P.G.Diploma in Women's Studies

Women's Health: Issues and Concepts

Block – I : Macro and Demographic View of Women's Health

Block –II : Women and Nutrition

Block -III : Women's Health Problems

Block -IV : Environment and Women's Health

Block – V : Health systems

Block – VI : Health Policy and Emerging Problems

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COURSE INTRODUCTION

Women's Studies has emerged as a field of enquiry due to the articulation of Women's issues by contemporary Women's movements. Women's Studies has been variously defined as "Studying Women's problems with the Women's perspective, looking at Women in the world from the Women's point of view" and so on. The Women's Studies programme is designed to create an understanding or awareness about Women's issues and to inspire impact on change. Women can change their lives, change the nature of knowledge that is being disseminated and change society and its values.

The area of Women and Health as part of women's studies is much more than medical information made easy. It is an interdisciplinary area of study drawing from disciplines such as medicine, sociology, economics, public policy, public health and even International relations, but much more it may be said that women's studies is a whole new way of looking at health and illness which is not limited by the study of diseases, bacteria, sick organs and deranged function of the body. It offers a new perspective or a new way of interpreting the established disciplines. In this course attempts have been made to present information on women's health in the context of their lives, work, family support and incomes and many other aspects of women's lives. In a sense it investigates illness and health from a new perspectives, not usually fashionable with medical students. This framework has emerged from the work done by women's groups, and other concerned groups working with the poor, dalits, tribals and other marginalised sections of society and draws heavily from the experiences of women and specially poor women.

On the other hand national and international organizations use and understand health information as data to "plan" for "development" and even place countries in order of their backwardness in an attempt to assess "progress" and women's health status. The unit on Demography discusses the limitations of these methods.

The topic women and nutrition has been specially included, considering the fact that 60-80% of women in this country are anaemic, underweight or have some nutritional problem and ironically these undernourished women are very often solely responsible for cooking and producing food for the family. Another important unit is the detailed account of women's health problems which combines health information with a critical assessment of the medical establishment and the scientific discipline itself.

The topics health and environment deals with the newer questions of the impact of development on the health status of the poor. A description of the structure of the health care system, both modern and traditional have been discussed because they are important for the understanding of government policies, specially the new economic policies, which has changed the notion of state responsibility for universal health care for the poor.

The University hopes that this material will help the student get acquainted with women's health and related problems. Critical suggestions for improving the text are most welcome and they will be incorporated in the future edition.

CONTENTS

UNIT-1 : VITAL STATISTICS AND DEMOGRAPHIC PARAMETERS OF WOMEN'S HEALTH STATUS, IT'S IMPLICAT IONS FOR WOMEN.

1.1. OBJECTIVES

After going through this unit you will be able to discuss

- The Demographic characteristics of Women's Health status
- Its implications for women

1.2. INTRODUCTION

Till recently there was very little information on women's health in India. But by the 80's and 90's the question of women's health and welfare has definitely assumed importance both nationally and internationally. Till the seventies it was believed that except for pregnancy and problems related to child birth, there were no differences between men and women in terms of illnesses, treatment, or even access to health care. For example it was taken for granted that the study of disease patterns, and the incidence and manifestation of diseases such as tuberculosis, heart problems, blood pressure, diabetes, cancers etc, could be studied in man and the results would apply to women, infact it was believed that more men than women fell sick and women were generally stronger than men. Therefore hospitals, Primary Health Centres (PHCs) and other clinics were set up by Government to cater to the needs of the whole population. But infact the planners had men in their minds when they planned the network of hospitals, clinics and health centres. Except in certain tribal areas, no special efforts were made to ensure that all sections of society and specially the poor and women, benefitted from the elaborate health care network. Even though health data on the prevalence rates of diseases was common, it was not found necessary to generate separate information for men and women, rural and urban areas, rich and poor, dalit and non-dalit or even tribal and non tribal areas. Therefore very little specific information on women's health was available in the seventies. The health professionals argued that diseases were diagnosed by an objective criteria, and since medicine and treatment was precise and scientific, a disease could not be different in different groups. It never occured to them that there could be many reasons for the women to be outside, the framework of such surveys whether at the hospital or in the villages.

As a result of this, the country relied on either data generated from hospitals or gross figures of deaths, births and prevalence of a few diseases from a few states, for the finalization of the 5 year plans for the whole country. The fact that very few women were even taken to a hospital or that the reporting of important illnesses and events like births and deaths depended on factors like place of delivery, remoteness of a village had not been recognized by the health care system. For example clinics functioned from 9 a.m. to 12 noon though most women have to cook, clean, fill up the water, take care of the old and the children, send their men to work before they could possibly visit the Government hospital at these times.

This fact did not figure when the data base on hospital cases was computed. With the declaration of the UNdecade for women in 1975 and the emergence of certain women's organizations and health groups in the seventies, demands were made for segregating health information to understand better the health status of women. As a result of these demands, and many small studies by women activists, information on women's health trickled in by the eighties. However health data was available only in terms of numbers, such as percentages, ratios or other numerical values. For example, the Birth Rate in India was computed to be around 30 per thousand or the Maternal Mortality rate was said to be about 400 per 1,00,000 births etc.

Without thinking about newer methods of gathering information, the existing tools of data collections were utilized for generating information about women's health. It was not surprising that only quantifiable health information could be generated. However even this data seemed to underestimate women's illnesses. The problems with the data collection were many. For example when surveys were conducted to record the prevalence rates of diseases - men and women were questioned by strangers about possible symptoms of fever, cough, diarrhoea etc. It was assumed that women like men, volunteer information readily about their (Gynecological) problems. This just did not happen. Women readily volunteered information about children's illnesses or the number of births and deaths in the family but they were unable to talk about their own ill health, such as menstrual problems, white discharge, prolapse or the number of abortions, chronic aches and pains, etc. One of the reasons could be that women are rarely asked to talk about themselves and a sudden question of this kind can leave them dazed. In addition, the investigators bias is well known. Most of women's complaints are dubbed as "Non-specific" and as a result symptoms of women's illnesses no matter how serious are either not heard or placed in the category of general problems of women. Another contributing factor to this confusion could be that women's illnesses are not simple in a way that direct answers can be expected. Unless carefully investigated most complaints may not be distinguished from the effects of a whole day's house work, taking care of the old and the young, their inability to eat nutritious food or take rest. It is also possible that their complaints of ill health take the forms of protest against housework. For example instead of stating that "I have profuse bleeding" some women end up saying, "I cannot do housework" or "The washing is killing me" etc. It is therefore not difficult to understand that the use of simple survey methods based on questions that were not sensitive to women's social context ensured that women's health problems were under estimated.

The statistics did not reflect the magnitude of ill health and disease. The health infrastructure inturn continued to function unchallenged. In any case, most women had got used to living with chronic pain and illhealth and did not expect the International Women's Year to perform miracles. The family and the medical profession found it easier to recognize and treat urban men's health problems, which were "clear cut" and thus "treatable". However the use of questionnaires to elicit information about women's ill health though inadequate, provided some leads. Only certain undisputed quantifiable events like data on births and deaths could be collected. No attempts were made to go beyond this or critique the methodology for the collection of demographic details or vital statistics.

With globalization, the National and International agencies discovered that such quantifiable health information however inadequate was valuable, as it could be standardized, and generated from all the countries around the world, or from various regions of a country or

With globalization, the National and International agencies discovered that such quantifiable health information however inadequate was valuable, as it could be standardized, and generated from all the countries around the world, or from various regions of a country or even smaller areas of a region. Inspite of the limitation, it may be stated that quantifiable data helped highlight some basic and comparable figures on the health and environmental conditions and medical facilities across the world. Collection and presentation of health statistics and information from countries of the world became a regular feature of the World Health Organization, the World Bank, UNICEF etc. For example, information on Maternal Mortality highlighted the absence of health facilities for delivery specially for the poor rural women in the under developed countries. Similarly, the details of infant mortality throws light on the state of the public health measures, and the near absence of curative and preventure care in the rural areas and the ill-equipped hospitals.

You will notice that health information is generally provided in terms of numbers, percentages, graphs and complicated tables. This information and method is drawn from disciplines which are known to be parts of demography and vital statistics. We will discuss details of health and population information with special reference to such data on women's health and well being. This will be accompanied by attempts to explore the limitations of such data.

1.3. DEMOGRAPHIC CHARACTERISTICS

Attempts will be made to first provide the important parameters being used to assess women's health, and later the possibilities of going beyond this frame work will be discussed. This might help in generating a new statistics for women and other marginalized sections of society.

Table - 1a

Birth Rate in India

	1971	1981	1991	1993
Rural :	38.9	35.6	30.9	30.3
Urban :	30.1	27.0	24.3	23.5
Combined :	36.9	33.9	29.5	28.5

Table - 1b

Estimated Birth Rates in some Indian States (1990)	
Andhra Pradesh	26.3
Arunachal Pradesh	30.1
Assam	29.7
Bihar	32.9
Goa	15.8

Gujarat	29.6
Haryana	31.9
Himachal pradesh	27.4
Jammu&Kashmir	31.4
Karnataka	28.0
Kerala	19.6
Madhya Pradesh	37.1
Maharashtra	27.5
Manipur	21.1
Meghalaya	31.8
Nagaland	16.2
Orissa	30.0
Punjab	27.6
Rajasthan	33.6
Sikkim	26.3
Tamil Nadu	21.6
Tripura	24.9
Uttar Pradesh	35.6
West Bengal	28.2

1.3.1. Birth Rate

Now let us see how birth rate is calculated.

This is defined as the number of live births per thousand population in a given year (for purposes of calculations the population in the mid-year is used). It is given by the formula,

$$\text{Birth Rate} = \frac{\text{No. of live births}}{\text{Estimated mid-year population}} \times 1000$$

Figures of declining birth rates of different regions are used widely by National and International agencies to point to either the development of a country or the status of women. The logic is that since the birth rates of developed countries have declined over the years (due to a large number of reasons such as increased employment of women in the formal sector, availability and accessibility of health care facilities which ensures that all the children born would survive, nuclear families with minimal help for child support, increasing levels of women's education, knowledge of safe contraception etc.). It has been assumed that low birth rates can be a proxy for development. Other demographers use the declining birth rate data to represent "women's better status". But there are many problems with such a simple way of representing development of women's status. For example, Kerala has one of the lowest birth rates in the country and Kerala does not represent a "developed" state. Similarly, Japan and some of the European countries such as France, Germany, Holland have low birth rates and it is known that the status of women living there is not exceptional. Women have to do all the housework,

take care of children, do not occupy jobs that are highly paid, infact they are doing jobs of secretaries, teachers, nurses, etc. They rarely occupy the top level jobs or doctors. The explanation for the declining birth rates must be sought in other spheres and the temptation to use a birth rate figure to represent development must be questioned.

Based on the birth rate data, it is important to remember that there are wide variations across India. It is obvious from table 1a and 1b that the birth rates are lower in the urban areas when compared to the rural areas. Within India, Goa, Kerala, Tamilnadu and Nagaland have the lowest birth rates, infact they are on par with the most developed countries in the world, whereas some of the northern states such as Madhya Pradesh, Bihar, Rajasthan, Orissa and Uttar Pradesh have very high birth rates. It is also important to remind ourselves that the birth rates are again higher in the underdeveloped countries when compared to the developed countries. The significance of this kind of data will be discussed later. These differences may be due to variations in the health care as reflected in the number of doctors, nurses, hospitals or beds per thousand population and on other socio-economic differences such as ownership of land, nature of employment and education etc. But whether birth rates of a region can be used to reflect women's status or her development, needs investigation.

Table - 2

Death Rate in India by Sex - 1992

	Rural	Urban	Total
Male :	10.7	7.2	10.0
Female :	11.1	6.8	10.2
Combined :	10.9	7.0	10.1

1.3.2. Death Rate

Now let us see how death rate is calculated.

This is defined as the number of deaths per thousand population in a given year. Death rates are calculated in the following way ;

$$\text{Death Rate} = \frac{\text{No. of deaths per year}}{\text{Estimated mid-year population}} \times 1000$$

As in the case of birth rates, lower death rates are said to represent an improvement in the status of the country. They are influenced by many factors such as the presence or the absence of basic health care services, prevalence of malnutrition and infections, epidemics and problems associated with a region's development. The death rates have been declining in India since 1921.

Over 20% of all deaths occur in children in the age group of 0 -1 year (called infant mortality). In women there is an increased death rate due to causes related to pregnancy and childbirth in the age of 14-35 years accounting for 20% of deaths in women in this age group. Over all pregnancy related deaths (maternal mortality rate) accounts for 2% of deaths in women.

Problems related to heart attacks and strokes account for 30-40% of death rates in men and women after the age of 45 years. Table (2) highlights the rural-urban dichotomy in the death rates of India. The overall death rates are higher in women living in the rural areas, because they seem to bear the brunt of the harsh realities of ill health, absence of health care, and perhaps even a general neglect. The picture in the urbanareas is reversed where the women have an advantage as in most advanced countries, and the death rates are higher for men than for women. Variations in death rates exist between the states also.

Table - 3

Life Expectancy in India by sex 1901-1980

	At Birth	
Census year	**Male**	**Female**
1901	23.63	23.96
1911	22.59	23.31
1921	19.42	20.91
1931	26.91	26.56
1941	32.09	31.37
1951	32.45	31.66
1961	41.89	40.55
1971	46.40	44.70
1980	54.10	54.70
1986-91	58.10	59.10

1.3.3. Life Expectancy : Life expectancy at birth is 'the average number of years that will be lived by those born alive into a population if current age-specific mortality rate persists'. It is dependent on many factors which act on a community over a long period of time. More specifically on the availability of adequate incomes, food and nutrition, health care services and many other related facilities. The adverse impact of famines, epidemics, natural disasters and prevalence of chronic diseases such as cancers, heart attacks etc, in a population can affect the life expectancy in a population.

Table 3 gives the life expectancy of Indians. In 1901, the life expectancy of men and women was around 23 years, it is now 58 and 59 years for men and women in 1986-91. Once the critical years of 0-4 is crossed most people can expect to live beyond 60 years. There has really been a dramatic increase in the life expectancy of Indians since 1951. This may be attributed to the countries role in providing food, health care, water supply which has benefitted certain sections of society. Data from other countries shows that normally women outlive men by over 3-10 years and have a higher life expectancy (70-75 years). However, this is not the case in India where women do not seem to have a big advantage.

There are also urban-rural differences in life expectancy in India, such that an urban man and woman can expect to live a little longer than rural population. It points to the fact that the rural areas have not received their share of the countries resources. It would be useful to study the patterns of longevity among the various marginalized groups such as dalits, minorities, tribals etc, to understand the disadvantage suffered by these communities in relation to the advantages that have been given to the urban areas and specially to some sections in this part of the country. Life expectancy also shows wide inter-state variations with Kerala having a higher life expectancy than rest of India.

Table - 4

PERCENTAGE DISTRIBUTION OF DEATHS BY CAUSES RELATED TO CHILD BIRTH AND PREGNANCY (MATERNAL DEATHS) 1989

Specific causes	1989
Abortion	13.7
Toxaemia	12.6
Anaemia	19.6
Bleeding of pregnancy and puerperium	25.2
Malposition of child leading to death of mother	8.5
Puerperium sepsis	11.5
Not classifiable symptoms	8.9
Total	100.0
Percent of total deaths	2.4

1.3.4. Maternal Mortality Rate: (MMR)

Maternal Mortality is described as the death of women due to child birth or causes related to pregnancy. It is calculated in the following manner :

$$\text{M.M.R.} = \frac{\text{Total no. of maternal deaths due to complications of pregnancy, childbirth (or within 42 days of delivery) from 'puerperal causes' in an area, during a given year}}{\text{Total no. of live births in the same area and year}} \times 1000$$

Maternal Mortality Rate in India is 3-4 per thousand pregnancies. It is acknowledged that the MMR of India is one of the highest in the world. Since Maternal deaths are due to preventable causes (table-4) such as anaemia, bleeding, infections and emergencies during labour, it may be stated that these deaths can usually be prevented by prompt medical care which includes blood transfusion, use of antibiotics, surgery like an emergency caesarian section etc, in a well equipped hospital and other prompt medical interventions. It would be important to investigate the class and caste backgrounds of women who die in child birth and also their distance from a well equipped hospital. It is therefore unfortunate that so many women are still dying in childbirth. To reduce these deaths preventable problems like anaemia, toxaemia, safe abortion and related questions can be addressed during antenatal visits to the clinics. For emergency problems during childbirth, such as bleeding during pregnancy, malposition etc, accessible and well equipped hospitals to take care of these emergencies are absolutely necessary. But the hurdles in the rural areas are many, the long distances from the hospitals, specially when women go into labour pains, and difficulty in transporting women in labour to these hospital for surgery. Inability to pay and problems of access are believed to be responsible for the very high maternal mortality rate. Table 4 gives the causes of MMR. It is significant that out of 100 deaths in childbirth, over half of them like anaemia, and sepsis could be prevented, and many could be treated. Toxaemia, and bleeding during pregnancy require well equipped hospitals with facilities for admissions, surgery and blood transfusion. Infact, maternal deaths can be largely eliminated with proper planning of health services for women. The Government is now planning a reproductive child health programme for women which is expected to provide emergency services specially services like surgery, MTP, blood transfusion etc, in the rural areas in Andhra Pradesh. Women must get these services and must not depend on a persons paying capacity.

Table - 5a

Infant Mortality Rate in India

Year	1971	1981	1990	1993
Rural	138	119	86.0	82.0
Urban	82	62	50.0	45.0
Combined	129	110	80.0	74.0

Table - 5b

Estimated Infant Mortality Rates in the states of India, 1993 (rural and urban)

India/States	Rural	Urban	Combined
India	82	45	74
Andhra Pradesh	70	46	64
Assam	84	60	81

Bihar	73	41	67
Gujarat	65	42	70
Haryana	70	53	58
Himachal Pradesh	65	36	66
Karnataka	79	42	63
Kerala	15	8	13
Madhya Pradesh	113	67	106
Maharashtra	67	32	50
Orissa	127	68	122
Punjab	60	39	55
Rajasthan	88	54	82
Tamil Nadu	66	38	56
Uttar Pradesh	98	67	94
West Bengal	64	33	58

* Excludes Jammu and Kashmir.

1.3.5. Infant Mortality Rate (IMR):

Infant mortality is defined as the death of children below one year of age. IMR can be further divided into neonatal mortality rate (death under 28 days of birth) and post neo-natal mortality rate (above 28 days but within 1 year of age). This is said to reflect the status of women's health and well being, because death of each new born child has implication for a mother who has recently delivered. It puts a great burden on her to get pregnant again thus draining women physically and emotionally. From the discussion that follows you will realilze that infant mortality rate is one of the most sensitive indicator of the state of development of a country or a region. The differences between regions, urban - rural and the various states is better reflected in IMR. Over all death rates are not such a sensitive indicator but IMR is capable of reflecting even subtle changes in the development of a region. IMR can be calculated as follows :

$$\text{I.M.R.} = \frac{\text{No. of deaths in a year of children less than 1 year of age}}{\text{No. of live births in the same year}} \times 1000$$

Apart from congenital malformation in the newborn, the major causes of infant deaths are due to infections like pneumonia, diarrhoea, tetanus, sepsis, etc. and it is worse in infants who have a low birth weight. These causes of IMR are largely preventable or they can be treated with the availability of antibiotics. Prevention of these infections is however possible

with the supply of safe drinking water, clean and hygienic surroundings, adequate food and nutrition and establishment of sound drainage systems and of course immunization. It is known that contaminated water and open drains are sources of infections in children which can lead to fatal complications. Since children are more vulnerable to infections they are affected faster by the absence of any of the above listed prerequisites. Adults also get sick but do not die due to illnesses like diarrhoea but for children these can be killers. IMR figures are important because they are affected by the absence of these preventive services. IMR is also affected by the state of the curative health care services. Except for children with congenital abnormalities (see Neonatal deaths) most of the causes of IMR can be treated provided this care is available in a well equipped health centre round the clock. Diarrhoea, pneumonia, high fevers, and other infections which top the list of problems leading to infant deaths become emergencies in infants and delay in treatment can result in infant death. Apart from clinics, treatment of infant problems require provision of roads and possibility of quick transport to a health centre so that children can receive the benefits of modern care in time. Since reduction in IMR requires an elaborate infrastucture, with preventive and curative services such as well equiped hospitals, manned by trained personal, roads linking up all villages to cities, transport facilities, medicines and money supply, it can be said confidently that IMR can become a proxy for the state of development of a country or region. With the help of Tables 5a and 5b, you can actually rank the states in India and the rural areas of each state. It is not surprising that the rural areas have a higher IMR when compared to the urban regions. It is significant that Kerala compares very well with an IMR of 13 whereas the IMR of some of the Northern states are very high. One of the reasons for this is the elaborate health care network, roads and access to medical centres in Kerala which makes it possible for children to be taken to a doctor during an emergency. Of course women's education is another big advantage where women understand the medical set up better.

Table - 6

Neonatal Mortality Rate in India:

	1983	1988
Rural	73.6	62.0
Urban	39.3	34.6
Combined	67.2	56.8

1.3.6. Neonatal Mortality Rate (NMR): This is a parameter which specifically quantifies the death rate of newborns: It is calculated in the following manner.

$$N.M.R = \frac{\text{No. of deaths in a year of children under 28 days of age}}{\text{Total live births in the same year}} \times 1000$$

It is important to understand that most of deaths of infants in the immediate period after birth (within 1 month) are due to untreatable causes. (These conditions are usually difficult to diagnose and treat). They are usually as a result of serious complications in the mother during pregnancy or childbirth, resulting in congenital problems such as birth defects and related problems in the newborns. Birth defects like those that affect the heart, lungs, brain etc, are serious and the chances of the child's survival are remote. Some of these can however be prevented, by careful monitering of pregnant mothers. This is only possible in the well equipped centres in cities resulting in a comparatively lower NMR rates in the urban areas (Table - 6). The other causes of NMR are infections like diarrhoea, pneumonia, meningitis, cord infections. Even these become very serious in the new born. Older children can survive such infections, but newborns have little resistence even when it is referred to the doctor early.

Table - 7

Post-Neonatal Mortality Rate in India:

	1989
Rural	40.1
Urban	27.5
Combined	37.7

1.3.7. Post-Neonatal Mortality Rate (PMR)

This is the death rate of infants after 28 days of birth. It is calculated in the following manner.

$$P.M.R. = \frac{\text{No. of deaths of children between 28 days and 1 year of age in a given year}}{\text{Total live births in the same year}} \times 1000$$

Since Neonatal mortality rates and post-neonatal mortality rates together account for the infant deaths in the 1st year of life, it is obvious that PMR are those deaths which can be largely treated or even prevented. Unlike NMR, PMR has been gradually declining over the years where as NMR has not changed much. However the greatest decline in PMR have been observed in areas which have access to health care such as the urban areas, and in certain states of India (Table 7). As the health facilities reach rural areas, the PMR will decrease, but it is very difficult to reduce the NMR.

Table - 8

Still Birth Rate in India

	1989
Rural	13.9
Urban	11.7
Combined	13.5

1.3.8. Still Birth Rate (SBR)

Now let us see what is meant by Still Birth Rate (SBR)

These are the number of babies born, dead. It is defined as the number of foetal deaths after 28 weeks of pregnancy. Deaths of foetus before 28 weeks (7 months) of pregnancy would be called abortions. But deaths of the foetus after 7 months in the uterus would be called still births. The causes of stillbirths are also difficult to recognize because they are usually due to birth defects, other intrauterine problems in the baby, or problems during labour. It is usually calculated in the following manner.

$$SBR = \frac{\text{No. of foetal deaths after 28 weeks of pregnancy}}{\text{Live births + still births}} \times 1000$$

The major reasons for birth defects and still births may be infections, compounded by poor nutritional status of mother, diabetes, blood pressure or other unknown events during pregnancy. Some of the infections in pregnancy can be treated and antenatal clinics are supposed to help early detection and treatment of diabetes and blood pressure and other identifiable causes in the mother. New imaging techniques using ultra sound procedures in pregnancy are useful for detecting still births wherever indicated and the foetus could be aborted.

Table-9

Age specific Death Rate 0-4 years

	Urban		Rural		Total
	M	F	M	F	
1988					
0-4	18.8	18.7	35.1	39.1	33.3

1.3.9. Age Specific Death Rate 0-4 years

This is the death rate of children aged 0-4 years per 1000 children in the same age group in a given year. Zero to four is a crucial age for a child as the child's survival is dependent on a larger number of factors. Children at this age are prone to infections such as diarrhoea, pneumonia, tetanus and other ailments which require prompt treatment. They are also victims of malnutrition due to the non availability of special energy rich foods for children (See women and Nutrition later) or the family's inability to feed the children 5-6 times a day due to either overwork, little knowledge about child nutrition and ofcourse poor incomes. Very often pre-school children are left behind in the care of other children when their parents go out to work. There is no support system which ensures that children are fed. This results in children being ill fed, and as a result they are thin and weak which makes them prone to infections.

Due to the cycle of infection and malnutrition children succumb and may even die leading to a high age specific death rate. It is unfortunate that over 33% of children in this age group do not live to celebrate their 5th birthday. After the age of 4 or 5, children learn to fend food for themselves and eat bits of food without any help. They may still be undernourished but it may not lead to death. The reduction in 0-4 age specific death rates requires the provision of adequate wages to the man and woman in the family, paid leave in the case of child's illness and childcare support when the mother is out at work. Somehow the figures of death hide all these details. Child support is seen as a waste of expenditure by the employers because it is seen as a women's job and therefore not worth much attention. The employers are forced to work out details of travelling allowance, dearness allowance, leave, overtime pay and other perks for regular employees (men) who demand it as their right but any benefit for "women" stays in the rule books and is rarely implemented. Women are pitied or even seen as taking advantage of the system when they ask for support services or creche's for children.

0-4 age specific death rates are double in the rural areas, where wages, childcare services, health care and access to information are all areas of concern. The Government has an ICDS (Integrated Child Development Scheme) functioning in most of the states where the child is given a food supplement and the anganwadi worker is expected to teach the mother about child feeding. The programme has had limited success. Children below 3 years are not brought to the centre. The question of caste segregation prevents certain caste groups from bringing their children. As a result the programme has had an insignificant impact on the illnesses and mortality rates of children.

Table - 10

General Fertility Rate in India 1992

Rural	127.6
Urban	89.1
Combined	118.6

1.3.10. General Fertility Rate (GFR)

It is the "number of live births per 1000 women in the reproductive age-group which is (15-44 years) in a given year". It has been pointed out that calculations of birth rates, relies on the whole population figures, though only women in the reproductive age groups give birth to babies. Therefore for purposes of understanding fertility and contraception, only women in the age group 15-44 years should be considered for calculations. The GFR is calculated in the following manner.

$$GFR = \frac{\text{Number of live births in an area during the year}}{\text{Midyear female population age 15-44 in the same area in same year}} \times 1000$$

Even as a measure of fertility the major weakness of GFR is that not all women in the age group of 15-44 years may be in a situation where they can be expected to have a child, (for example about 40% of women would be using contraceptive or are sterilized).

Table - 11

PERCENTAGE OF ACCEPTORS OF FAMILY PLANNING METHODS IN ANDHRA PRADESH, 1980-87

Year	IUD	C.C users	O.P users	Sterli sation	Tubectomies as a % of total sterilisation	Total Acceptors (Lakhs)
1980-81	5.7	13.6	1.4	79.3	77.59	3.07
1983-84	10.9	22.6	5.6	60.9	90.83	5.88
1986-87	11.7	26.3	7.4	54.6	89.92	8.30

IUD- Intra Uterine Device,

CC - Conventional Contraceptives (condoms)

1.3.11. Acceptors of Family Planning Methods

At any given time about 40% of women in India use some method of family planning to limit the family size. Family Planning methods are of 2 types - Temporary (Reversible) methods like the pills, and Intra uterine devices (IUD) used by women and condoms for men. The permanent methods are vasecomy and tubectomy which are surgical procedures for men and women respectively. Along with curative and preventive care family planning services have been recognized as an important component of the health infrastructure because these services can help couples plan their families and postpone births. Small families have important implications for women's well being. It is significant from Table 11, that most couples in Andhra Pradesh and even in India prefer to use the permanent method that is, tubectomies (female sterilization) to limit their family sizes. One of the reasons for the preference of sterilizations is that there can be many side effects with the use of pills, and the intrauterine devices or condoms (called conventional contraceptives etc.). In the absence of men's support the total responsibility and burden for contraception has been borne by women and coping with side effects can be expensive and time consuming. Therefore women appear to prefer sterilization which has fewer side effects and is also a permanent method. (In 1986-87 about 90% of all sterilizations, were tubectomies in A.P.). In contrast vasectomy for the men has not received the attention, it deserves despite the fact that vasectomy is simpler, required no hospitalization, has fewer side effects and if required is reversible. In 1975-76, the number of vasectomies in the country exceeded the number of tubectomies. This was during the period of the National emergency (1975-77) the Government targeted couples for family planning and recruited men for vasectomies. This policy resulted in large scale discontent in the

country, infact the over throw of the Congress Government in 1977 at the centre has been attributed to the male sterilization programmes. Since then, the Government has been cautious with the family planning targets for men. As a result women seem to bear the brunt of the targetting resulting in 90% tubectomies when compared to only 10% vasectomies. There are side effects with tubectomies, however in the absence of support from their partners, women have accepted this terminal method (women have no other choice) after the required family size is completed.

Table - 12a

Sex Ratio in India 1901-1991:

Census year	Sex Ratio
1901	972
1911	964
1921	955
1931	950
1941	945
1951	946
1961	941
1971	930
1981	934
1991	927

Table - 12b

Sex Ratio in India by major states

States	Sex Ratio	
	1981	1991
Andhra Pradesh	975	972
Arunachal Pradesh	862	859
Gujarat	942	934
Kerala	1032	1036
Nagaland	863	886
Punjab	879	882
Rajasthan	919	910
Tamil Nadu	977	974
Uttar Pradesh	885	879
West Bengal	911	917

Assam	901	923
Bihar	946	911
Goa975	967	
Haryana	870	865
Himachal pradesh	973	976
Jammu & Kashmir	892	923
Karnataka	963	960
Madhya Pradesh	941	931
Maharashtra	937	934
Manipur	971	958
Meghalaya	954	955
Mizoram	919	921
Orissa	981	971
Sikkim	835	878
Tripura	946	945
Andaman & Nicobar Islands	760	818
Chandigarh	769	790
Daman & Diu	1062	968
Delhi	808	827
Dadra & Nagar Haveli	974	952
Lakshadweep	975	943
Pondicherry	985	979

1.3.12. Sex Ratio

This is defined as the number of women per 1000 men. In developed countries there are more women to men as women live longer. Sex ratio is now used as a very basic demographic characteristic of a population and has now been increasingly used as a proxy for women's status. Why is this so ? A glance at table 12a and 12b highlights the fact that the number of women is declining in almost all the states and this decline had started at the beginning of the century. Generally there are more boys than girls at birth, followed by an increased mortality of the boys thus resulting in a sex ratio which is favourable to women, that is, there are more girls to boys by the age of five and after. Table (12a) gives the sex ratio in India since the beginning of the century and shows a declining status of women. A favourable sex ratio is seen only in Kerala. (Table 12b) In the rest of the country the sex ratio has been generally adverse to women. The northern states seem to have the worst sex ratio.

It is significant that the progress and development of a country in the economic sphere does not run parallel with the development of women. Inspite of 50 years of development after independence we are yet to understand the reasons for increased mortality of women. A discussion on the types of development in India may help us understand why women have been progressively affected? Is it the role of women in the family ? Or her decreased importance in agriculture and industry ? Or is it a new system of laws and politics that have helped to keep women out of the area of importance in private and public life.

Table - 13

Percentage Distribution of Sample Births by Type of Medical Attention at Birth, 1986, India

Sector	Type of medical attention at birth			
	I	T	U	O
1	2	3	4	5
Rural	14.3	17.7	48.3	19.7
Urban	47.8	25.0	18.6	8.6
Combined	20.7	19.1	42.6	17.6

I : Institutions like hospitals, maternity nursing homes,health centres, etc.,

T : Delivery conducted at home by doctor, trained dai, trained mid-wife trained nurses, etc.,

U : Delivery conducted at home by untrained village dai or other untrained professional functionary.

O : Delivery conducted at home by relation and others excluding the above.

1.3.13. Type of Attention at Birth

Table 13 provides important information on the health services available to women during a delivery. Only 20% of women are able to use the services of a hospital or nursing home, but this number is even lower (14%) in the rural areas. The rest of the women deliver at home in the hands of trained or untrained women. This in itself is not a terrible finding. But the problem arises when the women delivering at home need emergency care like a Caesarian section or blood transfusion or any other kind of help during the delivery. Reaching a hospital in time may not be possible. In addition the "trained nurses" and "dais" are usually handicapped because nothing is done to help them update their skills and information. They rely on their "experiences". If the delivery ends up in the death of the newborn or the mother the dais and nurses are blamed. No doctor or nursing home tries to support their efforts or gives them a status though they are the obstetricians of this country, delivering over 80% of

women. The nurses and dais are actually afraid of sending women to doctors when problems arise during delivery. The medical doctors scold and humiliate the dais in the presence of the patient. The conditions of the Government hospitals after liberalization have got worse with reduced funds allocated to such large institutions, resulting in their inability to treat even "simple cases". Attendance at Government hospitals is expected to fall and only those women with incomes will use the services of the private sector. A large number of women will not even attempt to seek care, to avoid being humiliated. One may expect to see a rise in the maternal mortality rates unless safe institutional delivery is assured. In a study carried out in the rural areas of Zaheerabad, it was discovered that one of the most important reasons for not going to the hospital was that the doctors scold and abuse women. If women have to benefit from the health sector, both private and government, many changes have to take place, changes in the way the medical staff treats women, the facilities at a nursing home, the updating of the training of dais and nurses in the rural areas and a constant vigil over these factors specially in the rural areas.

Table-14

Percent Distribution of Sample Deaths by Type of Medical Attention Received Before Death, 1986, India

Sector	Type of medical attention before death			
	I	T	U	O
1	2	3	4	5
Rural	8.6	29.6	23.9	37.9
Urban	27.6	44.8	7.1	20.5
Combined	11.5	32.0	21.3	35.2

I : If the death occurred in a hospital, dispensary, health centre, other medical institutions, etc.,

T : If the death occurred at home but was attended by a qualified practioner.

U : If the death occurred at home and was attended by an unqualified practioner.

O : No professional doctor/hakim/vaidya attended.

1.3.14. Type of Attention at Death

Factors leading to death are usually serious and one assumes that people seek medical attention. But the table on type of attention at death tells a different story. Medical attention at death may not be important or even desirable if it only prolongs life by a few weeks or when the person is very old and death is due to causes of aging. But medical attention is important

when the illness and death occur at a younger age group and death could have been prevented. Only 11.5% of people die in a hospital or to put it differently, only 11.5% of people who died received emergency medical care to prevent death. The rest (88.9%) of the population were not taken to a hospital despite their serious condition.

As before the rural areas have less than 10% of the deaths occuring in medical institutions. Whereas they are around 30% in urban areas. One of the reasons is the absence of these institutions in the rural areas. The problems of poor health services in rural areas is compounded by the fact that by the time sick people reach urban health centres, it is too late.

Many rural families recognize the futility of the medical intervention which results in agony of prolonging a life - but does not offer cure. This is specially true in the case of very sick children and the very old. the time, money and organization for transporting ill persons to hospitals is carefully evaluated and very often sick children are not brought to urban hospitals. With increasing number of corporate hospitals, patients with terminal illness are being encouraged to utilize the services of these institutions, but young men and women who desperately need care, but do not have the resources will be allowed to die. Attempts to refer dying patients (where the family is willing to pay) to hospitals will only increase rural indebtedness. What is required is a rational health care in the rural areas.

1.3.15a:

Table:15a

Dietary Intakes of women

Calorie intake/day	1660
(% RDA)	(75)
Protein intake (g/d)	50
(%RDA)	(89)

Table - 15b

Relation between weight gain in pregnancy and birth weight of the infant

Birth weight (kg)	% Distribution of weight gain (kg) of pregnant women		
	< 6	6.0-9.0	> 9.0
< 2.5	54	17	16
2.5-3.0	34	60	44
>3.0	12	23	40
Total	100	100	100

Table - 15c

Percentage distribution of birth weight in different income groups

Birth weight (kg)	Income Groups		
	Low	Middle	High
< 2.25	10.0	7.4	3.8
2.26-2.50	28.8	2.5	7.6
2.51-2.75	20.2	23.5	18.3
2.76-3.00	24.3	26.6	23.0
> 3.00	16.2	21.0	47.3
Total	100	100	100

1.3.15. Nutrition and Birth Weights

Tables 15a, 15b and 15c give us an idea of the nutritional status of pregnant women. It is known that the nutritional status of the mother is important for the birth of a healthy child.

The weight of the mother before she gets pregnant must be above 45kg at least, she must put on 8-10kg during the 9 months of pregnancy and have adequate food throughout pregnancy (calories, protein, vitamins and minerals etc.,). In the case of women from the low socio-economic group her pre-pregnant weight is only 42kg (at least 8-10kg less than the desirable weight). Therefore women start pregnancies with disadvantage. They put on less than 6kg during the entire period of pregnancy, and because they are from the low socio-economic class, their intakes of food is deficient not only in calories but also proteins, vitamins and minerals. This table 15a, b and c show the effect of inadequate intakes of calories and proteins. Women consume only 75% of their needs.

The mean birth weights of the newborns of women from the high socio-economic group is 3.2kg, whereas it is only 2.7kg in the low socio-economic groups. Table 15b highlights the fact that when women gain less than 6kg during pregnancy their mean birth weights are less than 2.5kg and this increases with increasing gain in weight.

Table 15c emphasizes the role of adequate nutrition in the high income group where more number of children have birth weights more than 2.7kg, whereas in the low income groups, there are fewer women with birth weights more than 3.0kg.

A child with a good birth weight has a better chance of survival. Infact children with birth weights less than 2.5kg are called small for date (SFD) and percentages of SFD children is over 40% in the low socio-economic group, whereas it is only 12-15% in the HIG group. It is in between in the MIG group (30%). The figures must be interpreted to understand

why pregnant women must have a proper weight, and eat and rest well to have a desirable weight gain of 8-10 kg to give birth to a healthy bal[illegible] the need for maternity leave, mother nutrition and other support structures are therefore important for the survival of the mother and the child.

Table-16a

Percentage distribution of villages according to population of Andhra Pradesh 1981

Population	No.	%
< 500	8858	32.4
500-999	5277	19.2
1000-1999	6464	23.5
2000-4999	5609	20.5
5000-9999	1058	3.8
10000 and above	163	0.6

Table - 16b

Percentage Distribution of Sample Households and Estimated Population by Source of Drinking Water in A.P., 1978

Source of Drinking water	Sample Households			Estimated Population		
	Rural	Urban	Total	Rural	Urban	Total
Tap	2.25	70.15	15.72	1.91	69.31	13.48
Hand Pump	2.51	6.09	3.22	2.24	7.35	3.11
Well	84.61	21.21	72.03	85.54	20.71	74.41
Pond/tank	6.73	0.15	5.42	5.10	0.09	4.24
River	2.68	0.01	2.15	4.13	-	3.42
Others	1.22	2.39	1.46	1.08	2.54	1.34
All classes	100.0	100.0	100.0	100.0	100.0	100.0

1.3.16. Quality of Women's Lives - Rural and Urban

Table 16a and 16b provide some interesting facts. It is known that over 70% of the population lives in the rural areas which do not have adequate facilities for water, sanitation, education and health care etc.. These are important for women's well being. Women in the rural areas have to walk long hours to get water or reach a school or a health centre. It is therefore not surprising that the demographic indicators are unfavourable to people from the rural areas. But what is not recognized that even in the rural set up, 30% live in small hamlets with population less than 500. These are bound to be far flung and thus worsen women's quality of life.

Smaller villages of less than 1000 are unlikely to even have kutcha roads. Thus affecting the literacy of girls and the health of women. Also contributing to infant and child deaths.

The other fact is that availability of water supply which is a pre-requisite for health and also reduces women's work is a huge hurdle in the rural areas.

Table 16b shows that the majority of women (85%) from the rural areas depend on wells for their drinking water supply, whereas only 21% of urban women depend on wells. It is known that wells may not be near the homes, they go dry in summer, and one well may serve a whole village creating problems of sharing between the various caste groups. The alternate supplies are virtually non-existent in the rural areas. This is not true in the urban set up where-at least life is a little bearable because tankers may arrive (sometimes at midnight) but women get water within 1/2km of their homes. Rural women's lives are spent in search of water, fuel and food, and these decide the quality of her life.

1.4. SUMMARY

This section deals with the demographic and health data generated by national and international agencies. This turn is used as a proxy for determining the status of women's health or in fact the status of women. The limitations of such data has been discussed with a large number of examples. The overall anxiety is that though numbers are useful, they represent just one aspect of women's lives, because numbers do not capture the complex lives of women's work, their family responsibilities, relationships, illnesses, sense of insecurity, the daily drudgery and even humiliation at the health centres. The usefulness of some of the data has also been pointed out.

1.5. MODEL EXAMINATION QUESTIONS

I. Answer the following in 30 lines each

1. What are the limitations of demographic data ? Discuss.
2. Choose the demographic indications which reflect the well being of the children of a country.
3. Using demographic indications, discuss the status of population in the rural areas.

II. Answer the following in 15 lines each

1. Birth rate in India
2. Infant mortality rate in India
3. Type of attention at birth
4. Source of drinking water in rural areas
5. Birth weights
6. Still births

1.6. GLOSSARY

a. **Demography** - is the scientific study of human population, specially pertaining to
   a. changes in population size, (growth or decline).
   b. the composition of population.
   c. the distribution of population in different areas.

b. **Prevalence rate** - refers to all current cases of a disease / deformity (old & new) existing at a given point in time or over a period of time in a given population.

c. **Incidence** - the number of new cases occurring in a defined population during a specified period of time.

d. **Non specific** - Not due to any single known cause as a particular pathogen

e. **Vital statistics** - Data pertaining to the vital events i.e. human mortality, morbidity notaling and demography.

1.7. RECOMMENDED BOOKS

1. Government of India, Family Welfare Programme in India, Year Book, 1995-96, 1996-97. *Department of Family Welfare, Ministry of Health and Family Welfare*, New Delhi.
2. National Family Health Survey, India, 1992-93, *International Institute for Population Sciences*, Bombay, 1995.
3. Government of India, Health Information of India, 1995 & 96. *Central Bureau of Health Intelligence Directorate General of Health Services, Ministry of Health and Family Welfare*, Pushpa Bhavan, New Delhi, 1998.
4. The World Health Report, 1998 Life in the 21st Century. *A vision of all*. Report of the Director General, World Health Organization, Geneva, 1998.
5. Health Monitor, 1999, *Foundation for Research in Health Systems*, Ahmedabad.

UNIT - 2 : CONCEPTS OF NUTRITION AND BALANCED DIET

2.0. OBJECTIVES

After going through this unit you will be able to discuss

- Balanced diet, its importance in providing adequate nutrition - qualitative and quantitative
- What is nutrition
- What is a balanced diet
- Importance of Balanced Diet.
- Discuss nutrients and their requirements in foods.

2.1. INTRODUCTION

To lead an active and healthy life and also for optimal growth and development women and men require adequate food which is optimal quantitatively and qualitatively. Both undernutrition and malnutrition in women and children have become matters of great concern for humankind. Even now about half the Indian population has survived a period of severe nutrition deprivation during childhood and more than half the children are at risk from serious effects of malnutrition. Besides, the effect of malnutrition on growth and development in children, poor reproductive performance in women, high mortalities especially in infants and children, long term consequences on quality of life are emerging as important issues. Chronic semi-starvation, commonly faced by poor socio-economic group of people results in lower weights and heights in children in their growing ages. Adults also are chronically under-weight and this affects their well being, and work efficiency. Weights are the simplest and the most telling

indicators of adequate food intake. How does one define a balanced diet and what are the components of foods, which go to form the balanced diet ? How does a community perceive balanced diet? Since women are involved in buying, cooking and distributing food in the families, how does their socio-economic condition affect the food they consume and the nutritional values of the food? Are food habits just simple concepts of availability of foods or are there factors which modify food habits. The student may also try to understand the links between women's wages and food needs, time spent on work, cooking, water fetching and food needs of the family and many other related questions. Some of these questions will be explored in this section. Food is the chief source of essential materials that the body needs for it's well being. These essential materials are called nutrients. The science of nutrition attempts to understand and explain the role of these nutrients for good health and well being of an individual. Food is not only a source of energy for satisfying hunger or even providing nourishment to the body but in many respects is a representation of an individual's economic and social status and an important source of security. Most poor nations try to provide food security to it's populations. Food may also help to express one's mood and individuality. In the same manner food may define a culture at certain times in history. In India caste, class may be defined by the foods served in homes and public places. Some castes will not eat meat though it is an important source of protein and many other essential nutrients.

Food is important not only for sustenance of life but also for growth, development, nurture and the very existence of human beings on the earth. The present unit highlights the prevailing concepts and misconcepts about food and nutrition and how over the decades concepts have changed. We will also try to explain the prevailing food habits and their role in nutrition. This unit also deals with the definition of balanced diet, its importance in providing adequate nutrition-qualitative and quantitative. The importance of these concepts in relation to woman's perception, and their economic, cultural and social background will also be discussed.

2.2. NON NUTRIENT COMPONENTS OF FOODS

Most people identify food as equivalent to nutrition. Conceptually nutrition can be defined as nurturing one's body with food quantitatively and qualitatively adequate for the growth, development and good health. Food by and large has nutritional value but there are foods which have non-nutritional components consisting of organic chemical compounds which have other functions. While some of these like fibers are beneficial others like lathyrogens in certain pulses eaten in large parts of central India (called Kesari dal) may be toxic. Other non-nutritional natural substances occur more widely in plant foods and determine overall quality of food. Function of these components is to protect plants against external predators. Some of these are also present in small amounts especially in spices, and act as flavour and aromatic substances. The amounts of these components should also be considered besides their nutrient content while considering impacts of diets on health.

Trypsin-Inhibitors are widely distributed in plant food like legumes and in animal foods like eggs. They may interfere with digestibility of proteins in the gut. Heating easily destroys

them. Some of these inhibitors are present in Soya bean, kidney bean, duck egg whites which are all important from nutritional point.

Phytates - are widely distributed in seeds and unrefined flour made from cereals like wheat and millets. These phytates bind minerals like iron, zinc, calcium and magnesium in the diet and interfere with their absorption from the gut. Wide spread zinc deficiency in Iran and Egypt is attributed to consumption of whole-wheat flour. Germination of grains reduces the phytate content.

Tannins are present in high amount in seed coats of most legumes, spices, tamarind, turmeric etc. Certain vegetables and fruits, millets like bajra, ragi, and jowar also contain fair amounts of tannin. Tannins interfere with protein and iron absorption. Removal of the seed coat of legumes, exclusion of tamarind and turmeric from diet can reduce tannin content.

Goitrogens: Though swellings of the thyroid glands called goitre develops due to low iodine intake, some of the substances present in plant foods may also interfere with iodine utilization and contribute to development of iodine deficiency and goitre. These compounds are known as goitrogens. These occur in leafy vegetables like cabbage, cauliflower, rapeleaves, radish, turnips and legumes like Soya bean, bajra, peanut, lentils etc. Excessive intake of these foods in areas where food or water iodine intake is low can lead to goitre.

Other Toxic substances: Some of the naturally occurring toxic substances present in foods like khesari dal, broad beans etc. lead to disease like lathyrism which results in paralysis of limbs. These can be removed either by parboiling and throwing away the water before being used for cooking, but in practise it is not very easy because the poor people do not have the fuel or time to boil the dal, discarding the water and then cooking it for the night meal for the family.

Dietary Fibers are indigestible sugars present in the food. They do not get absorbed from the gut but instead absorb water and swell in the gut. These have beneficial effect as they prevent absorption of some of the substances from gut especially glucose, Cholesterol etc. Consumption of diets rich in fibers such as fenugreek seeds (methi), whole grains, gums etc is considered beneficial in diabetes, in prevention of cancer and heart disease. One caution is that excess eating of fibers can prevent absorption of important and essential trace metals and vitamins.

2.3. GEOGRAPHIC VARIATION AND FOOD HABITS:

A brief account in simplified manner about geographic variations in food habits is important to understand the implications of food habits and nutritional status. These may also be linked to their purchasing power and food availability. Most tribes especially in Africa (like Bantu, Kikuyu and Masai) live mainly on cereals (maize, millets, sweet potatoes and plantains). Goats are used as currency rather than source of milk or meat. Very little cow milk is available for the children. Masai tribe make liberal use of meat, milk and blood. Zulu

have good diets but children suffer because of cultural custom of serving them at the end. In Nyasa Land children are not allowed eggs for fear of bladder disease and pregnant women for fear of having bald headed children. Cereals are mainstays of most people in Asia. 70 -80 % of energy needs are derived mostly from cereals of one kind or another. In most places, especially Thailand, Srilanka, Indonesia, Malaysia green leafy vegetables are also used by the population.

Indian Food habits are mainly determined by the availability of Indian food, incomes and to some extent their traditions. Though non-vegetarianism is the norm in over 90% of population, a large section cannot buy meat and are forced to live on only plant sources of food foregoing meat and other important sources of animal protein. Though value of milk as a good food is accepted by most people it is not regularly consumed due to its cost and scarcity. Fish resources are not well developed. If only fish, meat and poultry are made available at affordable prices most of the population will make use of them. In India intakes of beef, milk, pig, poultry and egg is quite low in the large sections of the population, and the main reason being poverty.

Food and Changing Cropping Patterns: As mentioned earlier, dietary habits are not only based on locally available foods but also on the changing cropping patterns for the market. Cash crops such as coffee, tobacco, cotton replace food crops and imported food from other areas replaces locally grown food. Milk and poultry may be sold in crisis to bring cash at the expense of family needs.

Illnesses and state of health may determine food intakes in certain cultures. Certain diseases may be associated with the use of certain types of food and individuals try to avoid such foods eg. cholostrum, which is the milk secreted on the first 2 or 3 days after childbirth is not fed to new born infants in many parts of India since it is seen as accumulated "old" milk. In most parts of India papaya is supposed to result in abortion and is not given to children and pregnant women for the fear of causing abortions. Mangoes are considered hot and not given to nursing mothers as it is believed to cause jaundice and fits in children. In Indonesia young girls are encouraged to eat bananas, cucumber or pineapple in order to ensure physical perfection. Vegetarians in India cannot be persuaded to eat flesh foods even when they are sick. Infact they may refuse to dine with others who are meat eaters. In India menstruating girls are not allowed to eat sesame preparations as it is believed to increase menstrual bleeding. Children are deprived of supplementary food upto one year due to the belief that they cannot digest solids. In addition when the child develops an illness when on supplementary semi-solid food, it may be discontinued. Cultural influences can sometimes precipitate protein energy malnutrition or other deficiency diseases.

You have thus seen how food habits may be influenced by various factors which may have a role in causing malnutrition. Changing food habits is thus not an easy task, since it may be determined by the individuals economic status or based on the current knowledge

of right and wrong. The role of advertisements is becoming increasingly important in determining food habits. Some of these problems have to be addresed if we must change the way we eat.

2.4. BALANCED DIET

Nutrients are derived from food and play a vital role in growth, development and maintenance of normal body functions, physical activity and health. Nutrients are organic or inorganic substances found in plants and animals and are necessary for physiological and biochemical processes in the body. Nutrients must be available in right proportions for optimum assimilation and utilization for maintaining health and activity. An understanding of the nutrients and their requirement in foods goes into the study of balanced diets.

Balanced diets consist of macro and micronutrients from food necessary for the body in the required amounts and in proper proportions. For formulating balanced diets one needs adequate knowledge about the presence of nutrients in foods, and their requirements. If one has to plan satisfactory meals conforming to the principals of balance diet for population groups one should have insight into the socio-economic status, dietary habits and cultural constraints which determine food consumption pattern. There is enough information available to formulate balanced diet. With increasing knowledge of the nutritive and non-nutritive values of various food substances, their functions and requirements this concept is well applied to determine the balance diet.

Balanced Diet : consists of different kinds of foods in such quantity and proportion that meet the need for energy, protein, minerals and vitamins. In addition it also provides for extra nutrients to be useful during lean periods for short duration. Food thus can be categorized into five groups.

Food groups		Major nutrients
1. Cereals and Millets	:	Energy, iron, B Vitamins
2. Pulses, Legumes, Nuts and Oil seeds	:	Protein, energy, and calcium
3. Milk, Egg and Flesh foods	:	Protein , calcium, vitamin A, riboflavin, vitamin B 12
4. Vegetables and Fruits	:	Calcium, iron, Carotene, Vitamin B-complex, Vit. C
5. Fats and Sugar	:	Energy, essential fatty acids (fats only)

2.5. CEREALS AND MILLETS

The major cereals and millets consumed are rice, wheat, Jawar, bajra flour and ragi. These are the main sources of energy in Indian diets consisting of 70-80% of daily energy intake of Indians. These are the cheapest, widely available source of energy especially in poor income groups. Cereals also contribute protein, calcium, iron and B complex vitamins to the diet.

The consumption of cereals and millets is highest in poor income groups (as they are the cheapest foods) and decreases with increasing incomes. In view of their high intake, cereals are a major source of various, nutrients mentioned above. The protein content of cereals is 6-12% and provides 50% of proteins needed for the body. Rice is a poor source of iron and calcium. Ragi is rich in iron and calcium. Based on the positive and negative quality of a cereal, a mix of cereals and pulses may contribute important nutrients to the diet. However, they may still not provide all the nutrients necessary for a person. The whole grain cereals are important source of B complex and vitamins but polishing of the rice reduces the B complex content. Highly polished rice has low vitamin content, parboiling i.e. soaking and steaming of paddy protects the B vitamins in rice. Highly refined wheat flour i.e. maida has low B vitamin. However none of the cereals have any vitamin A or C. Fat contents of cereals is also low and whatever amounts present is called invisible fat. The popularity of refined foods can be attributed to the influence of rice mills and women's attempt to reduce their work of pounding at home.

2.6. PULSES

Pulses or legumes are the richest source of proteins in vegetarian diets. Major pulses commonly consumed are Tuar, Bengal gram (chana), Black gram (urad), green gram (moong) and lentil. Some of these are used as whole gram besides cowpea, field bean, rajmah etc. Legumes do not contain enough minerals but are rich in B vitamins. Like cereals, pulses do not have any vitamin C except when used after germination. Therefore cereals pulse diets form a good combination for vegetarians to get balanced protein and amino acids in the diet.

2.7. NUTS AND OIL SEEDS

Like pulses, nuts and oil seeds are rich in protein and also fat. Thus they provide concentrated source of protein and energy. They do not have much of carbohydrate but have high levels of B vitamins. However since very small amounts are consumed, they do not contribute enough minerals or vitamins to the diet. Most of oil seeds produced in the country are used for oil extraction. Major oil seeds and nuts in common use are groundnuts, sesame (gingily/til), sunflower seeds, safflower seeds, and coconuts. Oil seed cakes obtained after extraction of oil have proteins and are used as feeds for animals. Oil seed proteins are of inferior quality. In recent years it has been shown that oil seeds especially groundnuts get affected by fungi if not dried properly after harvest. This can be toxic and harmful to human health.

2.8. SUGAR AND JAGGERY

These are sweetening agents used in beverages and other foods to improve palatability. They also contribute some energy. Excessive consumption especially in refined form can lead to heart diseases in adults and dental caries in children.

2.9. FATS AND OILS:

Visible fats consumed in India are butter, ghee, hydrogenated oils and various vegetable oils like groundnut, gingilly, coconut, sunflower, rice bran etc. Fats and oils are energy dense, and high intakes are harmful and lead to cardio vascular diseases in adults. Fats being expensive its intake is inadequate in poor income groups but excessive in the well off groups.

2.10. FRUITS AND VEGETABLES

(A) Fruits :

Fruits are good sources of vitamin C. Amla and Guava are the richest source of vitamin C. Yellow fruits like mango, papaya are good sources of vitamin A and beta carotene. Banana is rich in carbohydrate. Dried fruits are rich in calcium and iron contents.

(B) Vegetables: are of three kinds.

i. Green leafy vegetables: Many types of greens are consumed all over the country. Commonly consumed greens are palak, amaranth, methi, drumstick, mint, dhania and radish. They are rich sources of vitamins like beta-carotene, vitamin C, folic acid, riboflavin and minerals like calcium and iron. Greens are least expensive and encouraging their regular consumption in the long run will be of great value in preventing many of the deficiency diseases like anemia, blindness etc.

ii.Roots and tubers: Most of the roots and tubers are rich source of carbohydrates and form an important energy source in the diet. Commonly consumed roots and tubers are tapioca, potato,sweet potato, carrot, yam, colocasia and radish. Carrots and yellow variety of yam are rich source of beta-carotene. Potatoes have vitamin C. Tapioca and yam are rich in calcium.

iii. Other Vegetables: Those, which do not come under green leafy vegetables and roots and tubers, are classified under this head. They include a large variety like cauliflower, lady's finger, French beans, guar beans, various gourds, tomatoes etc. They not only add to the variety but also provide vitamin C and some minerals. They are also rich source of dietary fibers and provide bulk to the diet. One may assume confidently that all green and red/orange coloured vegetables contain carotenes which go to form vitamin A and almost all vegetables contain vitamin C and minerals.

2.11. ANIMAL FOODS

Animal foods are of three kinds- dairy, meat and poultry

i. Milk and Milk Products: The group covers milk (cow, buffalo and goat), milk powder, curds, buttermilk, butter and cheese etc. Milk is the most wholesome food especially for children due to its good quality protein and calcium. Milk from different species has similar values except human milk, which has low protein content, but high lactose. Milk has to find a place in balanced diet particularly vegetarian diet for getting good quality protein, adequate calcium and riboflavin, which are difficult to get from plant sources.

ii. Eggs: Eggs are rich source of all nutrients except ascorbic acid. Egg proteins have the highest nutritive quality compared to any other dietary protein but raw eggs should not be consumed as raw egg white contains anti nutritional factor avidin, which binds with biotin, a B-Vitamin and then makes it unavailable to the body. It contains another anti-nutrient called ovomucoid, which can inhibit the activity of another nutrient called tyrosine. However cooking and boiling destroy these anti nutritional factors. Inclusion of eggs in the diet of pregnant women and children can improve their diet and essential nutrient supply.

iii. Flesh foods: Flesh foods like meat, poultry and fish are rich in good quality protein and may also provide B vitamins. They also are the only rich source of vitamin B 12 which is absent in plant food. Fish is also a rich source of calcium, vitamin A and vitamin B, polyunsaturated fatty acid, which is known to prevent heart disease. Animal food production is very low in India and the cost is prohibitive. Some amount of animal food improves the quality of vegetarian food. Dry fish can be a good substitute for pulses in the cereal-based diet of the poor.

2.12. CONDIMENTS AND SPICES

These are accessory foods mainly used to add flavour and improve palatability of the food. They are used in small amounts and for digestion. Some of them are rich source of iron and other trace minerals and potassium. Green chillis, coriander leaves provide beta-carotene and vitamin C. Some of them like turmeric, garlic and asafoetida have anti bacterial property and inhibit putrefying bacteria. But it is now recognized that spices have a protective role in fighting chronic diseases and also cancers.

Salt: Salt is very important in our diet. Most of the salt comes from sea and provides iodine, but high intakes of salt may be associated with hypertension. Areas which are endemic for goitre and iodine deficiency disorders are advised iodine fortified salt.

2.13. WOMEN AND NUTRITION

Women continue to bear the major burden of providing food to the family members and the community since it is assumed that it is her job in the kitchen. Most of the time women cook food items, which the men bring or the landlord provides as a part of the wages. In most rural areas women may also look after the kitchen garden. Her perception regarding nutrition and balanced diet is influenced by what is locally available and socially acceptable and of course affordable.

Even if she has some knowledge regarding value of some of the foods, the scarce availability of important nutritious food due to poor purchasing power, limit her action in preparing wholesome food. Throwing rice water or vegetable water after boiling and cooking, because of the fear of pesticide residues, the belief in the hot or cold effects of certain raw vegetables like cucumber and papaya etc., can restrict her access to nutrients resulting in loss of important nutrients not only for herself but for the whole family.

The social custom of feeding the male members and elders of the family the best foods and being the last one to eat, results in many instances of women eating less or left-over food especially in so called "traditional" families. Since this practice persists even during pregnancy and lactation when needs are high it results in poor nutritional status and therefore poor pregnancy out come. During breastfeeding due to fear of cold or hot effects, the woman normally deprives herself of nutritious food and also the infant may not get adequate nutrients through breast milk. Perception of women regarding infant feeding is one of the important aspects of infant and child nutrition. Most of the time especially in first pregnancy, the needs of the infant and child are determined by the elderly woman or grand mother / mother-in-law of the family. The young mother despite her awareness is not able to provide the infant with adequate nutrients. Discarding cholostrum, which is rich in nutrients and easily digestible with anti infective properties and also late starting of breast feeding (3-4 days after delivery) is a common practise. Many women who have to work for long hours at home and at the workplace with no help find it difficult to feed the child adequate diets. In others the belief that supplementary food introduced early would result in poor digestion and sickness in the child, prevents the mother from providing extra supplements till almost one year of age resulting in infant malnutrition.

2.14. SUMMARY

In this unit we have described the concept of nutrition as understood by the nutritionists as well as by the women and the community. The factors influencing the food habits which determine the nutritional status of the community or the country has been discussed. Role of the non-nutrients has been elaborated. The concept of balanced diet and the foods which must go into the making of a balanced diet has also been attempted.

2.15. MODEL EXAMINATION QUESTIONS

I. Answer the following in 30 lines

a. Explain about a balanced diet.

b. Usefulness of animal foods.

c. Write about the geographic variations in food habits.

II. Answer the following in 15 lines

a. How do changes in agriculture affect food intakes ?

b. Explain the importance of cereals and millets.

c. Why is nutrition the concern of women ?

d. Importance of fats and oils.

e. Goitrogens.

f. Condiments and spices.

2.16. GLOSSARY

a. **Colostrum**: Breastmilk which is a thin, yellow, fluid secreted by the mother a few days before or after the delivery of her baby. It contains a high concentration of immunoglobulins which protect the baby from infections. That is why doctors advise mothers to feed colostrum to their newborn infants.

b. **Concept:** An idea or a mental picture of a group or class of objects formed by combining their properties.

2.17. RECOMMENDED BOOKS

1. *Nutrient Requirements and Recommended Dietary Allowances for Indians*, Indian Council of Medical Research, New Delhi, 1989.

2. Mahtab.S.Bamji, N.Prahalhad Rao and Vinodini Reddy, **Text Book of Human Nutrition**. (eds) 1996. Oxford and IBM Publishing Co. Pvt. Ltd. New Delhi, Calcutta.

3. C.Gopalan and Suminder Kaur. *Women and Nutrition in India*. Nutrition Foundation of India, (eds) Special Publication Series. 5, New Delhi, 1989.

4. *Nutrition Foundation of India (NFI) Bulletins*, New Delhi, January 1994 (Vol. 15, No.1) to May 2000 (Vol.30 No.5).

5. E. C.Gopalan. **Recent trends in Nutrition**. (eds) Oxford University Press, New Delhi, 1993.

6. Ekhard E.Ziegler & L.J.Filer. Jr. (eds) *Present knowledge in Nutrition*, Seventh Edition. ILSI Press, Washington DC, 1996.

UNIT-3: NUTRIENTS IN FOODS

3.0. OBJECTIVES:

After going through this unit you will be able to discuss

- The Functions of foods
- The Effect of cooking and other process on food values
- The role of media

3.1. INTRODUCTION

Good quantity and quality of food is essential for proper growth, development, healthy and active existence of the human being. The plants are able to synthesize their own food from the chemical substances available in the soil, water, and air. However higher forms of life and human beings cannot do so and have to depend on the plant and animal sources of foods. Thus an imporant activity of the humans and animals is to put all their efforts to procure enough food for their survival.

In animal kingdom, the food needs are satisfied through natural selection whereas humans have access to wide range of foods to choose from for their consumption. To maintain good health and meet the nutritional needs they have to depend upon the type and the quality of food they are able to include in their diets. The wide range of nutrients needed by human include proteins, fats, carbohydrats, vitamins and minerals. These are the chemical substances present in the food eaten by us every day. The natural foods are classified into cereals, legumes(pulses) , nuts and oilseeds, vegetables and fruits, milk and milk products and flesh foods(Fish, meat and poultry). All these foods contain most of the nutrients needed by the body though the amounts of each of the nutrients vary. Some are rich in certain nutrients and others in some other nutrients.

It is common knowledge that adequate food, both in terms of quantity and quality is important for health. Understanding the functions and the nutrients in the foods we eat would help in planning the diets which are well balanced, palatable and acceptable to the community. In this unit we discuss the various functions of foods, their quantitative and qualitative aspects and the effect of cooking and other processes on food values. Also the impact of food processing and the role of media would be described in brief in promoting food choices.

3.2. MAJOR NUTRIENTS

Proteins, fats and carbohydrates form the proximate principles since they provide the necessary energy needs of the body. However functions of these principles are different i.e., while the proteins may also provide energy ,its main function is to provide amino acids (AA) for the body proteins. Fats especially the vegetable oils besides being rich source of energy also provide essential fatty acids which are important for many metabolic activities such as clotting of blood and formation of cell wall etc.. Plant foods which have very high fibre content (undigestable molecules of food) contribute to the bulk and have important function in emptying the bowels and have a preventive role in the diseases of colon.

Vitamins and minerals have important role in the regularisation of the metabolism in the body. They also have great value in the utilisation of the proximate principles. Minerals are needed for the formation of bones (Calcium and Phosphorus), blood (iron) and other important functions in the immunological system (Zinc).

All the nutrients are important for mankind in different amounts for growth, survival and healthy life. Most of the nutrients are derived from foods one eats and unless the food is well balanced to provide all the nutrients it would result in deficiency diseases and poor growth. It therefore becomes important to understand their functions and values for the formulation of a balanced diet. The quantitative requirements and the concept of balanced diet has already been discussed in Unit II. The role of various nutrients in humans is discussed in the next few pages.

3.2.1. Proteins

Proteins are known as body building blocks and are vital for any living organism. They are the most important components of tissues and cells in the body. The muscle, the brain, intestines, stomach, body fluids like blood and other tissues have proteins as major components. Also proteins are the ones that make enzymes and hormones needed for a wide range of reactions in the body and other processes and vital functions like respiration, blood clotting etc. Proteins provide the body building materials and are constantly needed to replace the tissues lost due to wear and tear. They are also very important as antibodies to protect and fight the body against infections.

Thus proteins are needed for a wide range of functions necessary for the sustenance of life. They should be provided in adequate amount and of good quality. Dietary proteins are broken down in the digestive tract into amino acids and absorbed. The amino acids are then re-grouped to synthesize the proteins in the body for tissue building, synthesize functional molecules like enzymes, hormones and antibodies. Besides the above functions amino acids are also broken down to yield energy. If the diet does not have adequate energy supply through carbohydrates and fats, the amino acids which are needed for the protein synthesis are used to fulfill energy needs.

Source

Foods rich in proteins are generally expensive. Though all foods (except sugar, oil and fats) have small amounts of proteins, some foods like animal foods (meat fish & egg), plant, foods like pulses, oilseeds and nuts are rich sources of protein. Milk also comes into this category since it is a complete food with good quality protein containing all the essential amino acids. These foods have as high as 20% protein, Soya bean being the richest(40%) of all. Cereals & millets provide 10% of proteins with rice the lowest(7%) and wheat highest (12%). Since cereals & millets are staple foods and eaten in large quantities, they provide almost 50 to 60% of the protein needs of the body. Leafy vegetables, roots, tubers and fruits are poor source of protein. Oil seed cakes are the richest source (60%). Earlier it was used as cattle and poultry feeds and manure. In the recent years with improved technology they are available for human consumption also.

Biological Value Of Proteins

For determining adequacy of dietary proteins for body needs, it is not only the quantity but also the quality that matters. The protein quality varies from one foodstuff to another depending on their amino acid composition. There are 20 amino acids in the body of which 9 are known as essential amino acids (EAA) since they can not be synthesized in the body. The rest, the nonessential amino acids can be formed in the body, due to interconversion of other EAA's or from simple compounds derived from the break down of carbohydrates or fats. The body cannot do without EAA which are needed for tissue building purposes.

The quality of proteins depends on the pattern and amount of EAAs supplied. Best quality protein is the one which provides EAA pattern very close to the tissue proteins. Egg and human milk fulfill this criteria and are known as high quality proteins and therefore used as reference protein to define the quality of other food proteins. Besides these proteins, the minimum amount of EAA's needed by infants is also taken as reference to define the quality of the proteins. Based on the extent of the deviation of EAA pattern with reference to the standard(egg or milk), the quality of the proteins is assessed and chemical scores provided. However this method takes into account the digestibility of dietary proteins. Another method used to assess

the quality of protein is biological wherein the growth or nitrogen retention by the experimental animal is used. The measure of quality is Net Protein Utilization(NPU) which takes into account both the absorption and the retention.

Proteins of animal foods are of high quality since they compare well with reference to Egg or Milk Protein. Vegetable proteins are of poor quality since there is deficiency of one or the other EAA like Lysine in cereals, sulphur containing amino acids like methionine in oil seeds and pulses. This relative deficiency of one or two EAA in cereals can be compensated by using proper combinations with pulses, oil seeds or other vegetable foods having adequate level of the EAA in the cereals. A ratio of 5:1 cereal:pulse provides optimum combination for e.g. the rice, dal and milk diet comes close to the desired optimum combination.

Other factor in assessing the value of protein is its digestibility. Uncooked vegetable food proteins are digested poorly as compared to animal foods. Low digestibility of uncooked plant foods is due to the presence of trypsin inhibitors that are destroyed while cooking or boiling. Thus cooking improves the digestibility of many of the foods. Excessive heating results in non availability of lysine or methionine since they get converted into some other compounds. Thus it is clear that food quality depends on EAA composition and digestibility and cooking methods.

3.2.2. Fats

Fats are important components of the diet. Besides increasing the density and concentrated source of energy, fats also improve the palability of the food and slows stomach emptying time. Fat is also essential for the absorption of the dietary Vit A and Carotene. Besides this, some of the fats especially of vegetable origin provide essential fatty acids(EFA),which have vitamin like functions in the body. The nutritional aspect of the fat are of importance from two points: 1) excessive intake particularly of animal origin like butter, ghee, curd etc..; fat increases blood cholesterol, the excess of which leads to its deposition in the lining of the blood vessels narrowing and hardening them resulting in reduced blood supply. The coronary arteries supplying blood to the heart and the arteries supplying blood to the brain are most affected leading to coronary heart disease and stroke. Fats are the richest source of energy.

Fats are of two types

A) Visible fat derived from animal and vegetable oils, and B) Invisible fat present in almost all food items like cereals, pulses etc. The invisible fat contributes a great deal to the total fat intake and the EFA. Diet containing nuts, oilseeds, avocado, pear and animal foods have high amount of invisible fats. The cereal pulse combination of Indian diet provides about 10gms of invisible fat. Visible fats are oil, ghee, dalda, butter etc.. Some of the animal fats like butter and ghee contain vit A and D whereas the vegetable oils have vit E which protects the oil

from becoming rancid. While excess fat causes obesity and problems related to it like blood pressure, heart disease, the deficiency of EFA can lead to certain diseases.

3.2.3. Carbohydrates

Carbohydrates are a class of energy giving substances like starch, glucose, sugar, milk sugar etc. The cereals, millets, tuber and roots are mostly starchy. Besides their role as energy yielding, there are other complex carbohydrates which are undigestible(gums, pectins etc.). These are called fibres and are undigestible. Fibres, though do not have any nutritional value, contribute to the bulk of diets as well as roughage which is needed for the digestion of food and elimination of waste. If fibre intake is inadequate it can lead to constipation and colon diseases. These fibres also have an effect on lowering the blood cholesterol. Fibre is mostly obtained from vegetables and cereals.

Energy

Fats, proteins and carbohydrates all provide energy. The energy is needed for maintaining the basal metabolism, metabolic processes in the body, to maintain body temperature, respiration, blood circulation, digestion of food and its absorption. High energy foods like fat which provide density to the food are very useful especially in infants who cannot take bulky foods in large quantity. This is also true of those recovering from illness and the elderly.

Energy is also needed for physical activity, exercise and physical work. Low energy intake is associated with loss of weight, asthenia and weakness in adults, and marasmus & underweight in infants and children. High energy intake if not utilised for work, gets stored as fat and can lead to obesity and over weight with their associated problems. A balance is absolutely necessary for energy needs. This has been discussed in the earlier chapter in detail.

3.2.4. Vitamins

Vitamins are of two types, fat soluble and water soluble. Fat soluble vitamins are A, D, E & K. The requirements and consequences of the deficiency of these vitamins has been discussed in other sections. In this unit only the important functions will be described.

Vitamin A

Vitamin A is a fat-soluble compound called retinal and is present only in animal tissues. Pro Vitamin A called carotene is present in large amounts in most of the green vegetables and yellow/orange coloured fruits. They get converted into Vitamin A in the intestinal wall and get absorbed in the bile to be stored in the liver.

Vitamin A is essential for the integrity of epithelial tissues and functioning of retina. Visual purple or Rhodopsin containing a protein and a pigment is present in the rods of retina. When light falls on the eye Rhodopsin gets decomposed. The regeneration of Rhodopsin is dependent on Vitamin A and if deficient result in failure of dark adaptation. Thus Vitamin A is essential for clear vision in dim light. Another function of Vitamin A is to maintain the integrity of epithelial tissues. Deficiency leads to dryness and wrinkling of eyeball lining followed by that of cornea resulting in loss of eye sight. It is also essential for immunity and protects from infections especially of respiratory tract. Children who do not get enough vitamin A from diet suffer from night blindness.

Vitamin D

Vitamin D is needed for bone growth and calcium metabolism. Deficiency leads to rickets in children and osteomalacia in adults. It has an important role in promoting calcium absorption from the gut and its deposition in the bone. If there is not enough Vitamin D it results in bone deformity. Vitamin D is formed in the skin by the ultra violet rays of the sunlight. The rays gets absorbed through the skin and convert inactive vitamin D into active form of Vitamin D. Rickets are common in children and osteomalacia in adults who live in dark and dingy houses. Rickets occurs in children who grow very rapidly but have Vitamin D deficiency. Exposure to the sun for 30 minutes a days (in the morning) is adequate for the daily Vitamin D requirement. This explains why children are encouraged to go out and play. Other fat soluble vitamins K and E are discussed in unit 4.

Water Soluble Vitamins

Most important of these are B Complex vitamins like B1(Thiamine), B2 (Riboflavin), B3(Niacin), B6(Pyridoxin), Folic acid and B12 and Vitmain C. Folic acid and B12 are required for DNA synthesis and transfer of C1 carbon atoms for the formation of amino acids. They are also essential for multiplication and maturation of red cells. B12 is also needed for proper functioning of central nervous system. The deficiency of these vitamins results in megaloblastic anemia and disorders of the central nervous system.

Ascorbic acid or vitamin C is essential for the integrity of the epithelium of the blood vessel walls, for collagen synthesis, (cementing, substances necessary in bone, tendons, cartilages) bone and teeth calcification. The deficiency of vitamin results in Scurvy.

Sprouting of grams and whole grains results in the synthesis of not only vitamin C but also the other B vitamins. Other B vitamins are discussed in detail in unit 4. Vegetables and fruits are rich sources of vitamins. Most important of the minerals are iron and calcium.

3.2.5. Minerals

Iron

Iron is essential for formation of haemoglobin which in turn is of importance to carry oxygen from lungs to different parts of the body. Tissues also require iron for various oxidation and reduction reactions to help tissues live.

Calcium

Calcium is an essential element for several life processes. It is needed for the formation of the bones and the maintenance of skeleton and teeth. Normal contraction of muscles of the limbs and the rhythmic contraction of the heart depend on the calcium ions. It is also needed for nerve cell conduction (transfering messages along nerves) and blood clotting. There are no specific signs of calcium deficiency. In old age, depletion of calcium from bones results in their softening and osteoporosis. Signs of deficiency are bone pains and body pains. The body has 1kg of calcium mostly stored in the bones.

3.3. COOKING PRACTICES AND FOOD VALUES

Most of the food consumed by the humans are subjected to cooking except for the fruits, some of the green vegetables which are used raw as salads or chutneys. Cooking not only helps in improving the digestibility but also provides taste and palatability of the foods. The manner and variety of food preparations depend on the cultural practices. The importance of cooking and cultural practices are discussed in detail in Unit II.

Cooking practices not only vary from region to region but also from one household to another. There is very little information on the effects of various cooking practices on the food values. Cooking practices in India involve a] wet method- boiling, steaming or pressure cooking; b] dry method- roasting, frying and baking. Depending on the temperature and duration of cooking there are varying losses in the nutrient.

Generally not much nutrients are lost during ordinary cooking especially in terms of proteins, fats and carbohydrates from cereals, pulses and meat. If vegetables are cooked in water and salt and water is thrown, some amount of protein is lost but loss of vitamins is considerable since they get leached into cooking water. It is therefore advisable that cooking is done in minimum amount of water, as far as possible the water is not discarded but used in some other preparations of food like soup, dhal etc. Very little nutrients are lost by wet or dry cooking of the tubers or roots.

Cutting the vegetables into small pieces and exposing them to air before cooking results in loss of vitamin C. Steaming of vegetables prevents losses due to leaching. Cereals like rice form the staple food for almost 50% of Indian population and are rich sources of many of the

nutrients. However the washing of rice prior to cooking results in loss of some amount of vitamins esp. B1 and Nicotinic acid(40%). Therefore washing should be minimum. Throwing of kanji after boiling the rice in excess water, a common practice in southern parts of India also results in loss of vitamins and minerals. Thus washing and cooking should ideally be done with minimal water to prevent excess losses of nutrients. Par boiled rice which is commonly used in Kerala retains the vitamins and minerals with minimal losses during washing since these nutrients get diffused into the grain during the process of par boiling of paddy which forms a gelatinous coating.

Frying, roasting and baking of food stuff result in extensive losses of nutrients. If roasting is too much to the extent of charring and if oil is repeatedly heated during frying it may contain toxic substances due to per oxidation and rancidity.

During cooking process loss of vitamins esp. the B group is of greater order than minerals or proximate principles. In wet cooking there is relatively less loss of vitamin A and Beta Carotene. Cooking in tamarind minimises the loss of B vitamins. Vitamin C is lost when cut or cooked vegetables are exposed to atmosphere. Heating of milk results in loss of folic acid. Steam cooking or pressure cooking prevents losses of vitamins.

Cooking also has some benefits. It improves appearance, palatability and digestibility of food. It also destroys micro organisms. Cooking of eggs destroys avidin which otherwise binds with biotin (a vitamin B) and makes it unavailable. Trypsin inhibitor in some legumes like soya bean reduce protein digestibility. Cooking destroys these inhibitors. In general, the quality of proteins improve after cooking. In recent years the pesticide residue in fruits and vegetables has risen, posing a dilemma as this means that foods must be thoroughly washed before use.

3.4. FAST FOODS AND REFINED FOODS

With many urban women going for work, time needed for cooking, household work, care of children, in addition to the hours of duty at work, has put heavy pressure on women's time. The use of refined foods and fast foods are becoming increasingly popular in well to do urban households.

Both fast foods, (burgers, chips, cold drinks) and refined foods taken on a routine basis can be harmful since they lack essential nutrients esp. vitamins and minerals and also most of the time are fatty due to excess oil used for cooking.

3.5. FOOD PROCESSING

Foods that are subjected to technological modifications either for preservation or to make ready to eat foods, to avoid long drawn laborious household procedures are called processed foods. Examples can be cited of ready mixes, bakery products, dehydrated foods, canned foods, confectioneries, and dairy products and breakfast foods. Due to urbanization there is an increase in the intake and demand for the fast and processed foods with a tendency to replace traditionally cooked foods. Most processed foods have variety of food additives and unless fortified may not be nutritionally balanced.

Processing of food can be primary and secondary. Primary processing is used to convert basic staple grains like rice, wheat, pulses etc. into edible raw materials ready for marketing. Milk pasteurised and sent in bottles, sachets etc. for distribution in cities and towns is another form of processing. Secondary processing provides ready to eat foods like bakery products, jams, squashes, pickles, sweets, chocolates and soft drinks. Loss of nutrients affects large number of people in primary processing than in secondary since former is used mainly as staple food.

Primary Processing

Primary processing involves milling and polishing, par boiling, domestic pounding, hulling, grinding etc. of rice and wheat. Other processes like pearling, sprouting and toasting are used esp. for ragi and contain more nutrients than traditional processing. Oil seeds are processed by crushing in "ghanis (chakkis)" and expellers. 85% of oil production in India is through this process. Rest is the solvent extraction.

Secondary Processing

I. Cereals, Pulses and Oil Seeds

A] Baking - Bread, biscuits, cakes etc. Baking results in reduction of nutritive quality resulting in 30% of loss in B vitamins.

B] Puffing - like roasted bengal gram, green gram, and rajmah etc. Puffing results in loss of some of the anti-nutrients like trypsin inhibitors, saponins, tannins etc. and make the pulses readily digestible. Puffed bengal gram has serum cholesterol lowering effect.

C] Refining - especially oils which involves treatment with alkali, bleaching and deodorisation. During refining there is loss of essential nutrients.

II. Milk and Milk Products

Processing consists of a] sweetening and condensing for condensed milk. b] Cheese making - cottage and processed c] Ice cream making and d] Malting for baby foods. In milk processing the protein and fat contents are high. The nutritive values are maintained esp. in baby foods which become easily digestible.

III. Fruits and Vegetables

They are generally eaten fresh. The processing is done to make jams, jelly, squashes, juices etc. for fruits and pickling, dehydration for vegetables.

IV. Sugar Products

Boiled sweets, chocolate making and soft drinks are all rich in sugar and are canned to preserve the quality.

Why Do We Need Processed Food ?

More women going for work out side the house and the families becoming nuclear with women continuing to bear the household responsibility, ready to eat processed foods are increasingly sought after, in urban areas to reduce the drudgery of day to day cooking. Processed foods generally are consumed as snacks or part of the meal. The nutritional value depends on the type of processing, fortification, frequency of use and the quantity consumed. Most of the processed foods are rich in fat, salt or sugar and calorie dense, lacking sadly in fiber and micro-nutrients.

Children should be discouraged from eating too much of foods like candies, chips, chocolates etc. known as "junk foods" since they provide only empty calories. These also have artificial colors and additives which may be harmful for health. Besides, frequent consumption kills the natural appetite thus reducing the intake of essential nutrients from the normal nutritious diet. Food additives beyond prescribed limits have harmful effects.

3.6. ROLE OF MEDIA

Modern media has a great role to play in spreading the messages about health, balanced diet, and other benefits of nutritious foods and the dangers of malnutrition. Most people would assume that the media should be used by the government to impart this information. This is not so simple. The media is being used largely for advertisement, and food companies are not interested in either scientific nutrition or people's health. They are certainly interested in selling their products, and making profits. In this process they might use science to add to their product's value. With the large no. of processed and ready to eat food being advertised through colourful and powerful visuals and slogans, especially in the (TV) there has been

significant increase in the intake of ready to eat and off the shelf foods, many of which are qualitatively poor with more of fat and sugar. For most middle and upper class children fast foods are almost replacing the traditional nutritious foods, mainly due to springing up of food joints at every colony and street corner. Media has encouraged such a shift due to the aggressive avertising and marketing by the industry.

As discussed earlier the trend is more harmful in the long run. Development of obesity in adolescents as is happening in the west, early diabetes and heart disease (now also seen in Indian scenario), with sedentary habits and lack of exercise are going to be the major problems faced by the health professionals. The media should be accountable and advertisements should be carefully screened for it's impact on the health of the consumers. The Food companies will have to change their priorities when advertising processed foods, as is happening in USA. The agencies in charge of food control and safety should insist on displaying the nutrition value on the labels of every fast or ready to eat food prominently . Citizen groups can play an important role in this, and expose the "tall claims" of the nutritive values of the products of the fast food companies.

3.7. SUMMARY

The nutritive value of various foods have been discussed in this unit. It also emphasizes the understanding of the food groups and their importance in planning the menu. The impact of processed foods in the present context has been discussed and how media could bring about a positive attitude towards health and nutrition has been emphasized.

3.8. MODEL EXAMINATIONS QUESTIONS

I. Answer the following in 30 lines

a. What are the functions of carbohydrates ?

b. The effect of cooking practises on the nutritional value of foods.

c. Food processing - explain the advantages and disadvantages

II. Answer the following in 15 lines

a. How can the media change eating habits ?

b. Explain what is biological value of proteins ?

c. What are the water soluble vitamins - write a line about each.

d. Vitamin A

e. Iron

f. Calcium

- Pregent Women
- Lactating Mothers
- Elderly Women

3.9. GLOSSARY

a. **Synthesize:** Artificially building a chemical compound by a union of elements or other suitable starting materials.

b. **Vitamins:** A general term for a number of organic substances that occur in many foods in small amounts and that are necessary in trace amounts for the normal metabolic functions of the body.

c. **Bowels:** A more common name for the intestine whose function is digesting, absorbing and throwing out unwanted material from the human body.

d. **Tissue:** A collection of cells that have a common and unique function which build up animal and plant bodies, example muscle tissue, skin tissue etc.

e. **Sustenance** : A means of support or livelihood.

f. **Fast-Food:** Food prepared quickly and served in a snack-bar or resturant, eg. Pizza, burgers, chips samosa etc..

g. **Obesity:** A condition of high amounts of fat in a person's body.

3.10. RECOMMENDED BOOKS

1. *Nutrient Requirements and Recommended Dietary Allowances for Indians,*" Indian Council of Medical Research," New Delhi, 1989.

2. Mahtab.S.Bamji, N.Prahalhad Rao and Vinodini Reddy, *Text Book of Human Nutrition* (eds) 1996. Oxford and IBM Publishing Co. Pvt. Ltd. New Delhi, Calcutta.

3. C.Gopalan and Suminder Kaur. *Women and Nutrition in India.* (eds) Nutrition Foundation of India, Special Publication Series. 5, New Delhi, 1989.

4. *Nutrition Foundation of India (NFI) Bulletins*, New Delhi January 1994 (Vol. 15, No.1) to May 2000 (Vol.30 No.5).

5. C.Gopalan. *Recent trends in Nutrition.* (eds) Oxford University Press, New Delhi, 1993.

6. Ekhard E.Ziegler & L.J.Filer. Jr. *Present knowledge in Nutrition*, Seventh Edition. ILSI Press, Washington DC, 1996.

UNIT- 4: DIETARY REQUIREMENTS IN DIFFERENT AGES, PREGNANCY, LACTATION AND OLDER WOMEN

4.0. OBJECTIVES

After going through this unit you will be able to discuss the dietary requirements of

- Pregnant Women
- Lactating Mothers
- Elderly Women

4.1. INTRODUCTION

India was the 1st third world country in the world which recognized the rights of the people to adequate food, and even stipulating a minimum basic level of food needs for all. Way back in 1944 Nutrition advisory committee of the Indian research fund association now Indian Council of Medical Research (ICMR) attempted for the first time to recommend dietary allowances for energy, protein, iron, calcium (Ca), and even vitamins for Indians. This was based on the recommendations of the League of Nations in 1937. At that time a typical balanced diet was based on "a habitual Indian diet". It was formulated to provide all the nutrients to meet the requirements of an average Indian. This also proved that the existing dietary pattern as was followed by the poor was inadequate both quantitatively and qualitatively in several respects and that it needed urgent attention. Food and Agricultural Organization (FAO) in 1950 and 1957 came up with recommendation for energy and protein requirements. In 1958, ICMR tried to define the protein and calorie requirements of Indians based on the data available from FAO. Reviews of dietary requirements were made in 1968, 1978 and again in 1988 to revise the requirements of several nutrients. Also a wide variety of balanced diets

were formulated for different ages and physiological groups to ensure nutrient intake at recommended levels. The present unit deals with methodology of arriving at the requirements of individual nutrients and the details of dietary requirements of adults but also special groups like pregnant, lactating and elderly woman.

For good health food has to be provided in adequate amounts which meets the requirement of an individual both quantitatively and qualitatively. This unit will describe : Method of arriving at the dietary requirements of various nutrients and specially for women during their pregnancies, while breastfeeding and elderly women.

4.2. RECOMMENDED DIETARY ALLOWANCES (RDA)

The amounts of different nutrients needed depends on the age and physiological status of the individual. While adults need nutrients to maintain their body weight and ensure proper body functions, the infants, children and adolescents require nutrients not only for day to day needs, maintenance, but also for the rapid growth which occurs during this period. Pregnant and lactating women require extra nourishment for not only sustaining their own needs but also to meet the needs of the growing foetus, secretion of milk during breast feeding necessary for the young infant. There are certain general principles in arriving at the dietary allowances for the different groups. While the dietary requirements depend on an individual's age, body weight, whether the person is pregnant, breastfeeding or ill, the dietary allowances have to take into consideration variations within the group, quality of diet, effect of cooking, processing and the actual food absorbed by the body. A number of approaches have been used to achieve the proper perspective in arriving at the nutritional requirements of the individuals and RDA's for a population. In these approaches the minimum amount of nutrients to maintain nutrient balance and to prevent clinical or biochemical deficiencies is determined.

The bio availabilty of the nutrient is an important consideration to arrive at RDA. Bioavailability depends on the nutritive value of the particular nutrient and the quality and components of whole diet. For certain nutrients like Iron, Protein, Calcium, Vit B12 and B carotene diet is a critical factor. For protein, the essential amino acid composition would determine the quality and bioavailability. A mixed diet of cereals and pulses has better quality protein than a single food since plant foods have one or the other amino acid deficiency. For iron its absorption is influenced by both the promoters (Meat, Vitamin C etc.,) and the inhibitors (phytates, tannins, oxalates etc) present in the diet. Habitual Indian vegetarian diet has more inhibitors than promoters thereby reducing the iron absorption to 2-5 % only. For certain nutrients like Vitamin A and Nicotinic acid, pro vitamins like B carotenes and tryptophan are present which can be converted to the respective vitamins in the body. The amount of these in diet should be taken into consideration while calculating RDA for these nutrients.

Age and body weights largely determine the nutrient requirements of an individual. While weight and height in children indicate their normal health and growth, in adults they

indicate the health status and physical well being. While body weights of adults and children are below normal in developing countries, where malnutrition is wide spread, in developed nations, the other side of the spectrum i.e. overweight and obesity is a common phenomenon. Both of these statuses are associated with high risk of diseases.

4.3. METHODS OF COMPUTING INDIVIDUAL NUTRIENT REQUIREMENTS

So far we have discussed the general principles of determining dietary allowances. Now let us look briefly into the method of computing dietary requirements (RDAs) of some of the important nutrients. It is important to remember that what is given below is the requirement of nutrients like energy, vitamins etc.. We must remember that these must come from food, for example if a women must increase her calcium intake by 0.5gm then she must consume about 300-400ml of extra milk everyday or eat other calcium rich foods to provide half a gram of calcium. Thus all the nutrients can only come from food.

4.3.1. Energy

A. Definition of Energy Requirement

Energy requirement of an individual can be defined as amount of energy intake from food which would balance the energy spent by an individual with a normal body size and physical activity. But we often find in India that food intakes do not provide enough energy for poor people to reach a "normal body weight" (55kg for women and 65kg for men) or to spend energy doing "normal physical and social activity (paid work, housework, childcare, socializing etc..). Energy requirements are usually based on the occupations of the indivudual. For instance a clerk who does not expand much energy is called a sedentary worker and requires less energy when compared to an agricultural labour who does heavier work and requires more food. In practise however this is not assured.

B. Unit of Energy

which has been in use in nutrition for a long time is Kilocalories (Kcal) popularly called calories. Energy is available from Carbohydrates, fats and proteins providing 4Kcal, 9 Kcal and 4 Kcal per gram respectively. Alcohol provides 7Kcal/g. A balanced diet should have 10-12% energy from proteins, 20-30 % from fat and the rest from carbohydrates. To prevent complications of obesity and cardiovascular disease, fat energy should not exceed 30 % of total energy.

4.3.2. Proteins

Dietary proteins are necessary for growth to build new tissues like muscles and act as building blocks in amino acids, which are needed for these tissues. While in children

the proteins are necessary for growth and new tissue building, in adults they are needed to replace the ones constantly being broken down as a part of metabolic processes. Dietary proteins have essential amino acids (9 in no.) which are needed in proper proportion by the body for synthesis of the tissues and other metabolic activities. Other amino acids (non-essential) can be synthesized in the body. An adult requries about 1 gm/kg body weight of protein everyday. A child requires about 2-3gms for every kg of body weight. Therefore a 50kg women would need approx 50gm of protein per day which is available from rice (6gm/100gm) pulse (15-20gm per 100gm) milk 4.3gm/100ml of milk) etc..

4.3.3. Fat

Fat is a major component of diet and is important as concentrated source of energy. It also increases energy density of the diet. Fat helps in the absorption of B carotene and other fat-soluble vitamins. Essential fatty acids (EFAs) which are functional components of cell membrane have to be supplied only through diet. Excess fat is harmful. Thus while determining fat requirement one has to consider minimal level, safe level and the safe upper limit of fat intake. Fats and EFAs in a diet are derived from a) invisible fat present in all the common foods and b) the visible fats added as ghee, oil, butter etc. Most of the edible vegetable cooking oils like ground nut, rape / mustard, cottonseed, corn, sunflower and safflower oils are rich in one of the EFAs. Cholesterol in fats is harmful as it can lead to the narrowing of arteries, but all vegetable oils (groundnut, mustard, sunflower) do not contain cholesterol, it is present only in animal fat. The daily fat /oil requirement of an individual is around 25gms/day a family of 5 adults may safely use 125gm per day or 4.0kg/month. Since most of the middle classes also eat rich food from outside, the requirement should be 1/2kg per person per month, so 2 1/2 - 3 kg per month for a family of 5.

4.3.3. Minerals

Minerals and other micro nutrients important for human health are calcium (Ca), phosphorus (P), and magnesium. Other minerals are iron, copper, zinc, selenium, chromium etc. The minerals are involved in many of the enzyme and immune reactions and other body functions. Minerals like Ca, P, are necessary for bone growth, and strength, iron is necessary for the formation of blood cell, hemoglobin and respiratory enzymes. In this section we will discuss only the most important minerals.

1. Calcium(Ca)

Ca and P are major elements in the body and a man or women of total body weight of 60kgs will have about 1 kg of calcium, mostly present in the bone. Calcium is mostly involved in the formation of bone and has important role for nerve functions, blood clotting, cell wall functions and so on. Dietary Calcium is required for the losses that take place through urine,

feces, bile and sweat. About 20 to 30% of calcium is absorbed from the diet. During growth, pregnancy and lactation additional calcium is needed for skeletal development of the foetus and milk secretion.

Calcium requirement of women is high (800-1000mg/day), and milk is a rich source of calcium. Cereal/pulse based diet is poor in Ca and calcium intake of people subsisting on this diet is only around 300-400 mgs/6days. Of the plant foods, ragi, green leafy vegetables are rich source of calcium. Calcium deficiency is more rampant in women resulting in bone pains, back aches, osteoporotic fractures in the 50+ age groups.

Iron

Iron deficiency is a major problem in India affecting 40-50% of general population. Women are more affected since they constantly lose iron because of menstruation and during pregnancy and lactation to meet the demands of the growing foetus and breast-fed infants. Dietary intake of iron is mainly from the habitual Indian diets of cereals and pulses.

A diet providing 2800 kcal has around 25-30mg of iron (i.e.1mg/kcal). Only 2-5% of this iron is absorbed by the body, iron from meats, bone soups, liver is better absorbed (50-60%). Body stores of iron in an adult woman is 34-42mg/kg body weight, enough weight to make one nail. The iron requirement for an adult women of 50kg body weight would be around 30-60mg per day.

Iodine

Minimal requirement for an adult is in the range of 50-75 ug/day the safe allowance being set at 150 ug/day. Iodine is an essential nutrient, normally available in the soil. If there is less iodine it leads to goitre, a swelling of the thyroid and in children it causes cretenism and mental retardation.

Other Trace Minerals

Very little data is available about their content in the food, intake and requirement. Only deficiencies of few of these elements has been observed in humans. In recent years some of the manifestations of Copper (Cu), Zinc (Zn),Chromium (Cr), Manganese (Mn), Selenium have been reported. Using recent advanced techniques of estimation, the requirements of some of these metals has been possible. Thus the suggested intake of Cr is 67ug, Cu 2.2mg, Mn 5.5mg and Zn 15.5mg. Since most of these come into the food chain from the soil, overuse of fertilizers for increasing yields has resulted in soils being leeched of all micronutrients,resulting in deficiencies.

4.3.3. Vitamins

Since the deficiencies of many of the vitamins such as Vitamin A, D, Ascorbic Acid, some of the B-complex are known to occur in the population, their requirements have been determined. B-Vitamin requirements are related to calorie intake and are therefore expressed as per 1000 Kcal of energy intake.

Fat Soluble Vitamins

Vitamin A, D, E and K are included in this category. Recommended intake of Vitamin A (retinol) for an adult woman is 600ug / day. While the retinol or preformed vitamin A is present in animal foods, plant foods like fruits and vegetables contain pro vitamin as carotenes which gets converted into vitamin A in the body. About 50% of dietary carotenes get absorbed from the intestines. In the absence of sunlight a daily intake of 400 I.U. (International Units) of vitamin D is essential. Vitamin E and K occur widely in vegetable oils and plant foods. Dietary deficiency of these two vitamins is not commonly seen in the humans. Suggested intake for vitamin E is 0.8mgs of EFA since it is related to EFA content of the diet. Vitamin K is occasionally required by the premature infants at a dose of 0.5-1.0mg. intramuscularly, to prevent bleeding since vitamin K is involved in clotting process and premature infants may have deficiency of vitamin K leading to bleeding disorders at birth.

Water Soluble Vitamins

All B- complex vitamins and Vitamin C are included in this group. Minimum need of vitamin C for the adult is 10-20mg. Since vitamin C is lost in cooking and storage 40mg has been suggested as the requirement. No additional allowance for pregnancy is made. Additional 40mg would compensate the loss through milk in lactating women.

B-Complex Vitamins

This group includes thiamin (B1), Riboflavin (B2), niacin, pyridoxine (B6), folic acid and B12. The RDA of these vitamins for all the age group /1000kcal is 0.5mg thiamin, 0.6mg riboflavin, 6.6mg niacin. Pyridoxine requirement is around 2.0mg a day.

Folic Acid and B12

Both these are important for red blood cell formation and their deficiency leads to megaloblastic anemia, [a rare kind of anaemia]. An intake of 100 ug of folic acid is considered safe, though 75 ug would be the minimal amount needed to maintain adequate Folic acid levels. B12 requirement has been fixed at0.5-1ug a day.

4.4. DIETARY REQUIREMENTS DURING PREGNANCY AND LACTATION

Energy

Calorie requirement during pregnancy increases to provide the needs of the growing foetus placenta and maternal tissues and the increased metabolic rate. The additional energy needs of a pregnant woman weighing 50 kg would be around 75,000 kcal for the whole period of 9 months. During early pregnancy the extra needs are minimal, increasing with advancing pregnancy. After the 2nd trimester the needs are constant till delivery. While in the 1st and 2nd trimester extra energy is needed mainly for the growth of the mother's tissues like breast, uterus etc. and expanding blood volume, in the third trimester most of the extra energy needed is for the growth of the foetus and placenta. ICMR has suggested an extra 300 calories per day during 2nd half of pregnancy. This need would increase if the pregnant women do not rest and continue to do heavy work both at home and outside.

During lactation the energy cost is computed from the volume of the milk secreted, its energy content, and the efficiency of conversion of food energy into milk energy. Assuming an output of 850ml of milk and efficiency of conversion at 80% the extra energy recommendation during the first 6 months of breastfeeding has been 550 Kcal per day. Since Indian women continue to breast feed beyond 6 months but with reduced milk output, an extra allowance of 400 Kcal a day has been recommended for 6-12 months.

Protein

Foetus gains about 1000mg of tissues during entire intra uterine life, which forms the additional requirement for the protein in pregnancy, in addition to a small addition to the maternal tissues. Based on calculations called The factorial approach the protein requirement in pregnancy, has been arrived at as an additional allowance of 10gm of good quality protein/day like milk or egg protein. In terms of a cereal pulse based diet it works out to be around 15gms per day during pregnancy. Women who are underweight and are chronically malnourished, or have infections, and adolescent pregnant women need extra proteins and calories to make up the depleted tissues, and requirements are therefore increased in these conditions.

The protein requirement for lactation has been calculated on the basis of the protein concentration in the milk after the first month and conversion efficiency of dietary protein to milk protein. Based on the optimal milk output of 850ml in the first 6 months, the extra protein requirements are fixed at 25gm for first 6 months and 18 gm a day for 6-12 months.

Calcium

Requirement is based on the calcium accretion by the foetus for its growth and bone formation. Since most of the growth occurs in the 3rd trimester an extra intake of 0.5-0.6gm of calcium/ day above the non-pregnant requirement would meet the needs of pregnancy adequately.

During lactation a mother secretes about 850ml of milk. Calcium content of breastmilk averages around 300mg /liter. To meet this need an allowance of 1200mg per day of calcium has been recommended for the entire period of lactation.

Iron

Additional iron requirements during pregnancy are on account of the iron needs of the foetus (250 mg), expansion of blood volume including red cell mass (400 mg), the iron content of placenta and loss of blood during delivery (250 mg). There is however a saving of 150 mg of iron due to cessation of menstruation. Based on the above, total iron cost of pregnancy is 750 mg. Since only 2-5% of iron available in food is absorbed, in terms of daily requirements it works out to be an additional 30mg of iron. Since none of the diets and specially vegetarian can meet the additional needs one has to supplement the mother with medicinal iron during pregnancy. Besides large percentage of women enter into pregnancy with anemia and depleted iron stores, extra needs have to be met with from early pregnancy to prevent adverse outcome due to anemia. Infact pregnant women are advised to take iron tablets containing 60mg of iron daily in the 2nd half of pregnancy. No extra allowances of iron has been recommended during lactation since women may not have periods during lactation, thus saving the iron due to menstrual losses. **Vitamin A:** Requirement is not very different than that of non-pregnant woman and is around 600ug. During lactation an additional amount of 350 ug of Vit A has been recommended. **B-Vitamins:** Since requirements of B complex vitamins like B1, B2 and Niacin are related to energy intake, the calculations for pregnancy and lactation are based on the additional calorie requirements and work out to 0.2 mg B1, 0.2 mg B2 and 2 niacin equivalents. Corresponding values for first 6 months of lactation are 0.3, 0.3, and 4 mg respectively and during 6-12 months the requirements are similar to pregnancy. The additional amounts of Pyridoxine recommended are 0.5 mg during pregnancy. During pregnancy there is considerable increase in the demand for folic acid also called Folate, due to new tissue formation and their growth, since folic acid is involved in cell synthesis and multiplication. There is actually increased absorption of dietary folic acid during pregnancy due to its depletion. The folate intake of women from poor socioeconomic group is very low despite the rich folate contents of vegetables. The recommended daily intake for folate during pregnancy is 400 ug. During lactation the folate requirement is based on the milk folate content. Based on this the extra dietary allowance of folate has been fixed at 50 ug. **Vit B12:** The recommended intake of vit B12 for an adult is 0.5-1.0 ug. During pregnancy an allowance of 3ug has been recommended for meeting the needs of blood cell formations in the foetus and for liver storage. During lactation an additional 0.5ug over and above the non-pregnant requirement has been recommended to meet the needs of the breast fed infant through the milk.

4.5. DIETARY REQUIREMENTS OF ELDERLY WOMAN

With the better health care facilities and reduction in mortality rates more and more people are getting into the 60+ age groups, due to an increase in the life span. This is especially true of women, where it is known that once they escape the dangers of childbirth and related causes their life span is longer than that of men. Thus it becomes imperative that one determines their dietary needs since there are metabolic alterations related to aging. Also, the women in the upper classes are more prone for obesity and chronic metabolic disorders requiring strict dietary discipline, where as the older woman of a poorer class is deprived of even the normal food both in quantity and quality due to poverty. Poor women's food intake may be reduced due to less availability and neglect by the family members. The associated deficiency disorders esp. affecting the bone result in osteoporosis with the associated fractures and the disabilities. Thus it becomes important to examine the dietary needs of elderly woman. Hardly any studies are available on the dietary intakes of the elderly. In this context the discussion on this issue will be limited.

No specific recommendations have been made for the elderly for reasons given above. Their requirements for energy and protein have to be calculated on the basis of the body weight as well as their physical activity pattern. The fat intake should be reduced in the well off group to prevent the complications of obesity and cardiovascular diseases, which this group is more prone. The intake of Vit A ant B Complex vitamins should be increased by encouraging the intake of greens, vegetables and fruits. Since these women are more prone for bone loss and osteoporosis with the resultant fractures due to withdrawal of hormones after menopause and reduced intake of calcium. The calcium requirement for bone health should be around 1.0-1.5gms daily to be obtained through milk, millets like ragi porridge, and through green leafy vegetables.

4.6. SUMMARY

In this unit we have tried to bring out the essential information on the dietary requirements and the recommended dietary allowances. This information can be applied to assess: 1. adequacy of national food supplies and to plan food production both in quantity and quality. 2. To provide dietary guide lines for the healthy living individuals and the groups to formulate the balanced diets. 3. To judge the adequacy of the intake based on body weight and the physiological status.

4.7. MODEL EXAMINATION QUESTIONS

I. Answer the following in 30 lines

a. How will you compute the energy needs of an individual?

b. Write about the special nutritional needs during pregnancy

c. What are the requirements of fat soluble vitamins ?

II. Answer the following in 15 lines

a. Calcium requirements

b. Protein requirements

c. Iron requirements

d. Iodine

e. Kilocalorie

f. Trace minerals

4.8. GLOSSARY

a. **Balanced Diet:** Food taken by a person that is composed of all varieties and in correct proportions and which is therefore healthy

b. **Inhibition:** Any substance that interferes with a chemical reaction or biological activity and thereby hinders the full growth

c. **Chronic:** Any health problem persisting over a long period of time, eg. back pain and joint pains are chronic in most cases.

d. **Carotenes:** Yellow or red pigments found in carrots, papaya, mangoes, green leafy vegetables etc., and milk fat. These organic pigments are of different types and are essential for the body.

e. **Obesity:** A condition in which excess fat accumulates in the body.

f. **Osteoporosis:** Abnormal thinning of bone, seen most commonly in elderly women and caused due to loss of calcium from the bone. It usually causes pain in the back.

g. **Physiology:** The science which deals with the functions of the living organisms and its parts. It also deals with the physical and chemical factors and processes involved. For example physiology of the reproductive tract deals with the function of the uterus, fallopian tube and the ovaries. It explains how and why the egg is released, menstrual cycles, and the influence of hormones.

h. **Pro-vitamin:** a precursor of a vitamin which is converted into the actual vitamin in the body. For example, Beta carotene from vegetables and fruits are converted into vitamin A in the body.

4.9. RECOMMENDED BOOKS

1. *Nutrient Requirements and Recommended Dietary Allowances for Indians*, Indian Council of Medical Research, New Delhi, 1989.
2. Mahtab.S.Bamji, N.Prahalhad Rao and Vinodini Reddy, (eds) *Text Book of Human Nutrition*. 1996. Oxford and IBM Publishing Co. Pvt. Ltd. New Delhi, Calcutta.
3. C.Gopalan and Suminder Kaur. (eds) *Women and Nutrition in India*. Nutrition Foundation of India, Special Publication Series. 5, New Delhi, 1989.
4. *Nutrition Foundation of India (NFI) Bulletins*, New Delhi January 1994 (Vol. 15, No.1) to May 2000 (Vol.30 No.5).
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UNIT - 5 : COMMON NUTRITIONAL PROBLEMS

5.0. OBJECTIVES

After going through this unit you will be able to

- Assess the nutritional status
- Discuss the common nutritional Disorders.
- Discuss how nutrional status is assessed

5.1. INTRODUCTION

In spite of the Green and the White revolution and surplus production of food, milk, fruits and vegetables, a large segment of the population suffers from one or the other type of nutritional deficiency. What is the reason for such a disparity- scarcity in the land of plenty? Though the food corporation of India quotes that there is a surplus storage of food, and the public distribution system was introduced with the aim to make available at least a minimum amounts of grains, oil, sugar etc at low cost to the poor and subsidies for agricultural sectors are also given, despite this 50% of the population is not able to meet their food needs.

Various reasons can be attributed to this tragedy. In the agriculture sector due to vagaries of nature- drought, floods etc food grains are lost. Due to improper storage facilities almost 10% of produced grains are eaten by rodents or get spoilt. Lack of proper transport and poor road to villages in the remote and difficult areas interferes with the regularity of supply of food grains.

In addition the public distribution system seems to sell only the poor quality of grain especially for those below poverty line. But the most important reason for food deprivation is poor incomes inspite of a whole days work. The low wages, and non availability of employment add to the reasons for such a large problem in a community.

Nutritional problems first appear in pregnant and lactating women, growing infants, children and elders as they are vulnerable. Surprisingly the adolescents have less nutritional disorders. Most of the common nutritional problems can be either due to (a) inadequate intake, (b) or intake of poor quality of food, (c) In the high socio-economic group excess intake or overeating may contribute to nutritional problems also. Assessment of nutritional status is of great importance since malnutrition affects health by lowering the resistance to several diseases and predisposing the individual to ill health and incapacitation. Nutritional status assessment is done to understand the nature of malnutrition, it's extent and location and to decide the priorities of action and direction.

The term malnutrition can be defined as (a) any deviation of growth (weight, or stature (height) etc) or alterations in blood levels of certain biochemical tests (such as haemoglobin levels etc.,) which differ from the normal, reference population, defined as optimal, or (b) any deviation in body size, physical activity or metabolic patterns carrying a risk of disease, hunger or lack of normal functions.

Assessment of nutritional status could be by direct or indirect method. In the next few pages we will discuss in detail the identification of these nutritional disorders. Before getting into the specifics a general description of how to assess nutritional status in the community will be provided.

Surveys of rural and urban women in India indicate that only about 25 to 30% of them can be called apparently healthy. The rest of 70-75% of women suffers from one or the other ailments mostly due to Nutritional Deficiencies. The inequitable distribution of resources, poor purchasing power and non-availability of state support for nutrition result in imbalance in the food intake both in quality and quantity. In this unit the common nutritional problems arising out of such situations have been discussed in detail. Also the method of recognizing them in the community and possible solutions to these problems has been described. Besides, since it is necessary to understand who is normal in terms of nutrition, a detailed description has been given for different methods of assessing the nutritional status of the individuals and the community.

5.2. ASSESSMENT OF NUTRITIONAL STATUS

Nutritional status can be assessed by the following

1. Dietary,
2. Anthropometric,
3. Biochemical
4. Clinical

5.2.1. Diet Survey

Diet is a vital determinant of health and nutritional status of the people. Dietary habits and intake show variations in relation to purchasing power, customs and traditions. It is important to know the dietary pattern and intake to assess the nutritional status and understand the relation between nutrient intake and deficiency or excess. This would help in planning diets to overcome diet-related illnesses and promote the health of the people. It will also help in assessing food needs of population, groups at regional and national levels.

To formulate a realistic policy of food production, procurement and distribution one should have thorough knowledge of intake and food habits of people. This will also help in tackling food crises due to drought, floods, war, pestilence etc., leading to crop failure, by timely imports and facilitating the movements of food grains within the country. Information of quantitative intake is also needed to fix minimum wages, organizing rationing, mass feeding programs and also defining poverty levels of population groups.

Diet surveys are of two types- Quantitative and Qualitative. In the former the exact amount of food consumed in terms of grams or liters is assessed and their nutrient content is estimated. Comparison of the intake with the recommended level (RDA) provides the measure of adequacy, inadequacy or excess food/ nutrient consumption. In the qualitative method information on the type of food, frequency and attitude of people towards food and cultural significance attached to the food they eat is enquired into.

Methods of Diet-Surveys

Different methods are available to find out the dietary intake either for the individual or for the community. Depending on the type of the information needed the availability of the manpower, equipment and the transport facilities the survey method is chosen.

Food Balance Sheet Method (FBS)

This method is used where information is needed in a large segment of population i.e.country or a region. WHO first compiled this in 1949 and now they are available for each member country. FBS is computed on the basis of the food supply available for human consumption at retail level for a given country region, from different sources during a reference period of say one year. It takes into account the food used for animal feeds, exports, seeds and wastage. Availability of food (per caput) per day is estimated as Per Caput/day = Stores existing at the beginning of the year + total food produced + imports minus stock existing at the end of the year + exports + seeds + cattle/poultry feeds + wastage divided by mid year populationx365 days. FBS thus would tell us the availability of food at the national or regional level but not the food actually consumed. In this method it is difficult to assess wastage that takes place at retail or consumption level. Inedible portion of food also get included in this method. Thus FBS are useful for administrators and planners to monitor food positions in the country and to avert food crises, it does not look at special individuals, poor, women or those living in difficult terrain.

Inventory Method

This method is mainly employed in institutions like hostels, hotels, industrial canteens, army, barracks, orphanages, and home for aged etc. where homogenous group of people take their meals from a common kitchen maintained by the warden. In this method the estimates are as good as the food records. This method is mainly useful in the educated community.

Weighment Method

Women in the household are contacted for this information. In this method the foods are actually weighed using an accurate weighing scale before the food is cooked in the morning. A sheet of paper or a dietary survey schedule and a grocer's balance are the only things needed. This method can be used to weigh both raw and cooked foods. In the community surveys, the raw food is weighed whereas in the individual or family survey, the cooked food is weighed. Weighment is also applicable in orphanages and hostels where the cooking is done in a central kitchen.

Following points should be kept in the mind while doing this survey. Information on the number of people eating from the kitchen, thier ages and sex, their occupations any guests etc., must also be noted. It is assumed that all the members of the household eat the food in the proportion that they require, for example an adult male is 1 CU (Consumption Unit) a woman 0.8 CU, a child 0.5CU etc. But deviation from this intake cannot be measured. Though the Weighment method is more accurate since direct weighing of food is done it is cumbersome, time consuming and needs the cooperation of the household members through out the period of survey.

Expenditure Pattern Method

Amounts of money spent on purchase of food and non-food items are calculated using questionnaire for the previous month or week. Though less cumbersome, than Weighment method it needs more time to collect data on the cost of food items and the qualitative aspect of the diet (through frequency table) is necessary to get an accurate picture of the community.

Diet History

This method provides only a qualitative picture of the foods eaten at the household or industrial level. This method assesses the frequency of consumption of different foods daily, that is whether greens are eaten daily, weekly or fortnightly or meat is eaten daily, weekly or monthly etc.. This gives a rough picture of the quality of foods eaten.

Oral Questionnaire(24 hour recall)

A set of standardized cups suited for local conditions are used in this method to assess the intake pattern. The housewife or the member of the household who cooks the food on the day is asked about the type of food preparation made for break fast, lunch, dinner, and in between. Information about the total raw food ingredients used for each preparation, total cooked amount for each preparation in terms of standardized cups is obtained. Using the cups assessed amount of each preparation consumed by specific individual can be in the family. The cups are standardized for raw and cooked equivalent for each preparation like rice, soup, curries etc.

5.2.2. Physical Anthropometry or the Measurements of Heights, Weights and Other Bodily Measurements and it's uses in the assessment of nutritional status of a community

Anthropometry is the single, simple most universally applicable, cheap and non-invasive method to assess the nutritional status of an individual and a community. Since the growth in children and body dimensions at all other ages reflect the overall health and well being of individuals and the population, anthropometry can be used to predict the health and nutritional status of individuals to predict their wellbeing. Weights in children are linked to survival. It can also be used as an important tool to predict the benefits of intervention programmes such as the impact of PDS on the weights of children etc..

Basic Anthropometry consists of measuring weights, heights, skinfold thicknesses, and circumferences of arm, head, chest and abdomen, using standard methodologies.

Anthropometric indices have following objectives

1. Identification of individuals or population at risk both present, past and future
2. Selection of individuals / population for intervention and special care, predict the benefit to be derived from intervention programmes such as food for work or PDS.
3. It is used for excluding individuals from certain employment occupation requiring considerable strength, to predict lack of risk i.e. (in sports, army etc.) or certain benefits (low insurance rates for healthy well built individuals).
4. Achieving normative Standards to reflect norms of heights and weights for different ages and sexes helps in investigating the difference in anthropometry in the different socio-economic classes, or changes in weight due to famines, droughts etc., for example :It is known that the weights of poor women from the low socio-eocnomic group are 8-10kg lower than the weights of women from the high socio-economic group.

5.2.3. Biochemical Assessment of the Nutritional Status

Estimation of various nutrients in biological fluids like blood and urine, can be used as measure of biochemical indicator. This method needs a well established laboratory and sophisticated instruments. In community surveys, a biochemical estimations are limited to Hemoglobin which can be done in a finger prick blood sample. The method recommended for accuracy is cyan meth hemoglobin measurement. The cut off point for defining anemia in different age and physiological groups has been suggested by WHO and has been given in UNIT on Common Health Problems.

5.2.4. Clinical Assessment

Though clinical examination to detect the manifestation of any nutritional deficiency signs is carried out, this can be done only by a clinician or a trained paramedical person. This method is simple, less time consuming and does not require any special equipment or laboratory. Precaution to be taken in restricting signs chosen for survey to one or two most objective signs only esp. when done by a paramedical person other than a doctor. Deficiency diseases usually encounterd in the communuty survey of public health importance are:

1. Protein Energy Malnutrition or Food Deficiency
2. Vitamin A Deficiency
3. Iron Deficiency Anemia(IDA)
4. Iodine Deficiency Disorders(IDD)
5. B Complex Vitamin Deficiencies
6. Phrynoderma
7. Fluorosis
8. Other vitamin and mineral deficiencies

5.3. COMMON NUTRITIONAL DISORDERS

Nutritional problems commonly encountered are protein energy malutrition (PEM), nutritional anemias, IDD, vitamin A Deficiency, other vitamin and mineral deficiencies, especially calcium and zinc.

5.3.1. Protein Energy Malnutrition(PEM)

PEM continues to be a major public health problem in the developing countries. The frequency of PEM in children cannot be easily estimated from the prevalence of kwashiorkar or marasmus (the potbelled or shrunken children seen in UNICEF pictures) as these are the result of extreme deprivation and are only the tip of the iceberg. Mild and moderate malnutrition which affects about 80% of the child population remains unrecognised. Since

the clinical criteria for their diagnosis are not precise and difficult to interpret accurately, but weights of children in relation to their ages are usually used to recognize a child with PEM.

PEM is seen in children below 5 years age especially in the underprivileged poor communities. Most common period of onset is in the post weaning phase and is of serious consequence, since it is often associated with respiratory infections and diarrhoea a common cause of death. Besides a high child mortality, severe PEM leads to permanent long term sequelae which include poor weights, stunted growth, proneness to infection and reduced work efficiency.

PEM covers a wide spectrum of clinical stages ranging from severe forms like kwarshiorkar and marasmus to milder forms such as growth stunting. While Edema ,skin and hair changes are common clinical manifestations of kwarshiorkar, stunting and wasting are main features of marasmus. About 2-8% of the children in the country may have severe PEM.

But it is recognized that abuot 80-90% of children in India have lower weights or heights recognized by a scale called the Gomez Classification . This classification is most widely used Gomez classification for community surveys and is based on deficit of weight for age from a standard weights which is taken as cut off point for demarcating normal from malnourished children. Malnourished children are divided into 3 catagories. Normal are thos whose weights are 90% or more of the normal weight for age. Grade I malnutrition are those whose weights are 76-90% of the normal weight for age. Grade II children have weights 60-75% of normal weight for age and Grade III children have weights less than 60% of the normal weight.

a. Prevalence of PEM

About 80% of children from the rural areas have grade one and two malnutrition which means that they do not have adequate weights. Grade III malnutrition which is severe, is prevalent in 2-8% of children. Malnutrition is worse in children of landless families belonging to the Dalit communities. Children from the slums are also disadvantaged. PEM's relationship to incomes has been established.

b. Reasons for Protein Energy Malnutrition or PEM

By now it must be obvious that PEM occurs due to inadequate intake of food. The reasons are different in different age groups. In the case of infants (children less than 1 year of age) malnutrition sets in early by the 6-8 months because they are solely breast fed and there is a delay in the introduction of semi solid foods (such as kichidi, mashed vegetables, eggs or other soft foods). Infants may be breastfed as long as the mother desires, but she must start the child on semi-solid food by the 4-6 months, because breast milk only is just not enough after 4-6 months of age.

Once the child is 8-9 months old, mothers do introduce solids but not in sufficient quantities. The major reasons for malnutrition is decreased food intake and not just protein deficiency. Children do not get enough to eat because of low incomes, poverty, lack of special foods for children (such as soft foods with less chillies) and mothers inability to spend time feeding the child and the absence of child support for those employed. There is also absence of employer's commitment to childcare where women are employed in large numbers. A large number of children wait for their mothers to return, nibbling at whatever they can find. This chronic hunger leads to weight deficits in children and the various grades of malnutriton. Children need small meals 5-6 times a day and this is just not possible in poor households.

Severe PEM is usually preceded by an episode of respiratory infection or diarrhoea. Measles is another common infection preceding severe PEM. Infections affect nutritional status by reducing the apetite, food intake and food absorption. Sometimes, mothers impose dietary restrictions in the belief that food may aggravate the disease. Poor absorption of nutrients and their losses due to diarrhoea during infection aggravate malnutrition. In well nourished children with infection these factors do not affect the child's nutritional status because food intakes are adequate, but in an already undernourished child infection precipitates severe malnutrition.

PEM

It is obvious that a major nutritional problem in children is linked to poverty occurring not only due to inadequate intake of food but also due to unhygienic environment leading to high incidence of infection. In poor communities women often leave their infants to the care of older siblings while at work. The older sisters definitly take care of the safety of the child, but do not understand the need to feed the infant frequently or the principles of hygiene.

c. Characteristic Features

It is difficult to recognize the three grades of malnutrition unless the child's weight is recorded,and then compared with the standard. Most malnourished children look "normal", but slip into severe malnutrition when they have an infection. Marasmic children have extreme wasting of muscles, their body weight's are as low as 50% of the reference or lower, being more common between 6 months to 3 years age group. Child has an old man's appearance with emaciation and formation of wrinkles in the folds of the buttock region. In kwashiorkar the common feature is that the child looks bloated (edema) either generalized or in the legs and stomach region. There are hair changes, the hair turns brown and scanty. The body weight is below 60% of the reference and is more common in the 3-5 years age groups. There are also associated skin changes. We have got used to seeing these pictures of emaciated children put out by National and International agencies and have stopped responding to them, Somehow they represent poor countries of Africa and Asia, where conditions are hopeless. The fact of the matter is that most people have become immune to child malnutrition even though it is the cause of illnesses and death in children and most important is that it is preventable.

d. How can PEM be Treated or Prevented

Children with PEM have deficiencies of all the nutrients, that is protein, calories, vitamins, minerals etc.. In addition they may have infections like pneumonia, diarrhoea etc.. Severe cases of PEM need hospitalization and intensive care. Once life-threatening complications are under control they can be managed at home or in community health centers. Antibiotics are needed to correct the infections. Other complications like diarrhoea, anemia, vitamin deficiences require medicines, with careful feeding of the sick child. Vitamin A deficiency which may lead to blindness requires urgent treatment with massive vitamin A dose(injection) and protection of the eye from dust and exposure.

Proper child feeding is the essence for complete recovery. Diet should be sufficient in proteins and calories, easily digestible given in gradually increasing amounts to avoid vomiting and diarrhoea. Liquid formula is easier to feed and also one can measure the level of intake. If the child refuses to take the food initially, spoon feeding or a tube is passed into the stomach called gastric intubation may be resorted to. Once the appetite improves and child starts taking food by mouth, solid foods can be introduced. Initially larger than normal quantity of proteins and calories are required for rapid recovery. The recommended level is 3-4gms of protein and 170-200kcal/ kg body weight. In hospitals, milk formula is used and fortified with vitamin A and with generous helpings of sugar and vegetable oil to increase the energy density. Once the weight starts improving a mixed cereal, pulse, milk based diet is started.

5.3.2. Anaemia

Anaemia is a global health problem affecting women and children. 50-70% of women and children may have anaemia. In school children it affects the child's scholastic performance by reducing her/his concentration while studying and the child appears disinterested listless and unable to participate in the school routine. Anaemia in women results in tiredness, body pain, heavy bleeding, or absence of periods. During pregnancy it can result in the birth of smaller babies who are also anaemic.

a. Causes

The most common causes of anaemia is iorn deficiency accompanied by deficiency of folic acid and Vitamin B12 deficiency. But in practise it may be said that anaemia occurs because women and children (and also poor men) cannot afford iron rich foods like meat, bone soup, green leafy vegetables, pulses etc.. In addition worm infestations in the intestines and heavy bleeding in women due to heavy periods, copper T, infections of the reproductive organs can worsen anaemia. In addition the iron present in food is not easily absorbed due to the presence of inhibiting agents.

b. How do we Recognize Anaemia

It is the most difficult condition to diagnose as it's symptoms are not dramatic. Women may carry on with Anaemia and just appear normal or some people may feel that they are lazy, not interested in anything or just tired all the time. Children may not have any symptoms or may not do well in school, sleep too much, may not like play, and do not show interest in school. It is difficult to diagnose anaemia because the symptoms in women make them more "feminine" and withdrawn. A blood test for Haemoglobin (Hb) is the most important way of diagnosing anaemia.

A person is anaemic when the Hb levels are less than 12gms percent. However, in pregnant women and children Hb levels less than 11gm% is used to diagnose anaemia. Most women have HB levels of 9-10gms5 of Hb and live their whole lives with anaemia. This gets worse when they get pregnant, or have an infection or use a Copper-T or any other reasons or if they have heavy bleeding.

c. How do we Treat Anaemia

Once anaemia is diagnosed, treatment is possible with iron tablets or iron tonics. The Government has a programme for the distribution of iron tablets to pregnant and lactating women and also children. But very few women manage to taken them. But it is better to prevent anaemia with foods rich in iron that is meat, liver, bone soup, greens etc.. with fruits rich in vitamin C like guava, lime etc..

5.3.3. Vitamin A Deficiency

This is a common deficiency mainly affecting pre school children, the incidence increasing with increasing age. It is relatively rare in infancy. Over the years there has been a decline in the prevalence of vitamin A deficiency (Bitot's spot) from 20% (75-79) to 0.7% (88-90) who, Government of India national survey now report only 0.04% total blindness due to vit A deficiency.

a. Clinical Picture

Mild vitamin A deficiency manifests as night blindness (failure in dark adaptation), the child is not able to see in dim light (at dusk or dawn), conjunctival xerosis (dryness of conjunctiva), Bitot's spot (raised muddy and dry triangular patches on the outer side of cornea).

Moderate to severe vitamin A deficiency manifest as corneal xerosis (haziness or dryness of cornea), (the central portion of the eye) corneal ulcers and Keratomalacia leading to irreversible blindness due to rapidly progressive damage to the corneal tissues affecting the full thickness of the cornea. This may end with bulging of the eye ball or complete shrinking of the eyeball. Vitamin A deficiency is associated with high mortality, morbidity and permanent disability. Thus it is of great public health significance.

b. Prevalence

Commonly affecting the age groups above 2 years, males are more prone to vitamin A deficiency than females. Children from poor urban and rural families are more vulnerable to vit A deficiency due to inaccessibility and absence of some foods rich in Vitamin A. Vitamin A deficiency is more common during drought and summer when greens are sparsely available. In addition some households believe that green leafy vegetables must not be given to children.

c. Causes

Poor dietary intake of vitamin A, B carotene rich foods are major contributing factors. Pregnant and lactating mothers due to poor intake of food both in quantity and quality do not have enough store of vitamin A. Therefore the new born have poor vitamin A stores in the liver even at birth. During infancy mother's milk protects the child from vitamin A deficiency but even this is not enough after 6 months of age. During weaning or later stage vitamin A intake is grossly inadequate depleting the child of the vitamin A stores.

Childhood infections like measles, diarrhoeas, respiratory diseases and worm infestations like round worm, giardiasis worsen vitamin A deficiency, since they interfere with the absorption of vitamin A from the gut. Associated PEM in children due to repeated infective episodes also cause vitamin A deficiency resulting in the increased risk of nutritional blindness.

d. Treatment and Prevention

Oral administration of large doses of vit A is the recommended method of treatment of severe vit A deficiency like Xerophthalmia and corneal lesions. An oral dose of 2 lakh International Units (IU) of vitamin A is given to children once the condition is diagnosed. If the child has diarrhoea or vomiting, injections of 1 lakh IU of vitamin A can be given followed by another dose of 2 lakh IU of vitamin A orally after 4-6 weeks. In infants weighing less than 8kgs only half the dose is usually be given.

There is a Government programme for the prevention of blindness due to vitamin A deficiency where children are supposed to get massive dose of vitamin A orally (2 lakh IU) every six months in the age group of 1-5 years. Ideally the intake of greens and yellow vegetables,fruits and fish should be had in adequate amounts to prevent dificiency.

5.3.4. Iodine Deficiency Disorders(IDD)

Endemic goitre, (swelling in the neck) cretinism and deaf mutism (a kind of mental retardation) constute IDD and are major world public health problems. Main cause of this problem is known to be iodine deficiency for centuries. Earlier it was believed that this disorder was limited to the sub Himalayan and sub Vindhya (sub mountainous) territories

only. Now it is observed that IDD extends even to the plains. It is reported that about 40 million people are affected by IDD in India alone. Some of the ill effects of iodine deficiency are deaf mutism, myxedema, goiter, mental retardation, cretinism in children, abortions etc., in pregnant women.

Existence of goitre was known to the ancient Chinese, Indians, Romans and Greeks as early as 2000 BC. This condition has been described as 'Galganda' meaning neck swelling.

a. Prevalence

About 800 million people all over the world living in Iodine deficient environment are at risk of developing IDD. Of them 190 million suffer from goitre and another 3 to 15 million from cretinism. In developed countries IDD has almost been eliminated by effective measures like Iodine fortification of bread, salt etc. It continues to be a major problem in Latin America, Africa and Asia.

In India endemic belt of IDD is mainly along the slopes, foot hills and plains extending along 2400km of Himalayan territory, from Jammu and Kashmir in the west to all the states along the northern border upto Arunachal Pradesh in the east. There are several pockets of endemic goiter in other parts of the country- Aravalli Hills in Rajasthan, Vindhya in MP, Narmada Valley in Gujarat, tea estate of Karnataka, Kerala and Aurangabad and Pune districts in Maharashtra. About 150 million people are at risk of IDD in India of whom 55 million have goitre, 2.2 million cretinism. 6.6 millions are affected by mild neurological deficit.

b. Causes

Normally thyroid hormone produced by the thyroid gland is essential for growth and development both in human and animals. 80% of the Iodine needed by the thyroid gland to produce the hormone absorbed from the food is stored in thyroid gland. Daily requirement of Iodine is 150 micro grammes. Iodine gets converted into T3 and T4 which are its active forms.

Most of the Iodine needed for the body is met from food and drinking water. Iodine is present in large quantities in sea water. During summer evaporation of sea water enriches the soil with iodine. In hilly slopes due to soil erosion and denudation of forests and vegetation, rain water runs off the slopes and thus leeches out the Iodine from the soil leaving it Iodine deficient. Food crops growing in this areas thus become Iodine deficient. People consuming these foods become susceptible to Iodine deficiency.

Goitrogens

Some of the chemicals like thiocyanates and flavenoids found in nature are called goitrogens since they interfere with Iodine metabolism. Some of these are found in plenty in certain root vegetables and other vegetables like cabbage, cauliflower and tapioca. Some common food items like mustard, ground nuts, millets have fair amount of goitrogens.

c. Clinical Features

Since thyroxine is needed for every function of the body. IDD may manifest in many forms. In pregnant women it can result in abortions, still birth, congenital malformations etc. If born alive the child may have cretinism, mental retardation and neo natal goitre. In children and adolescents it manifests as goitre, hypothyroidism, impaired mental function and retarded growth. In adults also similar manifestations are seen.

d. Diagnosis

Goitre means enlargement of thyroid gland which can be felt or becomes visible. It is generally seen more amongst adolescents, young adults and school children. It is more common in women.

5.3.5. Vitamin B-Complex Deficiencies

B-Complex Vitamins are needed for various metabolic and enzyme actions and are involved in protein and energy metabolism. Some B complex vitamins like Folic Acid and vitamin B12 are needed for blood cell formation and cell metabolism. Role of B vitamins for vision and wound healing is being increasely recognised. Most commonest manifestation of B vitamin deficiency is tingling and numbness of extremities and burning feet.. Berri berri a disease of B1 deficiency common till early 50's has disappeared. Angular stomatis (cracking and soreness at the angles of the lips) and glossitis (redness and sore tongue) are the common manifestations of deficiency.

a. Causes

B-complex vitamin deficiencies occur mainly because people are not able to eat enough foods rich in these vitamins. Foods like vegetables, fruits, whole grains etc., faulty cooking habits like prolonged boiling, frying, roasting etc. further worsens the deficiency because it destroy these vitamins. During growth, pregnancy and lactation when requirirements are high and intakes are less, the deficiency becomes very serious. Besides dietary deficiency, poor absorption due to stomach disorders like diarrhoea, infections, and infestations lead to vitamin B deficiencies. Chronic alcoholism also precipitates severe deficiency.

Intake of certain drugs like antibiotics, anti tuberculosis medicines deplete the body source of B vitamins and result in their deficiencies. Doctors therefore include a B-Complex vitamins capsule with every prescription. Vitamin B deficiency in children occurs due to the fact that they are growing and their needs are greater and because children do not easily eat fruits and vegetables in large quantities. If the mother has B vitamin deficiency, during pregnancy and lactation, the foetus and the infant which depend on her is also born with deficiency. With growth and increasing needs the situation worsens.

5.4. SUMMARY

Use of different methods of assessment of nutritional status is important in understanding the health and well being of the population. Of the methods most feasible at community level are dietary survey and physical Anthropometry. Using these methods intervention and evaluation programmes can be planned at individual and community levels.

Nutritional problems commonly encountered are PEM, anemia, vitamin A and B-Complex deficiencies, IDD etc. Identifying these are of great importance to understand public health problem. Eradication of these problems have to be the targeted goals to reduce the infant and maternal mortalities and improve the health of the nation.

5.5. MODEL EXAMINATION QUESTIONS

I. Answer the following in 30 lines each

   a. Explain the problems of protein malnutrition in India.

   b. Explain why anaemia is so difficult to treat, especially in women.

   c. What are the methods of assessing the nutritional status of an individual ?

II. Answer the following in 15 lines each

   a. Iodine deficiency disorders

   b. Vitamin A deficiency

   c. Gomez classification

   d. Why do people have vitamin B-complex deficiency ?

   e. Haemoglobin

   f. Malnutriton

5.6. GLOSSARY

a. Weaning : A process by which a child is made accustomed to taking semi solid foods or animal milk in addition to breastmilk. It is generally advised to wean a child at 4-6 months of age.

b. Vagaris of Nature: Eccentric acts of nature such as floods, droughts etc.. These events upset the normal day-to-day activities.

c. Malnutrition: A dietary condition resulting from the absence of some foods or essential elements necessary for health.

d. Anthropometry: The science which deals with the measurements of the size, weight and proportions of the human body. The comparative measurements of the human body and its several parts. Example. measurements of heights,weights, arm circumference. It is used to measure the growth of human beings.

e. Normative standards: Authoritative recognized standards, eg. normative standards of

weight, height used internationally such as by the Americans, Europeans, Indians etc. to find out whether the populations are growing normally and have normal weights.

f. **Inequitable Distribution of Resources:** The imbalance in the distribution of goods, such as food, clothing, housing and land and services such as transport etc.. among people of a region, eg. the inequitable distribution of food, education and housing for the poor in many parts of the world.

g. **Subsidy:** Money granted by a state or public body to keep down the price of commodities.

h. **Antibiotics:** Antibiotic means "destructive of life". Antibiotic are chemical subtances produced by microorganisms that inhibit the growth of or kill other microorganisms. They are often used to treat infections in the human body caused due to the growth of microorganisms.

i. **Life Threatening Complications:** Advanced stages in an illness or starvation that are inevitably fatal.

j. **Cretinism:** A condition in which the bodily growth and mental development of a child are inhibited due to lack of thyroid hormone. This usually occurs due to iodine deficiency. Iodine is necessary for the synthesis system of thyroid hormone.

k. **Deaf Mutism:** Inability to speak due to congenital deafness, also due to iodine deficiency in the pregnant women and the child during it's growth phase.

l. **Xerophthalmia:** A condition in which the conjuctive becomes extremely dry, loses its lustre and acquires the colour of the skin. It is thought to be caused due to a deficiency in vitamin A.

m. **Xerosis:** Broadly dryness of the skin, conjunctive or mucuous membranes.

5.7. RECOMMENDED BOOKS

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3. C.Gopalan and Suminder Kaur. (eds) *Women and Nutrition in India*.Nutrition Foundation of India, Special Publication Series. 5, New Delhi, 1989.

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5. C.Gopalan (eds) *Recent trends in Nutrition*. Oxford University Press, New Delhi, 1993.

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UNIT - 6: NUTRITION PROGRAMMES FOR WOMAN AND CHILDREN

6.1. OBJECTIVES

After going through this unit you will be able to discuss about

- food supply and supplementary feeding programmes
- preventive programmes
- Integrated child Development scheme

6.2. INTRODUCTION

With wide prevalence of malnutrition especially in the vulnerable groups of women and children the routine preventive public health programmes of safe water supply, safe disposal of sewage are not adequate. Unless the individual is also nutritionally normal that is

the person does not have deficiencies, the impact of the other preventive programmes may not be complete. It is known that with nutritional deficiencies, infections can get worse and interfere with the treatment of diseases such as tuberculosis, gastroenteritis, measles etc. To put it simply a weak woman weighing only 35kg will take longer to recover from an illness like TB than a stronger woman weighing 55-60kg. Infact the stronger women may not get TB easily. Despite the increased production of food grains and public distribution system to achieve certain nutritional targets in terms of better health, it has been found essential to have special intervention programmes for vulnerable groups such as women and children.

Nutrition intervention is aimed at provision of food or nutrients directly to the people who are at the risk of developing malnutrition. It is a familiar strategy pursued all over the world by the health and social welfare sectors. The main aim of this approach is a) to supply in adequate amounts the deficient or the missing nutrients either through food commonly consumed or through supplementing in medicinal form at regular intervals. Most of the nutrition intervention programmes are short-term strategies and can hardly eradicate malnutrition permanently. Long term and permanent solutions can be achieved only through economic growth, proper and equitable distribution of food in adequate amount to people, balanced in quality and quantity. In addition availability of health care to all irrespective of their paying capacity or poverty is important for solving the countries health and nutrition problems. However to achieve these, long term strategies are needed. Short term strategies like nutrition intervention programmes can only take care of immediate needs of the population at risk of suffering from ill effects of malnutrition. Though these strategies may not improve the quality of life it can help in reducing mortality and morbidity.

The short-term strategies will be needed till one attains self-sufficiency in food production and adequate purchasing power of the new generation, combined with public awareness and equitable distribution of food grains to meet the nutritional needs through a balanced diet.

In the earlier chapters one has been given insight into the concept of nutrition and nutritive values of food requirements, methods of assessing the nutritional status and common nutritional disorders. In this chapter we will try in brief to determine various nutrition intervention programmes especially aimed to prevent and control malnutrition in women and children.

6.3. FOOD SUPPLY AND SUPPLEMENTRY FEEDING

There are two specific types of programmes 1) Providing food supplementation. 2) Vitamin and mineral supplementation. The former consists of supplementary feeding programme, midday meal programme (MDM) and providing essential grains to poor households at subsidized rates through public distribution system (PDS) and food for work (FFW). The programmes of vitamin and mineral supplementation includes periodic supplement of vitamin A in

massive doses (2 lakh IU) to children and distribution of iron/folic acid tablets (folifer) to pregnant and lactating women and children. Providing iodized salt through different Government and Non-Government organizations (GO/NGO) to the vulnerable group that is children, adolescent, pregnant and lactating mothers. However now universal iodization of salt is the practice to make sure that it reaches the populations who need it.

The main aims of these programmes are to control/ prevent severe PEM, blindness due to vitamin A deficiency, nutritional anemia and goiter (major manifestation of iodine deficiency disorder (IDD).

6.3.1. Supplementary Feeding Programme or Special Nutrition Programme (SNP)

Studies conducted by the National Institute of Nutrition, Hyderabad have shown that diets of preschool children, pregnant and lactating women belonging to the poor socio-economic class are deficient in calories to the tune of 300-500cals/day. The extent of deficit in children is 300kcal/day and women 500-600kcal/ day. Supplementary feeding trials wherein children were given foods containing 300kcal and 10gm protein/day for a period of 14 months under supervision, indicated that the food supplement not only prevented severe PEM and growth retardation but also promoted growth which was comparable with the well to do children. When pregnant women were supplemented with foods containing 500kcal and 30gm of protein in the last trimester of pregnancy they showed an improvement in the birth weight of the new born to the tune of 300gms. That is the average birth weight of the babies increased to 3.0kg from the earlier average of 2.7kg. Based on these results the Government of India in the year 1970-1971 initiated a supplementary feeding programme initially for preschool children and subsequently for the pregnant and lactating women also.

The programme was sponsored by Ministry of Human Resource Development (HRD) and implemented by the Department of Women and Child Welfare. The urban slums, tribals and drought prone rural areas were covered under priority basis. In rural areas the feeding was organized at a specific place and they were expected to eat it on the spot, where as in urban areas it is on a take home basis.

The locally available inexpensive foods (cereals/millets and pulses mixes) are made use of to keep the programme cost minimum and to get a high degree of acceptance. Food supplies by many international agency like World Food Programme (WFP), Cooperation of American Relief Everywhere (CARE) and others are also utilized. SNP is now an integral part of ICDS and is part of the package in Primary Health Care/Education Services.

6.3.2. Midday Meal Programme (MDM) for School Children

This programme is aimed at children attending the elementary schools. The programme consists of supplying one supplementary meal to school children to provide 1/3 of a days calories needs and 50% of the protein requirement. In 60's and 70's the Midday Meal Programme was very popular and covered a large area in the country.

The main purpose of the Midday Meal Programme is to improve children's attendance in the schools, which otherwise was negligible and was linked up with a school gardening programme to increase the horticultural produce. Besides Midday Meal Programme also aims at improving the knowledge of children about the importance of good food and nutrition for good health.

Most children especially in the poor households have grossly deficient intakes of calories, proteins and other essential nutrients. Most of the time children have to attend the school on a hungry stomach, and very often walking a long distance. These two together would exhaust the children and reduce the attention span in the classroom. In addition repeated gastrointestinal and respiratory tract infections aggravate the malnutrition. School drop out was said to be significantly high on account of above factors.

Taking these factors into consideration Midday Meal Programme for school children was initiated. Linking it with school health programme where the children had regular check ups by qualified doctors, and treated wherever possible, which offers preventive and curative services. These two, that is the School Health Programmes and the Midday Meal Programme would strengthen not only the health care system, but also sensitize the population to the needs of child nutrition also called nutrition education.

This programme along with SNP forms one of the largest feeding programme for the country in terms of coverage (16 million children covered under SNP). Earlier CARE food was being used which has now been replaced by indigenous food material. The children are fed 6 days a week during the school working days. In Tamil Nadu 8.4 million children benefit from the Chief Ministers Nutritious Noon Meal Programme and is one of the largest in the country, feeding all the needy children between 2 to 10 years through out the year.

6.3.3. Food for Work (FFW) Programme

While the above programmes provide free food to specific groups, food for work programme has been initiated to reach the families belonging to poor socio-economic group, to provide subsidized food distribution. FFW also known as National Rural Employment Programme (NREP) and Jawahar Rojgar Yojana (JRY) is an important milestone in providing firstly work to unskilled rural labour during lean seasons and secondly in supplying food grains as part of the wages. Most such works consists of road construction, building schools, canals etc. These while ensuring the employment to workers during lean season, also create assets for the village community to improve the quality of life for rural people.

Though this programme has helped millions of people during drought, floods, earthquakes and other natural calamities, it had certain drawbacks in terms of lack of managerial support to plan suitable work, supervision, and high cost of projects. In addition the people were not involved in planning the projects to be undertaken. Frequent interruption in the supply of food grains and their inferior quality are other major problems resulting in undue delay in the completion of the works.

6.3.4. Public Distribution System (PDS)

PDS is the major source of food supply in the country administered by the state governments with the help of the Ministry of Food and Agriculture. Large number of networks of fair price shop have been created all over the country to supply basic food needs (cereals, oil, dhals and sugar) to the poor and even the middle income groups at subsidized rates. This programme covers 85% of the population and has a reach even to the remotest villages and difficult tribal areas.

Though sound in principle this programme suffers from various flaws, urban areas are better served than the rural areas. In addition non availability or irregular supply of items, poor quality of grains leakage of food grains into the market are some of the other problems. Some feel that since wheat and rice are the major food grains distributed in the PDS, the farmers growing millets like jowar, ragi, bajra do not get the benefits which the big farmers get (after all the wheat and rice are purchased from rich peasants to be sold in the PDS). The poor in the rural areas do not get the full quota due to them because there is no guarantee that people will have money when the grain reaches the Fair Price Shop. This is mainly due to the poor purchasing power of the poor communities. The programme is enormous but perhaps it is the most important one for the poor in this country. It has a major role in stabilizing prices in the open market, and that surely benefits all sections of society.

6.4. PREVENTION AGAINST VITAMIN 'A' AND MINERAL DEFICIENCIES

6.4.1. Massive Vitamin A Distribution

A large percentage of preschool children in the country suffer from Vitamin A deficiency as manifested by xerosis, Bitot's spot and night blindness. Unless treated promptly these can lead to corneal destruction and ultimately permanent blindness. Severe Vitamin A deficiency is a major cause of blindness in this country. Massive Vitamin A distribution strategy was devised to supply 2 lakh IU of Vitamin A at 6 months interval to all the pre school children between 1 to 5 years of age.

This strategy is based on the earlier observation by the National Institute of Nutrition that any Vitamin A taken in excess of daily requirement gets stored in the liver, which is released

depending on the needs of the body and a massive dose was thus planned to improve the vitamin A levels in the body. ANMs and the Anganwadi workers (AWW) operate this programme through the existing health care and ICDS. About thirty million children are being covered under this programme. The evaluation of the programme indicates that wherever successfully operated, this strategy has resulted in the disappearance of cases of corneal destruction, blindness and also significant reduction in the eye problem due to Vitamin A Deficiency.

1. The other method devised for prevention of Vitamin A Deficiency has been by linking the massive Vitamin A dose given to the children with measles vaccination at 9 months.
2. Horticulture approach where attempts are made by health and agricultural personnel to increase the production of fruits and vegetables at the National and household levels by providing information and some training to the people with some land.

In this approach, health care knowledge regarding the importance of Vitamin A rich foods like green leafy vegetables(GLVs), carotene (which is converted to vitamin A in the body) rich fruits like papaya, mangoes etc. is also included. The community is encouraged to have kitchen gardens where greens, drumstick and papaya trees etc. can be grown with minimal to reduced inputs. In schools the children are encouraged to develop gardens with emphasis on GLVs and carotene rich fruits. Since these efforts are being done simultaneously along with massive Vitamin A delivery (a short-term strategy) over the years, horticulture approach would be able to replace the short-term programme and increase the Vitamin A intake of the children through changes in the eating patterns.

6.4.2. Anaemia Prophylaxis Programmes

Nutritional anaemias affect 70-80% of the population. Pre school children, adolescent girls and pregnant women are the most vulnerable. Anaemia is wide spread and affects not only the work output of the individual, thereby affecting the economic growth but also has a serious impact on the pregnancy outcome in terms of high maternal, and infant mortality, low birth weight and premature deliveries with their consequences. In pre schoolers and school children it aggravates infections, reduces the attention span and their scholastic performance.

In view of the above, The Government of India launched the National Nutritional Anaemia Control (NNAP) programme in 1971. This strategy was based on the observations by scientists that when the pregnant women were given 60 mg iron and 500 micrograms of folic acid during the last 100 days of pregnancy they were able to maintain the Haemoglobin levels above 10gm% and also had beneficial effect on the birth weight of the new born. The incidence of low birth weight (LBW) infants was also reduced. Also at 6 month the incidence of anemia in infants born to the mothers who received iron during pregnancy was lower than those born to the unsupplemented mothers indicating that such infants had better iron reserves.

a. National Nutritional Anaemia Prophylaxis Anaemia is Programme (NNAPP)

On the basis of these research findings, the anaemia prophylaxis programme was launched. Under this programme, women(Pregnant, lactating and family planning acceptors) are provided with 100 tablets containing 60 mg of iron and 500ug folic acid per tablet daily. For children below 12 years were to receive 20mg iron and 100-ug folic acid daily. For very young children liquid preparations of iron are provided. The distribution is done through primary health centers, sub centers, Maternal and Child Health (MCH) centers, and ICDS through anganwadi workers. The biggest success of the programme is that it has made all the families conscious of the fact that pregnant women must receive iron tablets though the Government supply of tablets has a poor outreach, due to inadequate/irregular supplies and the poor quality of tablets. Since the incidence of anemia is very high just the medicinal approach without any improvement in the diets does not have the desired impact.

In view of the above the Government of India (GOI) changed its strategy and instead of a prophylaxis programme it has launched the anaemia control programme especially for the pregnant women wherein the women should receive '100mg of iron and 500ug, of folic acid from 20 weeks of pregnancy till delivery. However the drawbacks remain the same. Whether the iron dosage is 60 or 100 mg unless implemented correctly and women take it regularly the situation will not improve drastically. It is being increasingly felt that increasing the iron dosage may not be advantageous for the newborn.

b. Fortification of Salt with Iron

Iron supplementation programme is a short-term strategy and covers only the most vulnerable groups. In India most of the population is anemic and iron deficient. The long-term strategies like fortification of the salt with iron and encouraging the intake of GLVs to improve the folic acid intake are of great importance. For improvement in the intakes of fruits and vegetables the horticulture approach is of great value since it improves not only the folate intake but also the other nutrient intake like, Vit A, B, Calcium, Zinc etc. Fortification of salt with iron is still not taken up on a national scale.

6.4.3. Iodine Prophylaxis Programme Against IDD

Goiter (swelling of the thyroid gland in the neck) is a major manifestation of IDD, mostly prevalent in sub Himalayan territory, Northeastern states and also in the southern states. Based on the experience of many countries it was found that the distribution of Iodized salt in place of the common salt reduces drastically the incidence of goiter. The National Goiter Control Programme was launched by the GOI in 1962. Initially this programme covered only the Sub Himalayan territories and the other endemic goiter zones.

a. Universal Iodisation of Salt

In 1983 The Nutrition Foundation of India (NFI) studies revealed that the IDD is much more widespread and more severe than what was thought all along. Also distributing the iodized salt only to the selected areas was ineffective. Due to the availability of iodized and non-iodized salt, the poor purchased common salt in view of the higher cost of the iodized salt. There was an absence of the quality control, and very often the iodized salt never reached these far flung areas where it was needed the most.

Also the lack of awareness among the public as well as the implementing agencies about the objectives of the programme and the serious health consequences of the iodine deficiency especially with respect to mental function, learning ability and neurological impairment.

The answer to these problems would be to distribute the iodized salt all over the country. In view of the serious dimensions of the IDD the new initiatives by the Government is A} towards universal iodisation of the salt to be made available to all the population irrespective of the prevalence of the disease. B} Liberalization of the production of the iodized salt by the private sectors and subsidizing the cost of production by providing financial assistance for setting up the plants; C} High priority allocation of the railway wagons for the transport of the iodized salt and D} Free technical assistance by the salt department for the installation and training of personnel for quality control.

This was part of the 7th 5-year plan. This initiative has resulted in several fold increases in iodized salt production. Media publicity has also resulted in awareness among the public with more and more consumption of iodized salt. It is expected that the target of adequate salt production would soon be reached in the 9th plan. There are steps effected to ensure nation wide monitoring system, to carry out quality control of the salt at the manufacturing stage and consumption level. Since the loop holes in the Government laws are being effectively plugged, the implementing departments are effective in checking the supply of salt, monitor the prices and its distribution first in the endemic areas and subsequently in non endemic regions of the country.

b. Organization

Ministry of health and family welfare is the policy making body of the Government with the Salt Department as nodal agency for monitoring production, distribution, quality control and subsidy payment to the iodized salt manufacturers. Every state has its own goiter-monitoring cell to carry out periodical survey for prevalence of goiter. They are also responsible for distribution of iodized salt either through PDS or through open market. The banning of sale of non iodized salt to endemic areas is being strictly implemented by each state.

6.5. INTEGRATED CHILD DEVELOPMENT SERVICES PROGRAMME (ICDS)

It is generally observed that when there are too many Government programmes there is confusion about the roles of each of the functionaries and people do not understand why they have to deal with 10 different people handling either

1. Malaria
2. TB
3. Filaria
4. Nutrition
5. Immunization
6. MCH
7. Water supply
8. Agriculture
9. Land
10. Work etc..

Also there is very little or no cooperation between the Departments though all of these are interlinked. A single integrated programme, which can cover at least 3 to 4 aspects of care, is always better since a single package makes sense to the people. The Government of India in 1975-1976 launched a programme which could address the problems of child health care, preschool education, nutrition and overall development.

The services of ICDS are unique in the sense that in a single programme the Government plans to take care of both the mother and the child and recently even adolescent girls.

6.5.1. Objectives of ICDS Programme

The objectives of these programmes are many

A) Improve the health and nutritional status of the children between the age of 0-6years and adolescent girls.

B) Lay the foundation for proper psychological, physical and social development of the child.

C) Reduce the mortality, morbidity, malnutrition and school drop out rates.

D) Supplementary feeding and folifer (Iron) tablet distribution to adolescent girls, pregnant and lactating mother.

E) Coordinate the programme amongst the various departments to improve child development.

F) Educate and guide the mothers to take care of the health and nutritional needs of the child.

6.5.2. Services Provided

The service package includes periodic health checkups, treatment of minor ailments, referral services, supplementary nutrition, and growth monitoring, immunizations and formal education of the preschool children. It is also supposed to impart health and nutrition information to the mothers. One of the important component of ICDS is to provide safe drinking water at the ICDS center. I.e. Anganwadi. These Anganwadis i.e. preschool childcare centers are situated within the village or slum managed by a women worker called Anganwadi worker (AWW), and assisted by women helpers. She covers a population of 1000 in rural and urban areas and 700 in tribal areas.

6.5.3. Supplementary Nutrition

This is the major component of ICDS where children who are malnourished are identified. All the families in the community are surveyed and children between the age of one and six, and expecting and nursing mothers are selected for feeding. The type of food supplement is usually based on the regional foods commonly used cereals and pulses, which are cooked according to locally available recipes such as either upma or a sweet preparation. In certain states ready to eat snacks with longer shelf life are produced in bulk, centrally/ commercially and distributed to ICDS centers. The preparation can be either wet, which should be consumed soon after cooking or dry, which has a shelf life ranging from one month to four months. Some of these preparations are bread, murukku/ sevai, sukhadi/ panjiri, miltone, balahar, energy food, soya fortified bulgar wheat (Grits), etc., cereal/ pulse mixes. The preparations could be liquid (or) semisolid. The energy and protein content of these foods are for infants (6-12 months)- 200kcal and 8-10gm; protein, children (1-6yrs)- 300kcal and 15gm; adolescent - 500kcal and 20gm; pregnant and nursing women- 500kcal and 25gm. For severely malnourished, children (based on their weights for age) double the quantity of supplement is provided.

6.5.4. Immunization

All the infants of the area are immunized against infectious diseases such as tetanus, diphtheria, whooping cough, poliomyelitis, TB and measles. Pregnant mothers are immunized against tetanus. All the ICDS centers take active part in pulse polio and mass immunization programme.

6.5.5. Health Check Up

All the Anganwadi children, adolescents, pregnant and lactating mothers are to have frequent health check up and treated for minor ailment by the visiting local health personnel i.e. lady health visitor, auxillary nursing midwife, health assistant or multipurpose female workers. They provide a link between the village and PHC & sub center. AWW also distributes medicines for minor ailments provided in a medical kit. Those needing special investigations or treatment are referred to the doctor at the PHC or district hospital.

6.5.6 Growth Monitoring

Children are weighed regularly and those whose growth is faltering are indentified for special care. Special growth chart (weight for age) which shows a graph of curves of weight for different ages, indicating the desirable weight for a particular child is used to identify malnourished children. Every child has a growth chart showing her/his growth.

6.5.6. Non Formal Education

AWW are involved in imparting certain learning skill with the help of songs, games, toys etc. for children between 3-5 years in an attempt to stimulate their curiosity. There is no rigid curriculum. AWW also teach alphabets and elementary numericals if requested by the parents.

6.5.7. Organization

The ICDS programme is implemented by the Department of Women and Child Development in coordination with the Ministry of Health. At the state level, the Dept. of Social Welfare/ Women and Child Development Board/ Health or a separate directorate of ICDS is responsible for the implementation of the programme.

6.7. NUTRITION MONITORING IN INDIA

An essential prerequisite of nutrition monitoring programme is a continuous collection of data on dietary and nutritional status of respective group of population using standardized procedures. The main aim of such programme is to identify the nature and the extent of the nutritional problem, their regional distribution to assess the changes over a period of time and also to assess any change in the dietary pattern, intake etc. The programme also systematically should assess the precise reasons for the change in the nutritional status(could be nutritional, economic, health and awareness) through well designed systematic investigations.

National Nutritional Monitoring Bureau(NNMB) was established by the Indian Council of Medical Research (ICMR) under the Health Ministry in 1972-73 to fulfill the above role in India. With a Central Reference Laboratory (CRL) at National Institute of Nutrition and peripheral centres in 10 states, the Bureau has reported the results of the nutrition surveys of 63,275 households and 3,84,652 subjects. The Bureau also evaluates some of the programmes mentioned earlier in this Unit from time to time.

6.7. SUMMARY

In this unit an attempt has been made to understand the reasons for setting up of various National nutrition programmes which are being implemented in India. The objectives and the usefulness of these programms have been discussed. Also some of the drawbacks and the pitfalls in these programmes have been highlighted. It is hoped that many of the programmes are short term measures and will be replaced by long term strategies over the period of time.

6.8. MODEL EXAMINATION QUESTIONS

I. Answer the following in 30 lines each.

a. Public distribution system or PDS

b. Integratted child development programme (ICDS)

c. Anaemia prophylaxis programme

II. Answer the following in 15 lines each.

a. Food for work programme

b. Iodisation of salt

c. National Nutrition Monitoring Bureau (NNMB)

d. Midday meal programme

e. Immunization

f. Massive vitamin A distribution

6.9. GLOSSARY

a. **Immunisation:** The process of rendering the body resistant to disease, eg. immunizations are given against polio, tetanus etc..

b. **Prophylaxis:** The administration of chemicals or drugs to members of a community to reduce the number of carriers of a disease and to prevent others from contracting the disease.

c. **Supplement:** Minerals, and vitamins administered to people with a deficiency. It is usually in the form of capsules or tablets. But in the III World countries where food deficiency is rampant, food supplements are given to children who are starving.

6.10. RECOMMENDED BOOKS

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5. C.Gopalan. (eds) *Recent trends in Nutrition.* Oxford University Press, New Delhi, 1993.

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UNIT - 7: ANATOMY AND PHYSIOLOGY OF REPRODUCTION AND COMMON GYNAECOLOGICAL PROBLEMS

7.0. OBJECTIVES

After going through this unit you will be able to discuss

- The Anatomy and physiology of reproduction
- Gynaecological Problems of women.

7.1. INTRODUCTION

Women's bodies and anatomies are generally objects of shame for women and of prurient interest to men. Popular perceptions have thus been highly coloured. Consequently, we find that though health books today do deal with the structures and functioning of women's bodies, the framework of the current perceptions have not been addressed at all. Consequently it is not surprising that most women have no words to describe their private parts, have great difficulty in explaining symptoms and problems in the reproductive area. The area in which women suffer most from concealment, prejudice, lack of research and male revulsion (even from doctors and scientists) is that of the genitals. They are either dirty or do not exist at all. A

common example is the lack of knowledge of many young girls about menstruation and the fear or dread it creates among them. Many older women go on with a painful prolapse rubbing against their thighs for years, because they have never talked about it. Not knowing about anatomy also leads to difficulty to fully experience and enjoy sexuality which is again very common to most women.

We need to stress that our bodies are remarkable to many ways. We have our special strengths. For instance, we have far more endurance than men, as opposed to short-term strength; we have better spatial skills than men; we have better language abilities. We tend on the whole to be more flexible, and we are, upto a certain age, less prone to heart disease. Given what women over the centuries have gone through in terms of childbirth, illness and hard work, it is amazing that they should be more long-lived in general than men; yet this is true and even premature female babies survive more frequently than male ones.

In this unit effort is made to explain the anatomy of a woman's body and the reproductive functions, problems arising out of these which are special to woman, inadequacies of the responses of the state, the medical profession and medical research to the special needs of women.

7.2. ANATOMY AND PHYSIOLOGY OF REPRODUCTION

The Pelvic Organs :

The vulva or outer genitals are visible if we look down with legs spread. These are the visible sexual and reproductive organs. Hair growth in this area begins generally around 10-12 years; just outside the genital opening lie the outer lips or labia majora. The outer lips enclose soft hairless flaps of skin, very sensitive to touch, that are called the inner lips or labia minora. Sexual stimulation makes these darken and swell a little. The pubic hair continues between the legs and on around the anus. The rectum (the bowels) opens to the outside through the anus. The area between the inner lips and the anus is the perineum. The inner lips join to form a soft fold of skin just below the mons. This is the hood and it is connected to the glans or the tip of the clitoris, which it protects. If this hood is pulled up, the glans of the clitoris, a small button-like projection made up of erectile tissue which swells up during sexual arousal is seen. The clitoris is about the only organ in the body that has a purely sexual function. The inner lips are connected to the underside of the clitoris. During intercourse, when the penis moves inside the vagina, pulling the swollen inner lips, the clitoris also moves and is stimulated. Since the most intense sexual sensation is felt in the clitoris, its connection to the inner lips is obviously important for sexual stimulation. Between the clitoris and the larger vaginal opening there is a small dot or slit. The short tube about 1 and 1/2 inches long leading out of the bladder ends in this urinary opening. The vaginal opening is just below it. Because these openings are so close to each other, the urinary opening can become irritated from

prolonged or vigorous stimulation of the vagina during intercourse.

The hymen may or may not be there. When it is present it is the thin elastic membrane at the vaginal opening. It covers a part of the vaginal opening in most women before stretching during some activity or intercourse makes it all but disappear. Of course it doesn't cover the opening - menstrual fluid would have to come out. The vaginal walls are very elastic, and have soft folds on the inside that grip the finger if inserted (after washing and with nails cut short). These folds help the vagina to mould itself around anything it holds: a tampon, a baby, a penis. The walls of the vagina may be dry or wet depending on whether the woman is in her reproductive years, and if she is, at which stage she is at in the menstrual cycle, and how aroused she is. The continuous secretions provide lubrication, help keep the vagina clean, and maintain the acidity of the area so that bacteria cannot invade it. The secretions taste salty.

Drawing in the walls of the vagina to clutch the inserted finger tighter is the same movement one would use to stop the flow of urine - contracting the pelvic floor muscles. These important muscles not only keep the pelvic organs in place, but also support all the other organs in the abdominal cavity. If these muscles are weak, there will be difficulty controlling the flow of urine, and having an orgasm. Laxity of these muscles also result in the possibility of the pelvic organs, especially the bladder, the lower intestine or the uterus descending from their places and in extreme cases even bulge out of the vaginal opening (prolapse). These muscles are also important during pregnancy and childbirth. They can be strengthened by exercises.

If an inserted middle finger goes in deep, the end of the vagina can be felt. Pulling up knees to the chest helps. The cervix can be felt in the centre even before the edge of the vagina. It feels like the tip of the nose and dimpled in the middle. If the woman already has children, it feels softer like the tip of the chin. The cervix is the entrance to the uterus. The cervix itself is nerveless. The depression at the centre of the cervix is the 'os'. This is the opening into the uterus and is as broad as a blade of grass. Fingers, tampons, male organs cannot penetrate through this. Yet, during childbirth, it is this that opens wide to enable the safe delivery of the child.

The rest of the organs that are described here - the uterus, the fallopian tubes and the ovaries, cannot be seen or felt with fingers. When there is no pregnancy, the size of the uterus is that of the index finger in length and as wide as this fingers. It has very thick walls and has muscles stronger than in any other part of the body. It is positioned in between the bladder which is in front of the abdomen and the large intestines near the spine. The walls of the uterus are close and touch each other. They separate when a baby is growing or when a fibroid is growing. On top of the uterus, on either side are the fallopian tubes. They are about four inches long and resemble the horns of a goat in shape. The opening from the uterus into the

tubes are so small that only a needle can go through.

The ovaries are organs located on either side and somewhat below the finger-like projections of the fallopian tubes. They are held in place by tissues and surrounded by fat. Ovaries produce eggs and female sex hormones (mostly oestrogen and progesterone).

In a pelvic examination, the gynaecologist uses a speculum and her fingers to find out many things : if there is a pregnancy, vaginal infection, any abnormal growth in the uterus, any unusual discharge from the cervix, etc. While examining the vulva, the doctor will check for signs of irritations, discolourations, swellings, lesions and unusual vaginal discharge. The doctor then inserts the speculum into the vagina while keeping the vaginal walls apart and then examine for sores, etc and checks the cervix (now visible) for unusual discharge, cuts, tears, signs of growths,etc. She can take do a Pap smear and a culture to send to the laboratory. After removing the speculum, the doctor will put on a sterile plastic glove and insert two fingers of one hand into the vagina while placing the other hand on the abdomen. By pressing down on the abdomen and manipulating the fingers in the vagina on either side, she can locate and determine the size, shape, consistency of the uterus, ovaries and tubes. She can also locate any unusual growths, tenderness or pain.

The Anatomy of the Breast:

Breasts are dormant until puberty. Hormonal activity develops fat that makes them swell, darkens the colour around the areola (the dark area around the nipple) and makes the nipple prominent. The breasts are made up largely of fat and milk glands organised under the skin. The milk-producing or mammary glands that cannot be seen without a microscope break up into tiny structures called alveoli. Fat insulates these glands; the connective tissue by which the breasts are attached to the chest wall supports their weight. The nipple is provided with nerve-endings and this makes it highly sensitive to touch; the muscle fibre in the areola cause the nipple to stiffen and become erect when the nipple is stimulated.

7.3. MENSTRUATION AND MENSTRUAL PROBLEMS:

Menstruation:

This is commonly known as the period every month when there is bleeding for a few days. Menstruation comes from the Latin mensis, for 'month'.

The Physiology and Anatomy of Menstruation:

Two hormones secreted by the ovary estrogen and progesterone help to increase the thickness of the lining of the uterus. Estrogen causes the lining of the uterus (the endometrium) to grow, thicken and form glands which secrete embryo-sustaining substances. Progesterone, made by

the ruptured follicle after ovulation, causes the glands in the endometrium to begin secreting nourishing substances and also increases the uterine blood supply. In this phase the fertilized egg can implant in the uterus. If the egg is fertilized, it should reach a well prepared uterine lining in about six and a half days, and plant itself there.

When the egg does not fertilize, there is no pregnancy. The egg is dispatched from the body alongwith vaginal secretions. The estrogen and progesterone supply (which lasts about twelve days around the time of ovulation if conception has not occured) diminishes in the last few days. As this supply decreases, the arteries and veins that nourish the uterine lining begin to pinch themselves off and the lining has to be shed. This process is menstruation or the menstrual period. In most women this bleeding lasts a week or less. About two-thirds of the lining is eliminated with the menstrual flow, but the remaining third forms a new lining. In the next cycle, a new follicle starts growing, and secreting estrogen; a new uterine lining is generated, and the uterine cycle starts again. Obviously menstruation stops during pregnancy, and at menopause. Most women start menstruating in the middle of puberty, generally at the age of eleven or twelve, though the range is from nine to eighteen. It continues until the time of menopause, which occurs in most women between forty five and fifty five years. Each cycle lasts an average of twenty eight days, though the normal cycle is a myth. There are variations and anything between twenty and thirty six days is possible. Any cycle, whether it is of 22 or 30 days, if it is regular, is normal. The flow usually amounts to about two or three ounces. The menstrual fluid contains endometrial particles which have detached themselves from the lining of the uterus, blood, cervical and vaginal mucus. Normally the fluid has no odour until it comes into contact with the bacteria in the air and begins to decompose.

Signs of oncoming periods may include a sensation of heaviness or dull pain in the breasts, backache, headaches, congestion in the abdomen, lethargy or a feeling of being tense, irritable and wound up. They may be pain related like headache, backache, fatigue, general aches, etc., related to our intellect like forgetfulness, distraction, confusion, etc., behaviour-related like wanting to stay home, related to brain centres such dizziness, nausea, hot flushes, excess water as weight gain, swelling of breasts, bloatedness or psyche-related as crying, irritability, depression, tension.

To absorb the blood during menstruation, a majority of women use cloth; some others use cotton or sanitary pads. Tampons are also available in India. Any girl who has started menstruating can use any of these as long as they are clean. Cloth needs to be kept clean and soft for re-use. During a normal menstruation you may have to change 2-3 times in a day.

Menstrual Problems :

The perception of menstruation itself is a problem. Shame associated with it and the taboo of

activity during the menstrual period causes many girls to opt out of sports or any outdoor activity. Lack of bathrooms and sufficient water accentuate the problem. Heavy bleeding is particularly upsetting and tiring. The cure, if the blood test indicates normalcy (haemoglobin content, no bleeding problem, no infection, etc.) is largely rest, good diet, and iron. In more severe cases, a month or two of hormone tablets may be prescribed. Checking up for anaemia is a must.

In older age groups, normally heavy periods come on a month after a MTP or after a D&C. If the cycle is very short and heavy,i.e., 10-15 days only, infection, a fibroid or a uterus which is bulky around menopause may be the possible causes. Sometimes mood changes may also be positive in that one may feel good and happy too.

7.3.1.Dysmenorrhea:

Painful cramping during the period may even be accompanied by nausea or diarrhoea. The pain seems to be caused by the rhythmic contraction of the uterus during menstruation. It is felt that the pain occurs when the cycles are ovulatory. As the uterus is a muscle, relaxation exercises and massage may help. The popular belief particularly among doctors is that if women get married and have children, the pain disappears. This is not true. Many women continue to have severe pains even after childbirth.

7.3.2. Amenorrhea:

When regular cycles do not come on, doctors call it amenorrhea. This absence of menstrual periods may mean delay of periods or total cessation of periods. Whatever the reason, a sudden absence of periods can be disturbing. Some causes for a temporary disruption of the cycle for a few months may be breast-feeding (the act of suckling vigorously affects the hormones that produce ovulation and the regular cycles. When the baby is fed solids or other milk, periods will come on. Anthropologists have recorded that in certain tribes, amenorrhea called 'lactation amenorrhea' could last for as long as 5 years followed by a pregnancy and another 5 years of amenorrhea again. As a result, women had 4-5 babies in their life-time because breast-feeding worked as a natural contraceptive), pregnancy, physical stress or emotional disturbance or even long-distance travel (all these factors affecting the pituitary) may cause amenorrhea. Periods usually come back after a few months. Severe anaemia may cause very heavy periods or they may get scanty and stop completely. This can however be reversed by treatment for anaemia.

Amenorrheas can also be due to infections like TB or after a chronic disease such as kidney disease, sudden weight loss due to dieting, vigorous exercise or physical training, after a few cycles of oral contraceptive pills (the cycles may take some time to re-establish), after hormone injections like Net-en and Norplant, hormone problems like hyperthyroidism, hyper

prolactinemia, or causes in the ovary, etc, or overuse of drugs prescribed for mental illness.

Postponing or advancing periods has become common nowadays for travel and 'auspicious' occasions and for marriages and even for trivial reasons. The synthetic hormones that the tablets contain to postpone or advance periods disturbs the delicate balance of the body. Comparatively speaking it is worse to advance periods than to postpone them.

7.4. MENOPAUSE:

Menopause commonly known as the end of monthly periods, sets in between the ages of forty and fifty five, rarely before forty. Early menopause can set in when women are severely malnourished or have some other problem. Normally menopause sets in gradually over a period of months.The ovaries which released an ovum every month as part of the menstrual cycle now work off and on. Even ovulation is irregular or sluggish, sometimes once in 3-4 months. Everything - the uterus, ovary and hormones slow down. The hormonal changes that accompany and follow ovulation result in the thickening of the uterine lining and later the shedding of this lining at the beginning of the next cycle, which appears as menstruation. Now this thickening is irregular, slower and so is the shedding.

During the ovulation phase of the cycle, the ovaries produce 2 hormones, oestrogen and progesterone. During menopause two things happen- the ovaries gradually stop releasing the ovum or egg every cycle and their oestrogen production naturally drops. As ovulation ceases, the production of the hormone progesterone (responsible for the thickening of the uterine lining) also declines. The most obvious sign of menopause is menstrual irregularity. The periods get scantier, shorter and further apart, sometimes skipping a month or two; or they may become heavier, with the passing of clots, and continue much longer than usual.

Symptoms of Menopause: Some women may feel great discomfort and exhaustion; others have almost no symptoms. Most women, however, have one or more of the following symptoms: hot flushes (also 'flashes' or 'sweats': The whole body, especially the upper half feels suddenly and uncomfortably hot for a few seconds, and this is followed by a cold sweat or chills) drying of mucous membranes of the vagina (the vaginal walls may also feel itchy and are especially vulnerable to inflammations or infections, sexual intercourse can become uncomfortable or painful because of the lack of vaginal lubrication) palpitation—the sensation of the heart 'thumping' (dizziness may accompany an attack) there may be increased frequency of urination or sometimes incontinence, accompanied sometimes by burning in the urine, which may be accompanied by infection. One may also have bone pains, abdomen may feel bloated, there may be indigestion, increasing forgetfulness, speech may sometimes be slurred. A range of other symptoms, partly physiological and partly psychological, may present themselves: anxiety attacks, depression, nervousness, insomnia. There may be thinning or weakening of the bones owing to calcium depletion.

Feminists argue that since menopause is something only women go through as part of their life cycle, it is under-researched and the very real symptoms of menopause are lightheartedly dismissal. Menopause also comes at a time when the space for older people in today's lives has become less, and when the skill and experience of old age are under-valued. Sleeping pills and tranquilizers are given by some doctors. Another solution is treatment with vitamin E with Vitamin C, and this may be effective in controlling hot flushes. Calcium supplements help many women make up the calcium loss from the bones; additional intake of calcium-rich natural foods like milk products, pulses, groundnut and so on can also prevent calcium deficiency. Dryness of the vagina, and unbearable hot flushes is increasingly being treated with hormones (Oestrogen Replacement Therapy (HRT). HRT works on the assumption that since many of the most debilitating symptoms in menopause are caused by the fall in oestrogen production, this can be made up by an intake of (oral) oestrogen or oestrogen cream applied to the vagina once or twice a day. HRT should be taken under the strict supervision of a doctor. It has helped many women specially those unable to do their daily routine.

The negative aspect of HRT is that the treatment may be potentially harmful. Research has shown that there is a link between HRT and breast and endometrial cancer (cancer of the uterine lining). The longer the therapy continues, the higher the risk of cancer. Women with cancer, recurrent ovarian cysts, a tendency to blood clots, fibroids, kidney, liver and heart disease should not take HRT at all.

7.5. URINARY TRACT INFECTION/CYSTITIS

The symptoms of cystitis or UTI are : a need to urinate frequently; a dull backache; a sharp burning pain in the vulval region, especially during urination. In some cases there may be haematuria (blood in the urine) and in other cases pyuria (pus in the urine, which therefore appears cloudy). There may be lower abdominal pain, focussed in the area just above the pubic bones, or a strong odour in the urine passed in the mornings. A lower urinary tract infection, involving only the bladder and the urethra, may cause nausea, frequent urination, and burning pain while passing urine; an upper urinary tract infection, which means that the kidneys and ureter are also affected, may be signalled by more severe nausea or vomiting, high fever with chills or rigours, pain in the loins, and the doctor will notice a rapid pulse. Frequently the vagina also picks up the infection, which means that some of the symptoms of vaginal infections may be present.

A common cause of such urinary tract infections is repeated or rough sexual intercourse. The reason why this affects the urinary tract has to do with the vulnerability of the area around the vagina and the urethra. Repeated intercourse or forcible penetration (something that often happens on the 'first night' of marriage) can damage the tissues and skin around the vaginal

opening. This part of the body is so delicate that any injury, however small, can break the mucous shield over it. This creates a raw area which is immediately invaded by the E. coli bacteria that are normally present in the colon and rectum. These organisms move into the urethra and bladder, which are so close causing acute cystitis and, sometimes, vaginitis as well. With sexual intercourse, the bacteria are pushed into the urethra by a mechanical action. If the infection is not treated, or treated inadequately, it spreads upwards along the urinary tract, it may lead to a kidney infection, which is a more serious problem. The reason UTI is common among women is that the female urethra is only 3 to 5 cms. long; so microbes have a shorter distance to travel in the female urinary tract before they attack the bladder.

Injuries in the area around the vaginal opening get infected despite all precautions for two reasons. One is that this area is always moist and warm; bacteria need such conditions to multiply and cause infection, and it is close to the anal region, which is generally a source of bacteria. The second is that it is bathed in urine, which is a very good medium for infections once it passes outside the bladder and becomes unsterile. These factors make for an environment in which all kinds of bacteria thrive.

Any situation which hinders or blocks urine flow in the urethra or the urethra can cause infection. Pregnancy is one period during which many women go through repeated urinary tract infections. The pressure of the growing uterus on the bladder prevents its easy emptying. It may cause a reverse trickle of urine into the tubes connecting the bladder to the kidneys. This means that the urine is stagnant, and the bladder is not washed out at each attempt to pass urine. This again becomes infected with them. This reflux of urine can also occur after intercourse or when the bladder is full or when the cystitis sets in. For some reason, this reverse flow occurs in young girls. Menopausing women are also prone to UTI. This is because the mucus around the vaginal area dries up as a result of hormonal changes, and this makes the area more vulnerable to injury. The catheter - the rubber tube that is passed up the urethra to empty the bladder in the post-operative period may become a source of infection during and after surgery. Most doctors start their patients on antibiotics before surgery so that the chances of infection are minimised. Other reasons for recurrent urinary tract infections include the growth of stones in some part of the bladder and urethra, or the development of some other obstruction causing an abnormal narrowing of the urethra or ureter, other problems such as vaginitis, cervicitis, pelvic inflammatory disease, prolapse of the uterus, diabetes, and so on. The problem associated with treating UTI is also because of the shame and taboo associated with the genital area.

Treatment:

Though cystitis can sometimes disappear temporarily without treatment, medical care is a must. It helps to drink plenty of water as this flushes some of the organisms out of the system.

Penetrative sex should be avoided, so also oral contraceptives, a CuT, jellies and foams. Normally a urine test is done. This is of two kinds. A routine test indicates if and how many pus cells are there. (Urine of all humans contain pus cells of about 3HPF. Above 5 HPF (High Power Field) is above normal, and above 10HPF definitely indicates infection.) A Culture and sensitivity test indicates whether bacteria is present, and to what drug it is sensitive. Treatment may begin immediately with a sulfa drug, though it is often delayed for a couple of days until the urine culture test can identify the offending bacteria and the drugs they are sensitive. A full cure may take two weeks, but the acute symptoms should disappear in a day or so.

Some home remedies found effective by many include three teaspoons a day, jeera (cummin) seeds crushed or put in water brought to boiling point and cooled —half a teaspoon a day, barley boiled in water and taken several times a day, sabza seeds (sherbet beeje) - a teaspoonful soaked in water overnight, and drunk the next morning. Of course none of this is a substitute for medicines, if there is an infection. Urinating and washing thoroughly after intercourse prevents infected urine from backing up into the bladder. A good general practice to prevent UTI is to drink lots of water and fluids, at least 10-12 glasses a day. Urinating frequently empties the bladder and makes room for more fluid; and the larger volume of fluid intake helps dilute the bacteria in the urine so that the infecting organism find it difficult to survive. Women who work outside the house, girls who go to school and college, women who are travelling find great difficulty in finding places to urinate. They thus drink less water so that there is less pressure to urinate. By allowing urine to accumulate, bladders get distended. When the bladder is full of concentrated urine, the pressure on it causes a reflex and provides the ideal conditions for a UTI to start.

Urinary tract infection in female children is also common. Babies as young as six months can get UTI. Babies should not be left on dirty floors with bare bottoms, young children should be taught to wash backwards from the vagina to the anus, children should be encouraged to drink more water and oftener, they should be discouraged to poke genital regions with foreign objects, and their panties can be changed more than once a day.

7.6. SEXUALLY TRANSMITTED DISEASES:

These are infections passed from one person to another during sex. These can also be passed from a pregnant woman to her baby before it is born or during childbirth. Though both men and women can get STDs, a woman stands a higher risk of infection because she can receive infected semen in her vagina, and which stays there too. Again as the reproductive parts - uterus, tube and ovaries are inside the body, it is difficult to see the symptoms of STD in a woman. Women, especially sex workers, also stand a higher risk because of the sexually subordinate role - she must have sex when her partner demands it, she has little control over her husband's sexual life with other women who may be infected.

The symptoms of an STD may be one or more of the following signs: unusual discharge from the vagina, pain in the lower abdomen, a rash, bump or sore on the genitals. If STDs are left untreated, they can cause infertility in both men and women, babies born too early, too small or blind, ectopic pregnancy, a lasting pain in the lower abdomen and later in life a possible cancer of the cervix.

Among the various types of STDs are -

Gonorrhea and Chlamydia: both are easy to cure if treated early.

The symptoms may range from yellow or green discharge from the vagina or anus, pain or burning while passing urine, fever, pain in the lower abdomen, pain or bleeding during sex or rarely, no signs at all.

Syphilis - the first sign is a small painless sore that can look like a pimple. This itself lasts only for a few days and then disappears. But the disease spreads throughout the body. Later, there may be sore throat, fever, rash (especially on the palms of the hands and soles of the feet) mouth sores or swollen joints. Sometimes even these signs disappear; without treatment, syphilis can cause heart disease, paralysis, mental illness and even death.

Chancroid - there may be one or more soft, painful sores on the genitals that bleed easily. There may also be fever.

Genital herpes - this sore can appear either on the genitals or on the mouth (not all herpes are spread by sex. Sometimes when there is a fever, sores on the mouth may appear.) The sores tingle and itch, and there may be small blisters that may burst and cause open sores on the genitals. There may also be fever, headache, body ache, chills.

Treatment: Except for herpes, and other viral STDs the others are treatable. Early treatment can mean permanent cure. Partners also have to be treated at the same time, and it may be better to abstain from sex till the treatment is over. Safe sex by using condoms is a good preventive for STDs. All sores on the genitals should be kept clean by washing everyday with soap and water and drying carefully.

The problems associated with genital STDs, is that most women tend to put off treatment. There is guilt, shame, worry and hope that by waiting, it may clear up by itself. Perceptions of society tend to embarrass women and delay explaining the symptoms to partners, families or doctors.

7.7. ACQUIRED IMMUNE DEFICIENCY SYNDROME (AIDS):

AIDS Much propaganda has been done about AIDS (Acquired Immune Deficiency Syndrome) - more than any other disease, though we really do not have complete information of its profile in India. AIDS is an STD caused by the HIV(Human Immunodeficiency Virus) virus that usually spreads through infected blood, semen, vaginal fluid gets into the body of another person. This can be through infected needles, blood and sex. There is no cure for HIV, but not all people who are HIV-positive (ie., who test positive for the virus) develop AIDS. It is like not all people with a TB bacillus actually get the disease. So HIV is the organism while AIDS is the disease. But a HIV positive person can pass on the virus to others without himself or herself suffering. It may be presumed that other conditions of health such as food intakes, general immunity etc.. might be important for AIDS to be established. The HIV virus attacks the immune system (the white blood cells) of the body, until the body cannot defend itself against germs anymore. It may take many years for the HIV virus to make the person sick. When the immune system gets so weak that the person can no longer resist common infections and illnesses, it is called AIDS.

Tests for HIV :

When HIV enters the body, a healthy person starts to make antibodies right away to fight the virus; so a HIV may show up 4-8 weeks later after infection sets in, but it may take upto 6 months to detect these in a blood test and it may be 3-10 years before the person actually gets the disease AIDS. Therefore a person feeling completely well may still test positive in the HIV test.

Due to AIDS, other infections set in. Diarrhoea may be caused by infections in the intestines, skin rashes, itching and allergic reactions, fungal infections, cancer of the blood or lymph nodes (Kaposi's sarcoma) manifesting in brown or purple patches on the mouth or skin, herpes (shingles), tuberculoses (AIDS patients are particularly vulnerable) pneumonia, mental confusion, etc.

The fear in India has been particularly directed against sex-workers who are seen to have been passing the HIV virus. Treatment is very often refused in hospitals many patient testing HIV positive. Blood banks are now screening blood donated or purchased for AIDS, though not as per regulations. Women are particularly at risk, just as they are for other STDs, both because they are sexually subordinate and because emergency childbirth problems necessitate blood transfusion.

7.8.REPRODUCTIVE TRACT INFECTIONS (RTI):

These are the most important problems of the reproductive organs. Infections can be of the vagina, cervix or uterus. Genital tract infections are fairly common (about 60 -70% of all women have them at one time or another).

Symptoms:

There may be pain, oozing out of pus- like fluid (commonly called white discharge) and sometimes bleeding. There would also be swelling and redness of the vagina. There may or may not be fever.

The symptoms of infections anywhere in the genital tract may be similar. This is because such infections tend to spread from one part of the genital tract to adjacent parts, so that the symptoms of one type of infection may be very like the symptoms of another. In some acute infections, however, there may be clear indications of the involvement of a specific organ: in the case of acute cervicitis, for instance, pain and bleeding during intercourse may help the doctor diagnose the condition. But again, if the infection has reached the stage where it is chronic, symptoms overlap. This is why, in reproductive tract infections, especially if they are chronic, a careful pelvic examination done by a competent person (using a speculum) is absolutely necessary to help locate the problem.

Infections of the vagina are called vaginitis or leucorrhea. These may be caused because of organisms around or inside the vagina—but cuts, abrasions or an irritation, (especially when little girls put fingers up or poke something into their vaginas) during childbirth or intercourse without enough lubrication, while wearing tampons, loose panties that bunch up and chafe the vulva, sanitary towels, especially after the period flow has become scant, by birth control pills that affect the acidity of the vagina, by taking antibiotics over a long period of time, and if these drugs have destroyed the 'friendly' bacteria in the vagina; diabetes or a pre-diabetic condition that has not been recognized and treated adequately, when general resistance is low because of lack of rest and sleep, loss of weight, or other infections, pregnancy or menopause (phases during which hormonal levels change and the acid/alkaline balance of the vagina is affected). The organisms that cause vaginitis are commonly Trichomonas vaginalis causing trichomoniasis and Candida albicans, a yeast fungus, causing moniliasis.

Infections of the cervix are called cervicitis. If acute cervicitis is neglected or becomes chronic in spite of treatment, it may linger leading to cervical erosion. (It is estimated that 95% of all women of child-bearing age have cervical erosions at one time or another). A cervical erosion is a large or small sore (benign lesion) that sometimes develops on the cervix beside its opening, visible only through a speculum. When the erosion is touched on a pelvic

examination, blood may appear in the discharge. The doctor must take a smear for microscopic exam called a pap smear. If the Pap smear shows abnormal cells (indicating cancer-like changes) in this smear, a biopsy may be recommended. This involves the removal of a bit of cervical tissue and its examination under a microscope.

An infection in the pelvic tract surrounding the uterus and tubes on the pelvis is called Pelvic Inflammatory Disease (PID). If the infection is in the lining of the uterus, it is called Endometritis, if in the fallopian tubes salpingitis, and if in the ovaries it is called oophoritis. PID may come on suddenly or may be a nagging presence. When it comes on suddenly, the symptoms of PID are: acute pain in the lower part of the abdomen, high fever with chills, and even cramps. If there is a sudden flow of smelly white discharge, severe pain in the pelvic area, fever, burning in passing urine alongwith an inability to stand up straight or move freely - and especially if these come on after an abortion, insertion of an IUD, MTP, other surgery or after delivery or even intercourse with a new partner, then it is PID. PID is very common with home abortions in villages where doctors are not available or refuse to abort. A similar situation occurs when IUDs are introduced irresponsibly after an MTP, delivery or in the presence of an infection.

When PID comes on gradually, the symptoms generally include deep, severe pain during intercourse and/or during period; irregular bleeding (with clots or an unusually heavy flow) and occasional sharp lower-abdominal pain. There may be nausea, cramps, maybe fever or may come down with a urinary tract infection or a gastrointestinal upset at the same time.

Treatment:

Infections must be treated and home remedies, may also be used in the case of vagnitis but serious reproductive tract infections are associated with a range of problems from PID to infertility, and it is important that they be treated medically. White discharge after sex, particularly with a new partner, after delivery, abortion, surgery or in case of IUD users should not be ignored.

A large number of gynaecologists label 50% of genital tract infections as 'non-specific' because they are not able to locate an organism. Not enough research goes into the unglamorous area of reproductive tract illnesses, and treating them is a genuinely difficult affair. Treatment is important because there is a possible link with cervical cancer. Cancer of the cervix is the major form of cancer among Indian women and it affects them very early in life. One explanation of this is that chronic infections of the cervix and vagina act as constant irritants leading to the formation of cancerous tissue in the cervix. It is advisable to have a Pap smear regularly after the age of 35 years. Treatment should always be for both partners. Alternative traditional remedies for mild vaginitis are curd and garlic pessaries.

Prevention includes washing and wiping dry, wearing cotton only next to the genital area and washing always from the vagina towards the anus.

Severe cervical erosion will be treated with cauterization of the affected tissue after 1 or 2 courses of antibiotics. Cauterizing involves burning the erosion with a hot, pointed instrument or a strong chemical (a chemical sustance such as silver nitrate sticks). There is also a freezing technique (cryocautery) which involves the use of substances like liquid nitrogen or carbondioxide, which have very low temperatures (-186°C and -78° C respectively). Where there is still no improvement conization may be necessary. This requires hospitalization for 10-12 days and involves the removal of a cone-shaped bit of the cervical tissue affected by the erosion (a'coring-out'). A D & C (Dilatation and Curettage) usually accompanies this procedure.

7.9. OTHER COMMON REPRODUCTIVE TRACT PROBLEMS :

7.9.1. Prolapse :

20% of all admissions to gynaecology wards of Government hospitals are for the treatment of prolapse. Prolapse is the gradual descent of the uterus into the vagina due to the sagging support structure of the pelvic floor muscles. If the uterus continues to sag, it may even be visible outside the vagina. Prolapse is often accompanied by urinary incontinence, repeated urinary tract infections, back pain, white discharge and soreness and burning around the vulva, difficulty in walking and nausea. Since the cervix is not held in place, but rubs against the walls of the vagina or even, if it has descended far enough, against the thighs or the surfaces sat on, it can get thick and ulcerated.

Causes of Prolapse:

The ligaments and pelvic floor muscles which keep the uterus in place may be weakened, stretched or torn by a pregnancy or a difficult and prolonged labour; an abnormally short ('precipitate') labour or a forceps delivery, which allows no time for the muscles and ligaments to stretch gradually, chronic malnutrition, atrophy (shrinkage and wasting) following menopause, due to oestrogen deficiency and other unknown reasons.

In India more poor women than middle class women suffer from prolapse and it would seem logical to suppose that there is a connection between this condition and malnutrition or strenuous physical work. Forced penetrative sex can also damage the nerve endings and the muscles of the perineum. Stress caused by the demands made on a new mother hinder healing of the tissues and recovery of the tone of the perineal muscles. Obesity, a chronic cough or constipation which increase the pressure on the abdomen,can also retard the

healing of the torn or weakened muscles and ligaments around the uterus. Weak and inelastic ligaments and perineal muscles may also be associated with lack of the right kind of exercise. Women in India are rarely encouraged to vigorous exercise.

Treatment:

A mild prolapse can be helped by strengthening weak perineal muscles by exercise, avoiding carrying heavy objects, having a bad or chronic cough treated; also any other condition that increases intra-abdominal pressure, reducing weight if overweight. If the prolapse has reached the stage where the uterus is coming out of the vagina, treatment options depend on whether the woman is still in her child-bearing years. If so, a pessary ring may be inserted to support the prolapse. But this is temporary measure and has many problems. Reconstructive surgery or repair of the perineum to tighten the ligaments and prevent the uterus from dropping can also be done if the prolapse is not too serious to correct. If the prolapse is severe, a hysterectomy may need to be done.

Preventing Prolapse:

Uterine prolapse occurs very rarely in women in the First world and Eastern block countries, and very frequently in ours. A special concern for the nutrition, space and clothing, exercise and rest, guidance and care that our girl children get makes the difference. A protein-rich diet is vital for the creation of muscles that do not wear out during pregnancy and labour. Vigorous exercises—in games, sports, swimming, running, skipping and so on, tighten up and strengthen abdominal and perineal muscles.

7.9.2. Fibroids:

These are growths of muscle in the uterus. 20-25% of women in reproductive years have fibroids, yet these rarely interfere in normal bodily functions. As small fibroids are symptom-free,they are generally diagnosed when a pelvic examination is done for symptoms such as bleeding and white discharge or, when a suspected pregnancy reveals that the uterus has a characteristic swelling, which is quite unlike a pregnancy. Some of us have had fibroids diagnosed because of an abortion or heavy bleeding like DUB. Most fibroids are usually benign and slow to develop. The very small percentage that are cancerous can be identified early with a pap smear and other tests.

There is no need to rush through the tests or surgery, since fibroids don't present an emergency except in the very remote possibility of one of them getting twisted. While most fibroids are symptom-free,troublesome fibroids have similar symptoms as those of certain other conditions. These are swelling in the abdomen, breathlessness, incontinence, bleeding, infertility, pain in the abdomen, etc.If you have fibroids when you are young, the doctor will rule out :

a) a pregnancy which is threatening to abort, causing bleeding

b) an ectopic pregnancy which is rupturing the tube (see Ectopic Pregnancy under

Complications in Pregnancy)

c) endometriosis which can cause severe pain and is accompanied by infertility. The uterus may feel bulky in this condition. A laparoscopic exploratory procedure can help detect this problem.

d) PID (see this heading) also makes one feel heavy and causes pain. If PID is detected as well as fibroids, the former will be treated before surgery is contemplated.

e) Infertility : If you have fibroids when you are around 40,then these should be ruled out

   a. DUB - Dysfunctional Uterine Bleeding
   b. Cancer

Why do fibroids grow?

Even the medical profession is not sure. It is speculated that fibroids seem to be common in those of us who have had only one or two children or none at all. It is believed that when a woman does not conceive over a great many cycles, her uterus slowly loses its ability to shed the thickened lining completely each month. This sometimes results in fibroid growth. Estrogen secretion may be a factor in causing fibroids to develop, which is why it is believed that they hardly occur in prepubertal girls. And since estrogen levels in the body fall during menopause, fibroids start shrinking in most women when they reach this phase.

Fibroids may run in families also.

Fibroids usually appear in small bunches but some of us can have as many as 20 to 30 fibroids at a time. They could be as small as marbles or pebbles, or be large enough to weigh 1/2 -2 kg. In some of us they are lodged in the uterine muscle-wall; in some others, they project out of the uterus into the pelvic cavity. Fibroids that grow on the wall of the uterus can protrude into the abdomen or press up against other organs. If they push against the rectum or bladder, they can lead to urinary tract infections. They are rarely painful in themselves, though they may produce a heavy feeling in the abdomen.

In those of us who are young, fibroids are generally too small to cause problems. Some of us have gone through a normal pregnancy with a fibroid. Of course, it was possible because the doctors monitored the baby and the fibroid closely for 9 months. However they can occasionally interfere with pregnancy by blocking the tubes, by causing abortions, or by making a normal delivery difficult. In older women, they may get large enough to cause menstrual irregularities—either bleeding between periods or an excessive flow during the period. Fibroids can increase or regress in size in women on the pill, and in pregnant women; they probably go back to their earlier size after the birth of the baby. If your fibroids were

discovered after your forties and you were symptom-free, there is usually nothing to worry about, since menopause automatically shrinks fibroids.

Diagnosis and Treatment:

The clinching diagnosis of a fibroid is through a ultrasound scan,laparascopy or a D&C. Fibroids are measured in terms of weeks of pregnancy, and a fibroid larger than '12 weeks' should be removed.

Removal of such large fibroids is by

a. **Myomectomy:** a surgical procedure which leaves the uterus itself intact.

b. **Hysterectomy:** Occasionally, these growths reach troublesome proportions, and infiltrate the tissues of the uterus—i.e., they become fused with the uterine wall. In such cases, the uterus itself may have to be removed (See Chapter on **Hysterectomy**)

Women may not influence one's decision about having an operation. **Fibroids almost never become cancerous, so fear of cancer need have to undergo surgery if:**

a. Women have **uncontrolled bleeding** that is not amenable to treatment with a D & C or with calcium supplements: Such bleeding can lead to severe anaemia, which can itself be terribly exhausting and difficult to cope with. If the women is young and planning to have a baby, the bleeding and the anaemia can impose additional burdens and dangers on her body. A myomectomy can be done if she want's children; but if the fibroid has completely occupied the uterine cavity, a hysterectomy may have to be done.

b. There is **infertility** resulting from the fibroid's blocking the mouths of the fallopian tubes (where they open into the uterus). The (fertilized) egg obviously cannot enter the uterus, and conception is impossible. Sometimes, even after conception takes place, the growth may press upon the growing foetus and prevent the pregnancy from reaching full term. A myomectomy may help if the uterus has not been affected by the growth and if there are no other causes for the infertility. After the operation, the chances of a successful pregnancy and childbirth become brighter.

c. In some women, the fibroid grows at a very rapid pace, causing **pressure symptoms** in the pelvis. Pressure on the ureter or on the bladder can lead to urinary tract infection (any blocking of the urine flow from outside such as that caused by a growth; or from inside, such as that due to a stone, can cause urine stagnation and infection). Pressure on the rectum and bladder can also cause constipation and can make one feel heavy in the pelvic region.

d. Sometimes, the fibroid can become so immense as to weigh a few kilograms and make the abdomen bulge. This can be embarrassing and uncomfortable. Removing the fibroid can be, in such cases, areal load off one's front!

e. Sudden abdominal pain as a result of the fibroid twisting around itself. In extremely

rare cases, the torsion of the fibroid constricts its own blood supply, and it becomes blue and begins to swell. (This is for the same reason as your finger might become painful, swollen, blue and even gangrenous if you tie a piece of string around it, tight enough to cut off circulation.) This is an emergency and requires immediate removal of the uterus. Another rare emergency situation that calls for surgery is when the fibroid ruptures inside the abdomen, causing internal bleeding.

7.9.3. Heavy Bleeding (menorrhagia) or Dysfunctional Uterine Bleeding (DUB):

Any continous or excessive bleeding with no known cause, continuing over several cycles is termed dysfunctional uterine bleeding (DUB). DUB can sometimes occur during adolescence (when it is called pubertal DUB). It can start after a delivery or an abortion, or around menopause. The increase in bleeding sometimes sets in gradually over a few months, and sometimes quite suddenly. Heavy bleeding can be extremely exhausting, sometimes causing dizziness, faintness, severe headaches or blackouts. These are usually symptoms of the anaemia that results from unchecked blood loss; a loss that is particularly serious if it is not compensated for by extra iron- rich foods.

Causes of Dysfunctional Bleeding :

Heavy bleeding is often associated with anaemia, which can be both its cause and its effect. Treatment for anaemia may decrease the bleeding in some. It definitely helps to reduce symptoms of giddiness and contributes to general health and resilience. A Dilation and Curettage (D & C - which involves scraping the endometrium, is both a diagnostic tool (when the scraped tissue is examined under a microscope) and a way of removing endometrial tissue that has accumulated over months. A D & C will show up if there are fibroids, polyps (small thickening of a part of the uterine wall: curettage will remove the polyp and cure the DUB, the state of the endometrium, whether it is ovulatory or anovulatory, the presence of a chronic infection like TB, endometriosis, etc., a thickened endometrium) (called benign hyperplasia or atrophied endometrium) curettage can remove this mass of bleeding tissue, any other growth. DUB usually runs in families.

During the ages between twenty and thirty five years possible causes of heavy bleeding may be due to a first period after an abortion or pregnancy, hormone injections (estrogen to treat skin problems, Net-en contraceptives, etc.) infections or an IUD.

Treatment:

Spontaneous correction of the cycle sometimes occurs in adolescence; but DUB during menopause is more persistent and difficult to cure, a D & C often helps reduce bleeding, but it may have to be repeated. Hormones (Estrogen-progesterone preparations like the

combination pill) may be given for 3 cycles and are usually effective in controlling bleeding in young women. They are contraindicated for women going through menopause, especially if they are hypertensive. Women in their forties, planning to undergo surgery, are now given progesterones (instead of a combination of estrogens and progesterones). For the forty- plus age group, it may be treated with a D&C or limited hormone therapy or possibly hysterectomy. DUB after menopause (around the 50-60 age group) should not be ignored.It suggests some infection or most probably growth (usually cancer) in the uterus. Hysterectomy has to be considered as a last resort for those who do not get relief with hormonal treatment or a D & C.

For the young girl to whom menstruation itself and coping with it is something new, pubertal DUB is particularly upsetting. Carrying enough pads to school, getting to change and dispose of them in the breaks, managing with the usual dirty bathrooms at school, changing and washing of stained underwear (very frequent) and the tiredness so unusual for this age - this has to be learnt to live with for a period of time till cure is effected. The cure, if there the blood test indicates normalcy (no blood clotting, etc.) is largely rest, good diet, and iron. In more severe cases, a month or two of oestrogen tablets may be prescribed. For older women too who are caring for grandchildren, DUB is difficult to manage. Embarassment is common for having 'reproductive health problems' after having finished with babies and childbearing.

7.9.4. Endometriosis:

This occurs when some of the endometrium (the tissue lining the uterus) grows in other parts of the body usually in the pelvic area on the ovaries, tubes, cavities around the uterus etc. These growths respond to the hormones of the menstrual cycle and acting like miniature wombs swell up and break down every month, causing bleeding. Internal bleeding, inflammation, and cysts and scar tissue result.

Symptoms:

There may be severe pelvic pain during menstruation and/or sex,DUB, tiredness, lower back pain, diarrhoea and painful bowel movements during periods and infertility.

Diagnosis:

Though doctors can sometimes feel endometrial growths during a pelvic exam, a laparascopy can give a definitive diagnosis. As the symptoms of endometriosis can be confused with those of PID, ectopic pregnancy, cysts, cancer, etc. diagnosis has to be systematic to rule out these.

Treatment:

This may consist of hormone therapy (this is to stop the ovaries from functioning and producing oestrogen, and also to stop menstruation- in effect, this leads to premature menopause - getting hot flushes, etc.) Surgery involves scraping or cutting the growths, cauterizing them, and in the rare case, hysterectomy.

7.10. SUMMARY

The subject of gynecological problems is complex. In the present set up it is not a pure "medical problem". the conditions like infections, prolapse, DUB, and even fibriod are rarely discussed. Most of these are well kept secrets till such time that they become a major crisis. We know of women who bleed most of the month and yet would not think of seeing a doctor. There is still no legitimacy or support for the treatment of gynaecological problems. In addition women tend to ignore their own needs, in a family where the children, the old and the husband need care. This section has tried to place before you some of the most important illnesses and the need to discuss these with women.

7.11. MODEL EXAMINATION QUESTIONS:

I. Answer the following in 30 lines.
   a. Describe a normal menstrual cycle
   b. Urinary tract infection, describe the problem and write about prevention.
   c. Fibriods - symptoms, complications and care.

II. Answer the following in 15 lines.
   a. Heavy bleeding (DUB)
   b. AIDS
   c. Menopause
   d. Prolapse
   e. Endometriosis
   f. Hysterectomy

7.12. GLOSSARY

a. **Anatomy** - The science of the structure of the animal body and the relation of its parts (it is largely based on dissection from which it obtains its name (ana + (Greek) tennin - to cut).

b. **Physiology** - The science which deals with the basic processes of the functioning of the various organs of the body e.g. physiology of respiration, digestion etc..

c. **Fertilization** - Fusion of an egg with a male sperm to form the future offspring. In humans usually takes place in the female fallopian tubes.

c. **Fertilization** - Fusion of an egg with a male sperm to form the future offspring. In humans usually takes place in the female fallopian tubes.

d. **Urinary tract infection** - Invasion and multiplication of microorganisms in tissues of urinary tract like urethra, bladder and even the kidney giving rise to symptoms.

e. **Microscopic exam** - Examination under or observation by means of the microscope. (i.e. as a instrument used to obtain as enlarged image of small objects and reveal details of structure not otherwise distinguishable.

f. **Pessary** - 1. A medicinal tablet which is to be inserted in the vagina either for the treatment of infections. Also called 'suppoitary'.

2. An instrument placed in the vagina to support the uterus or rectum or as a contraceptive device.

7.13. RECOMMENDED BOOKS

1. David Werner, *Vaidyudu leni chota, (in Telugu) Publ. Hyderabad Book Trust,* Hyderabad. 2000.
2. Veena Shatrugna, K. Lalita, Shyama Narang, Uma Maheshwari, Gita Ramaswami and others. *Savalaksha Sandehalu, Streelu - Arogya Samasyalu (in Telugu), Publ. Hyderabad Book Trust*, Hyderabad. 1998.
3. Jane Maxwell and others. *Manuku doctor leni chota (in Telugu), Publ. Hyderabad Book Trust*, Hyderabad. 1998.
4. *The New Our Bodies, Ourselves, The Boston Women's Health Book Collective, Publ. Simon & Schuster,* New York, London, 1992.

UNIT - 8 : PREGNANCY AND RELATED PROBLEMS

8.0. OBJECTIVES:

After going through this unit you will be able to understand the

- Complications in Pregnancy
- Medicines during Pregnancy and lactation

8.1. INTRODUCTION:

Pregnancy does seem a natural event to most people. Today however when many dislocations with traditional practices have taken place, we need to discuss pregnancy, childbirth, and life with the baby and complications that can occur during all these processes. In addition modern medicine in the urban areas has made pregnancy safe for most women.

With the knowledge of contraception, pregnancies are being planned; yet the pressure to be a mother remains on all women. With alternative lifestyles emerging, and the critiques of the feminist movement, this pressure is being questioned. Motherhood is generally considered one of the most important dimensions of a woman's life, even the primary focus. Women are told that femininity is complete only with motherhood. Untold but diffuse pressure pervades women's lives - through the eyes of dear ones, through literature and the media, through advertisements, through the centrality of the family in everyday life.

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Young married women are never told the difficult stories of parenthood. The problem is the difficulty, given the glow that surrounds motherhood, to acknowledge, express and find ways of dealing with negative experience of motherhood: the sleepless nights, the constant and not-negotiable demand for our time and attention, the expense, the difficulty of managing careers alongside parenting: the sudden discovery that even a supportive partner can "disappear" while the mother is left with a permanent responsibility. This leads to a real lack of choice for women to really have say in the matter of whether or not they would like to conceive and go through a pregnancy. In most families no one tells a young bride about sex or contraception. There is no question then of planning a pregnancy. Quite a few women get pregnant accidentally. Somehow, children have been perceived, at some time or the other, as the only assured source of social, economic and emotional support.

Pregnant women have important needs. Society and Government have the responsibility to provide the resources necessary for women to have healthy pregnancies and births. The need for sufficient resources, financial security and the support of friends and family; a safe environment; adequate food, rest and exercise; a skilled, trusted and sensitive doctor ; a comfortable and safe place of birth and continuity of care. When the birth rate drops, we see Western countries take drastic steps to encourage women to have children. Yet, in normal practice, though there are Constitutional directives, all support to parenthood has to be personally mobilized.

Pregnancies in India:

A majority of India's women bear their first child when their bodies and lives are yet unprepared for it. At a tender age, just entering adolescence, they are sent to the husband's homes to begin life anew in a different milieu and culture, and to consummate the marriage and bear children. It is surprising that at the age of 16-18 they are expected to handle so many changes single handed, changes in residence, new companies and environment which may even be hostile. A pregnancy at this usually adds to the stress. The share of maternal deaths from toxaemia and infections is higher for mothers in this age-group; these mothers also face considerable health risk from abortion, anaemia and bleeding. For mothers under 18 years, the pelvis may not be wide enough to allow the baby to pass through easily, and results in very difficult and prolonged labour.

This section helps you think of pregnancy in the context of women's lives where they have special needs, and where the birth of an infant brings about sea-changes in the lives of the mothers.

It helps you follow a normal pregnancy through its stages to childbirth and after. The section describes what the medical profession does not find important. It links up the medical with the social. The complications during pregnancy are given, because it is important to recognize that pregnancy is not always "normal". Problems with medicines during pregnancy are also discussed.

8.2. PREGNANCY TESTS :

The first sign of pregnancy is usually the missed period. Sometimes nausea may accompany it. Again, if the menstrual cycle is not regular, and there are no clear physical signs, the woman may not know for quite some time that she is pregnant. A urine test (HCG) is the simplest method of confirming the pregnancy. HCG or Human Chronic Gonadotropin is a hormone found in the growing embryo. The urine of pregnant women usually contains this hormone. For the HCG test, a drop of urine sample is placed on a slide, and a few drops of a reagent are added to it. If the mixture does not solidify, but remains separate, it indicates the presence of HCG in the urine, and consequently pregnancy. Since sufficient quantities of the hormone does not appear in the urine until about 10 days after conception, this test is normally done two weeks after the missed period. The test costs between Rs. 50 - 100, and gives correct results in 98% of cases.

a) **The pelvic examination** : When doctors do an examination they look for changes in the reproductive tract that indicate pregnancy. Within about two months of pregnancy, the cervix will have become much softer than usual; it will also have changed colour (from pink to deep blue) because of the extra blood supply to the uterus. The uterus itself will have become soft and have taken on a bulky shape.

b) **Ultrasound** : Intermittent high-frequency sound waves create pictures of the body's inner organs by recording their echoes, the procedure being done abdominally. The doctor runs the transducer (looks like a stick) back and forth over the abdomen, and a computer translates the resulting echoes into pictures on a video screen alongside. In towns, this is being widely used, but not enough is known about its long-term effects, especially during early pregnancy. Ultrasound however has proved extremely useful and life-saving in problem cases where a pelvic exam cannot be done or where it cannot reveal sufficient information about the growing foetus.

8.3. NORMAL PREGNANCY:

After confirmation of the pregnancy, a complete physical examination needs to be done. Many women, especially in the rural areas, seem to have had healthy deliveries and babies, without medical care-the percentage being as high as 80-90%. Yet competent physical examination can detect life-threatening complications like placenta previa (placenta attached to the uterine wall down below) and other problems like anaemia, BP, diabetes, etc. can be treated. Problems during pregnancy and childbirth still remains the single largest killer of women in India. While women who can, prefer to visit private doctors, it may be useful to visit the doctor in the local maternity Govt. hospital, as the opinions of the Government doctors are nearly always more thorough than at the private nursing home, mainly because the medical personnel are better trained and more experienced. Health activists and women's groups, while organising against the inefficiency and corruption in the Government set-up now recognise greater dangers in the totally-for-profit private set-up. The Govt. doctors have more varied experience and equipment for an emergency is assured. Private nursing homes also often perform unnecessary caesarian sections, both because the doctor is not on call, and comes only at a fixed time, and also because the profit on an operation is far more than on an ordinary delivery. Caesarians at nursing homes account for over 25% of all deliveries, while it is only 7% for the rest of India (those who deliver at home, at Government. hospitals, etc.)

Medical history includes the state of general health; menstrual patterns; the last menstrual period, the number of children the woman has had; earlier abortions if any; illnesses medication used for them. Also included is a record of any chronic diseases (conditions affecting the heart or the kidneys, and problems like diabetes, high blood pressure, anaemia, epilepsy and so on) that runs in the family, complications in earlier pregnancies (such as, for instance, an abortion, still-birth, PID, etc.) a caesarean section during an earlier delivery. Tests in Pregnancy: On the first visit to the doctor, the following tests are done :

1. Weight, height, and blood pressure checks
2. A urine analysis for albumen and sugar
3. Clinical test for signs of anaemia and haemoglobin levels
4. Abdominal and perhaps a pelvic examination
5. A complete physical exam—heart and lungs included.

On subsequent visits, weight, blood pressure, albumen in urine, and an abdominal examination is done.

Some tests usually need to be done only once in the first three months are the VDRL test to rule out syphilis, a complete blood examination (including blood count of red and white cells, blood urea, blood sugar, etc.) blood-grouping and Rh tests, and a complete urine analysis.

An older woman past 40 years with a first pregnancy, or a woman with a medical history indicating that the child could have problems may be recommended an amniocentesis or other special tests. Amniocentesis is used to reveal chromosomal conditions and other metabolic and biochemical disorders in the foetus. A long thin needle is inserted through the abdominal wall to draw about 4 teaspoons of amniotic fluid. While this may reveal any abnormality, it also has a small risk of miscarriage/abortion. (More well-known is that amniocentesis is now commonly used all over India to test the sex of the baby, and abort if it is female. An Act passed by the Govt. of India, the Pre-natal Diagnostic Techniques (Regulation and Prevention of Misuse) Act, 1994, prohibits the doctor to communicate the sex of the foetus to the pregnant woman or her family. However as all acts go, it is only as good as its enforcement.

The AFP (Alpha-fetoprotein) test is a blood test which gives some indication of spina bifida, a spinal disorder of the foetus. Although the blood test itself is routine, the results are difficult to interpret. Further tests such as ultrasound or amniocentesis may be needed to confirm the findings if positive. Taking care during pregnancy does not of course mean stopping doing routine work; but anything unduly stressful needs to be avoided. This includes carrying heavy loads or washing too many clothes. Light exercise and brisk walking may be good if the woman has a sedentary life. Deep breathing and relaxation while resting helps Exercises that develop the pelvic floor muscles will help during childbirth. Squatting helps if the mother doesn't normally sit on the floor, spend a few minutes to half an hour squatting either cross-legged or with feet pressed against each other, with back straight. Strong perineal muscles will help stay in control during second stage labour; squatting stretches the muscles in the pelvic area and makes for easier childbirth. A correct posture is vital to prevent backache, something most women suffer from as their pregnancies progress.

A good diet is an important aspect of taking care. Of course, most women who eat a fairly balanced diet normally will not need much special nutritional attention during pregnancy. A point to remember is that it should make no difference to the nutrition whether it is the first baby or the third. In India, 30% of women do not get sufficient and nutritious food during their pregnancies and they give birth to weak babies. This is true of 40-50% of women in rural areas and also of a large number of women among the urban poor. Reasons for a poor diet among poorer women of course include general poverty. Other reasons may be the habit of eating after everybody else and conforming the roles of ideal women. If there is nausea, eating whatever is liked and can be kept down is sensible.

In the middle and upper classes in our country, women are sometimes encouraged to overeat (especially fats like ghee and butter) during pregnancy. They end up putting on an enormous amount of weight, which they cannot easily shed after the delivery. Overeating is not healthy.

A sensible diet for a pregnant woman would contain about two to three cups of cooked rice, or of 6-8 rotis, and about a cup of dal with vegetables every day. We usually add enough fat

while cooking a meal, and the consumption of ghee or oil can be kept to within about 4-6 teaspoons a day. Extra protein is required in pregnancy and this can be in the form of an egg or two, and a serving of meat or fish, to the daily diet. Liver and bone soup helps too. For strict vegetarians, extra dal, peanuts, chana, etc. could be added. The diet must include plenty of milk and curds, cheese or paneer, which supply calcium and protein; dark green and leafy vegetables, which supply iron; at least one or two. Other vegetables for vitamins, minerals and fibre; fruits—citrus or bananas or any other, which supply vitamins. Dried fruits, if they can be afforded, are iron-rich and help prevent constipation.

Plenty of waterat least eight glasses a day is important for digestion, for maintaining the blood circulation, and for the prevention of urinary tract infections. Other drinks like fruit juice, etc. help though bottled drinks, and too many cups of tea and coffee can be avoided. It is difficult especially to get enough iron and folic acid from the regular diet, so supplements are routinely prescribed for pregnant women. The mother's requirement of iron increases during pregnancy because the baby needs to store up a reserve of iron in its liver to be used until it is weaned. To do this, it takes iron from the mother's body. Iron is also needed for the increased blood volume, for growth of the uterus, the baby and its formation, and for its blood. Many women suffer from iron deficiency even before pregnancy. Naturally supplementation during pregnancy is important in the form of iron tablets. Calcium deficiency can cause sleeplessness, irritability, muscle cramps, nerve pain, pain in the uterine ligaments. However, calcium from milk is superior to what is available in tablets.

The trimesters of pregnancy - approximately three months each have different physical changes. In the first trimester, some may tire very easily. As the milk glands in your breasts begin to grow, breasts will swell and may feel tender or painful. Nausea is common, may be because of the stepped-up rate of oestrogen production. It is best combated by eating anything in small quantities and at frequent intervals, except hot fried curries, very oily or masala-saturated dishes, as they tend to upset delicate stomachs. There may also be increased urination as also chances of a urinary tract infection. It is sensible to be aware of the risk of infection all the time and drink several glasses of water a day as a preventive measure.

It should also be kept in mind that pelvic examinations should not be done often; any sudden bleeding should be investigated at once, because bleeding can threaten the foetus; particular care should be taken with drugs or medicines: almost all of them can affect the foetus, which is especially vulnerable in the first three months. If possible, it is best to avoid all medicines in this period, smoking, alcohol, all radiation (X-rays), and all forms of stress. Intercourse during this period should be gentle, perhaps infrequent, or else, penetrative sex could be avoided. There is evidence that women who work in the rice fields on jobs like transplanting, etc that require a bent posture, have a higher rate of abortion in the 1-6 months.

What is happening inside the uterus? Not much is known about this process; the foetus lies suspended in the amniotic sac, inside the uterine cavity. Its development is aided by the placenta, which is attached to the uterine wall; from it run the three major blood-vessels that will bring essential substances to the foetus. The blood vessels are held in the 'body stalk' which later lengthens and develops into the umbilical cord, the baby's lifeline until birth. Throughout yur pregnancy, the foetus is surrounded by amniotic fluid, which consists largely of fluid secreted by the foetus itself. This fluid acts as a cushion against physical shocks, protects the umbilical cord, allows foetal movement and helps in eliminating wastes from the foetal body. In the second month, there is the formation of a rudimentary skeleton, a heart and the beginnings of a circulatory system, a brain and the elements of a nervous system, other internal organs including the liver and kidneys, facial features, and limb 'buds' that will eventually become arms and legs. The total weight of the embryo at this stage is about two grams. In the third month, all the features that started appearing in the second month acquire definition. Limb growth continues, fingers and toes begin to be differentiated, the neck is formed, allowing the head to move. The sexual organs are formed. From now on, it is a matter of change in size—the foetus will grow seven or eight times its present size in the remaining six months, and its organs will become mature enough to allow survival outside the mother's body. For most women, the second trimester is the best period of pregnancy, especially after nausea has disappeared. Since the foetus weight starts increasing appreciably in the fourth month, the belly begins to grow. More blood than usual is being carried in the circulatory system. Oedema or swelling of the face and extremities is a fairly common consequence of the increased fluid volume in the body. However fluids should not be reduced; putting the feet up as often as possible helps.

There may be constipation; increasing the intake of fibre (fruits and fresh vegetables) and fluids may help. There may also be varicose veins and other forms of circulatory upsets. Walking also helps improve circulation. Breasts feel heavier. Washing the area clean everyday with water and a mild soap is necessary as also massaging the nipples to help breasted more easily. Very often, women suffer from sore, cracked nipples after delivery. Nursing can then be a nightmare for the first few weeks after delivery.

Most women feel tired. Rest helps. Women should also watch out for bleeding. If the belly swells faster than normal, there may be twins. Or it may be the first signs of Hydramnios. Women who are diabetic, hypertensive, have kidney problems or Hydramnios should be especially attentive to signs of increased blood pressure. A sudden headache, pain in the chest, and puffiness of the hands and feet are classic signs of toxaemia, and should be reported to your doctor immediately.

The foetus is fully formed by the third month. After this, it is a matter of each organ maturing sufficiently to allow the baby to survive outside the womb. The foetus grows to several times its earlier size and takes on a much more 'human' appearance than before. The baby will

also be moving; the mother may notice the quickening taking place and the movement occurs in regular patterns. The brain also enters a period of rapid development which will go on, after birth, until the child is in its fourth or fifth year. Good nutrition in the last few months of pregnancy helps this growth-spurt take place.

In the third trimester, the uterus is now a big, hard mass; the skin over the abdomen is stretched and the baby's movements are visible to experienced eyes from the outside. Other organs are getting displaced too: the diaphragm is pushed upwards by almost an inch. This causes breathlessness. The foetus moves all the time, becoming particularly restless if the mother hasn't eaten for some time, or is excited by something. The movements may sometimes be alarming, and may disrupt sleep-routine; then it may quieten down for unexpectedly long stretches—even 3-4 days; this may not mean anything. If a quiet period goes on for longer than this, it has to be reported to the doctor. The foetus is probably settled by now in the position in which it will be born, the normal position being with its head down, near the birth canal, and its face turned towards the back. If there are contractions and they are continuous, it may be an indication of what is called an 'irritable uterus' and there is the possibility of a premature delivery. This calls for immediate rest. One of the signs of the approaching delivery is the 'engagement' of the baby's head; i.e., its descent into the birth canal. This may happen, especially in a first pregnancy, as early as the seventh month, or any time after this, upto around two weeks before the birth. This eases up the breathing considerably, though it doesn't do anything for any other difficulties the mother may have had. Warning points are bleeding, vision-disturbances, headaches or chest pain signalling a change in blood pressure, if the baby stops moving in the womb for a few days, if in the last stages of the pregnancy the amniotic sac upturns and the fluid runs out of the vagina.

By the seventh month, with today's technology, a foetus is theoretically mature enough to survive outside the uterus. Around the fortieth week of the pregnancy, it reaches full physical maturity; its head is engaged; it is ready for birth.

8.4. CHILDBIRTH :

If, in hospital, the baby is born in the bleak, solitary environment of the maternity room. The procedures are strange, 'prep' or shaving is rough, and there is not much information and control by the patient over the rhythm and processes of childbirth, one's private parts are poked and prodded by a host of unknown nurses and doctors. Also, especially for those with complications, there is a lack of control over crucial decisions. The indifference and unhelpful attitudes of medical staff in obstetric wards has also been remarked upon. This is more so in Government hospitals than in private nursing homes, and again, middle-class women are not as badly treated as the poor.

Medical intervention usually means tubes, drugs, machines and instruments, some of them unnecessary, some of them even dangerous, some of them unknown. Discussion among health activists and women's groups are centering around the invasive, sometimes dangerous procedures around child-birth - unnecessary caesareans, unnecessary forceps, unnecessary episiotomies. (Of course the use of a forceps or of a surgical procedure at the right time has also saved lives). Doctors learn their skills in a framework that has no room for the patient's emotions and anxieties, and even less respect for the woman's own needs. In their framework, women can tolerate all pain and discomfort.

Labour: The signs and stages:

Labour is the process by which the baby, the placenta, the foetal membranes and the amniotic fluid are all expelled from the uterus. Before labour sets, there may be warning signs : a pinkish or red stain from the vagina (the rupture of the mucus plug, which is a membrane that acts as a lid on the cervix. This 'plug' has the function of protecting the uterus from infection by blocking the entry of bacteria from the vaginal canal); a loosening of the bowels or a sensation of their loosening (natural mechanism by which the body guards against pressure (from the bowels) on the birth canal during the delivery); there may be cramp-like pain in the lower abdomen; breaking of the 'waters'- the amniotic fluid. This is the stage where most women not delivering at home, are taken to the hospital. The first stage of labour is the longest part of labour, when the cervix does the difficult work of dilating sufficiently to allow the baby's head to pass through into the vagina. It may last from 2 - 12 hours, depending on whether it is the first or a subsequent pregnancy, on the size of the baby, its position in the womb, the relation between the mother's pelvic girth and the baby's head, the position of the uterus and so on. A first delivery usually takes longer than subsequent ones.

The first contractions are irregular and fairly mild; they may occur at intervals of five to twenty minutes. If the woman has been given an enema, the pains may intensify and become more rhythmic, the intervals between contractions getting shorter (two to four minutes). Relaxation is important at this point. Not only does relaxation allow more oxygen to the straining muscles, but it also releases the body's built-in painkiller, a substance called beta-endorphins which help control the pain. The most strenuous stage of labour is when the cervical dilation increases from about 5cms. to its full capacity—8 to 10cms. The contractions last between a minute and ninety seconds, and the intervals become very short—less than a minute.

The second stage begins when the baby's head is ready to emerge from the fully dilated cervix and ends with the baby's birth. This phase takes the least time of the three stages (anything from five minutes to two hours). Though the intense pain of the initial contractions diminishes once the cervix is fully dilated, second stage labour may be accompanied by great discomfort. If the woman is very stressed out, some kind of a pain-killer may be given at this

stage. Women delivering at home choose various postures. In the hospital however, women are made to lie down. Feminists are questioning this position as it has many disadvantages for the mother and the baby: apart from eliminating the help of gravity and the baby's own weight in the birthing process, it also sometimes blocks the birth passage; or puts unnecessary pressure on the vena cava and other blood vessels whose work during a delivery is very important. In the West nowadays, the birthing position has come full circle. Most labour rooms offer the choice of a birthing chair, if the mother wishes to deliver sitting up.

Supported by the attendant/doctor's hand, the baby's head 'crowns' - begins to emerge from the vagina. Normally if the head cannot come through without tearing the perineal tissues, an episiotomy may be done. This is an incision through skin and muscles in the perineum, the area between the vagina and the anus, to enlarge the opening through which the baby will pass. The procedure is necessary only in cases of fetal distress, rare when the baby must come out quickly and the woman's tissues just won't stretch any more. However all private nursing homes and Government hospitals carry out this procedure routinely for first pregnancies. The reason partly may be the lying-down position, when the mother has to push against gravity, thus putting enormous strain on her perineum. Sitting or squatting to push the baby out, controlling breathing, massaging the perineum with warm oils and wet compresses, there is likely to be little tearing. Home deliveries in the villages are without episiotomies, and tears are not commonly reported there. These stitches are often itchy and extremely painful for several weeks as they heal, and women are often afraid to cough or strain for bowel movements after delivery for fear of the stitches coming apart. Nursing is painful, movement is not free, and the woman is greatly inconvenienced.

Crying begins as soon as the baby begins to suck air into its lungs—sometimes even before its body emerges—and is a sign of the baby's health. The baby's colour should be a healthy pink, though it will be covered with the slippery vernix. The doctor/attendant will by now have clamped the umbilical cord, and, usually after letting it pulsate for a few minutes, thus emptying the placental blood into the baby's system. They also note the baby's colour, heart-rate, passing of urine and other physical signs.

The third stage of labour is the delivery of the placenta:

Sometime after the baby has been born, uterine contractions begin again, this time to expel the placenta that was the baby's life-support through the pregnancy. This stage may take between five and forty-five minutes. If the placenta is not spontaneously delivered, the doctor or dai may have to remove it manually—an easy procedure, since the cervix is still wide open. What needs to be ascertained is that the entire placenta is removed from the uterus; if bits of it remain inside, they can cause infection to set in.

During childbirth the woman would have lost approximately 250 ml. of blood. There may be slight bleeding for a few days (for some it may continue for even 15-20 days) after the birth. Breastfeeding immediately after delivery stimulates uterine contractions that will control the bleeding.

8.5. COMPLICATIONS IN PREGNANCY:

Only 10% of women have complications during pregnancy and childbirth like bleeding during pregnancy, shock, Hydramnios, Toxaemias, twin pregnancies, and conditions needing induction of labour with glucose drips, forceps births, Caesarean section, and postpartum haemorrhage.

8.5.1. Bleeding during pregnancy :

In normal circumstances, there should be no bleeding during pregnancy until the onset of labour. In a small number of women, bleeding may very rarely be due to menstrual cycles which accompany the pregnancy. But in the first 2-3 months of pregnancy, bleeding with pain may be due to an ectopic pregnancy or a threatened abortion between 2-6 months. Between 6-9 months of pregnancy the cause may be antepartum haemorrhage or placenta praevia or a premature delivery. Because severe bleeding during a pregnancy can cut off the baby's oxygen and food supply, it is life-threatening to the baby, and sometimes to the mother as well. Bleeding during pregnancy should never be ignored.

1. **Tubal or Ectopic pregnancy:** This is a pregnancy that may initially appear exactly like a normal one (with missed periods, fatigue, and nausea), but the embryo (which is usually fertilized in the fallopian tube) has implanted outside the uterus. If it has lodged in the inner lining of the tube it results in a ectopic pregnancy. As the embryo grows, it stretches the tube, which has a diameter of only a few millimetres. Sooner or later—usually between the eighth and twelfth week of the pregnancy—it expands the tube beyond its limits and the tube ruptures and starts bleeding (internally) into the abdominal cavity. The endometrium is also shed and this accounts for the bleeding from the vagina. Bleeding is accompanied by severe pain on one side of the pelvis. There may be restlessness, palpitations, and a fall in blood pressure. If the bleeding is severe, the woman may go into shock. That is why an ectopic pregnancy is life threatening, and needs emergency treatment. A pelvic exam may reveal that the uterus, though slightly enlarged, is not as large as it should be. If the diagnosis is still not absolutely clear, a fine needle is passed gently through the vagina into the abdominal cavity to aspirate some fluid. If there is blood in the syringe, it will confirm an ectopic pregnancy. An ultrasound scan puts the diagnosis beyond doubt.

   In all suspected and clearly diagnosed cases of ruptured ectopic pregnancy, the first step in treatment is a laparotomy. This is an abdominal operation to examine and if necessary remove the ruptured tube, and to tie up the bleeding arteries. This is how the internal bleeding is stopped; the blood loss if severe may have to be compensated for by a transfusion. If the doctor operates and finds that the tube has ruptured, she may remove it (salpingectomy). Some doctors may also remove the ovary on the affected side to prevent another ectopic pregnancy.

Ectopic pregnancies may result from infections of the tube, (women with loops (Cu-Ts) are more likely to be prone to infections) or a congenital abnormality of the tubes. A woman who has had an ectopic pregnancy, would need to have her next pregnancy monitored carefully. It may also make sense to investigate the reasons for the implantation of the ovum outside the uterus. If an infection of the tube has caused the tubal pregnancy, it can be treated.

2. **Abortion or miscarriage :** Bleeding alongwith lower abdominal pain that is dull rather than sharp or severe may indicate an abortion. The pain is due to the contractions of the uterus, and the bleeding starts when the placenta begins to separate from the uterine wall. If the detaching of the placenta is inevitable, the cervix usually reacts by dilating to expel the foetus and the placenta. If the cramps are severe, and bleeding is in clots, medical help may be necessary to remove the remnants by a D&C.(Examination of the aborted parts may reveal what went wrong, so that the next pregnancy can be monitored.) If the cervix remains closed, despite some bleeding or spotting, it indicates that there has only been a threatened abortion. For a threatened abortion, rest is crucial, as also avoidance of intercourse.

In some women, bleeding usually without pain, signals an incompetent cervix, a medical term, indicating that the cervix dilates prematurely without pain, threatening to expel the foetus. This is likely in the fifth month, and many women feel it by a passing of clots or slight bleeding. For this the cervix is sutured bed rest is vital. Delivery will necessarily have to be in the hospital where the stitches are removed.

10 to 15% of all pregnancies, but 30% of all first pregnancies may result in abortions, because the body may not be ready for the baby. More than 60% of early abortions happen because the fertilized egg, owing to problems with both the egg and the sperm, fails to go through its chromosomal divisions properly. The embryo therefore cannot survive for any length of time, which is why the abortion takes place. Among possible causes of abortions range infections of the urinary and reproductive tracts, viral infections, and fevers like malaria, all of which affect the placenta and restrict the foetus's nutrient supply, leading to an abortion. Growths or abnormalities in the uterus or reproductive tract may also cause abortions. (An ultrasound image will help identify such conditions.) So also an inadequacy of hormones and nutritional deficiencies. Women who have undergone abortions need emotional support. The fear of a repeated abortion during a subsequent pregnancy are also there. A medical check up is necessary when the women conceives again, to make sure that she has a normal child. Very often the partner must also have a check up when a women has a miscarriage.

3. **Antepartum haemorrhage due to premature separation of the placenta (also called accidental haemorrhage):** Usually occurs in the last 3 months of pregnancy. As the placenta separates from the uterus, the bleeding begins; this blood may accumulate as a

large clot between the uterus and the placenta, causing a further tearing apart of the two. The bleeding may be accompanied by severe abdominal pain. At the hospital an attempt will be made to induce labour. In most women, contractions during an antepartum haemorrhage are not strong enough for childbirth. This is because the bleeding in the uterus reduces its tone and muscular strength. The delivery is hastened with a glucose drip or, if necessary, a caesarian section, so that the baby will have a good chance of surviving. If the bleeding continues after the baby is delivered, and if there seems to be no other way of stopping it, a hysterectomy may be performed. Among the possible causes of accidental haemorrhage are Toxaemias like pre-eclampsia and eclampsia, infections of the uterus (of the endometrium or placenta), chronic urinary infections and kidney problems, anaemia, and gross nutritional deficiencies, overstitching of the uterus, which sometimes happens in twin pregnancies and Hydramnios.

4. **Low-lying placenta or placenta praevia :** This is when the placenta may be attached to the lower part of the uterus, instead of the upper part as in normal pregnancy. As the pregnancy advances, the lower end of the uterus stretches to accommodate the foetus. (The upper half, where the placenta would normally be attached, does not stretch, so there is no strain on it.) Each time this stretching occurs, a little bit of the placenta, which is lying over the cervix, gets detached. The slight tearing of the placenta causes bouts of spotting or painless bleeding. There is usually no pain. Also, it usually starts either in the middle of the night or in the morning. Medical attention is important.

   In most cases of placenta praevia, there is no immediate danger. Very often, placenta praevia in the initial stages of pregnancy may correct itself, and the placenta may settle onto the upper segment of the uterus. Rest for the period of the pregnancy helps.

8.5.2. Shock :

When the body goes into this state, the blood pressure level drops so low that the pulse can barely be felt. The most important cause is heavy bleeding, though other kinds of stimuli can also produce shock. There may be a gush of bleeding followed by a weak, dizzy head, hot and cold flushes, cold sweat breaking out on the forehead and a feeling of drifting into a deep sleep.

When the body is in shock, the blood supply to the brain diminishes and most of the body's blood collects in the limbs. Shock can be extremely dangerous. The person in shock must be kept warm by covering her with blankets, shifted to a hospital and sending for a doctor who may be able to start a drip and give life-saving injections like cortisone, etc. At the hospital, the treatment starts with an injection of pethidine into the muscles, glucose drips and, if it seems necessary, a blood transfusion as well. A tube will be placed inside the nostril so that the patient breathes oxygen-enriched air. Medicines like dexamethazone (decadron) or dopamine,

which help raise the blood pressure, are also injected into the veins. A tube is inserted into the urinary canal (the urethra) to keep a check on the amount of urine passed; this is important because the kidneys can be seriously damaged if the blood pressure stays very low for a long period of time. In addition to all this, specific treatment will be started to deal with whatever it was that caused the patient to go into shock. If immediate help is given, the duration of shock can be reduced.

Women bleeding profusely; or sick with high fever after a delivery; or suffering from any other condition that makes them stop responding when spoken to, or only mumble replies, must be shifted to a hospital where there are facilities for glucose drips, blood transfusions and other kinds of emergency care. Women living in villages that do not have frequent bus services suffer the most. In fact, the high maternal mortality rates in India are largely due to inability of the families to take women to hospitals quickly enough for treatment to be effective. It goes without saying that women would be able to withstand shock or stress better if their general condition before the crisis was good (anaemia-free, normal weight, well-fed, and infection-free).

8.5.3. Hydramnios (excessive water around the foetus):

By the ninth month, there may be as much as 1-1 1/2 litres of amniotic fluid. But if there is considerably more fluid than this, there may be Hydramnios. The abdomen feels tense, distended and stretched; there may be breathlessness after even mild exercise. The legs may later swell up because of general water retention. Hydramnios is caused by excessive fluid in the amniotic sac and distension of the uterus. It may result in the premature rupturing of membranes, leading to premature delivery or early contractions leading to a premature delivery. Investigations may be for diabetes, an ultra sonograph to determine the state of the baby and any congenital defect, or for twin foetuses.

Most Hydramnios are mild. Usually the symptoms appear and intensify gradually, following the rate at which the fluid builds up. But there is one type of Hydramnios, occurring around the fifth month of pregnancy, in which the water accumulates suddenly and results in shock. There is really no treatment for Hydramnios. Doctors monitor the pregnancy, so that it can come to term. The doctor can also help reduce the discomfort to some extent by the use of a diuretic (which makes the woman pass larger quantities of urine to bring down the swelling in the legs.) or by aspirating the fluid from the abdomen using a long needle. The important thing is to get a considerable amount of bedrest, so that there are no disturbances that might cause the uterus to contract. Lying on the left side helps because this way the uterus does not press down on the big arteries and veins of the abdomen, and the blood flow to the uterus is maintained. Placing a pillow or two under the feet raises the legs and allows them to drain.

8.5.4. Toxanemias of Pregnancy:

High blood pressure in pregnancy (also called Gestational Hypertension GH) or preeclampsia. High blood pressure in pregnancy is seen very often during the 1st pregnancy and needs monitoring , so that the mother carries the pregnancy to term and delivers normally at 9 months. Pre-eclampsia as it is called must be treated in a hospital and appears to pass off without too many problems. When the high BP is associated with protein in the urine and fits during pregnancy, it is more serious and called eclampsia. There is a rise in blood pressure and there may be present, a protein in the urine, called 'albumen urea', when the condition is called toxaemia. There may be excess weight gain - the normal weight gain in pregnancy is 8 to 12 kgs over the nine months (or around 0.4 kg/week after the 4th or 9th month). A weight gain of over 1kg a week may indicate the possibility of toxaemia. An increased BP during pregnancy needs care - blood tests, regular check-ups, and reporting to the doctor if there is any kind of discomfort such as headaches, giddiness, etc. Rest and a hospital delivery is essential.

The peculiarity of toxaemia is that blood pressure rises to dangerous levels during pregnancy and returns to normal after the delivery. Toxaemia accounts for a large proportion of complications during delivery and even deaths in our country; the main reason is that antenatal check-ups, which include the monitoring and treatment of BP, are not done frequently enough, especially in the last trimester. In the rural areas, urban areas women may have many check up but 40-60% of them deliver at home and ecalmpsia needs hospitalization. Immediate measures are important, because neglected toxaemia can lead to a serious condition called eclampsia (convulsions or fits). Severe toxaemia may show up in a number of symptoms: restlessness, a headache, vomiting, pain just below the breastbone, sudden loss of vision. If these signs are followed by fits or convulsions, the toxaemia has progressed to a condition called eclampsia. In eclampsia, high BP is accompanied by proteinurea and fits, since the kidneys also get affected, urine output is low, and this can lead to oedema. Pre-eclampsia is a condition of high BP and proteinurea that comes on in the third trimester. In most cases eclampsia comes on only after the symptoms of pre-eclampsia have developed (high BP and oedema), in some women, ecalmpsia comes on without warning. The convulsions start suddenly and may be the only danger signals. It is imperative to reach a hospital at the earliest. Convulsions can be fatal for the baby or the mother or for both. Once the fits come on the doctor tries to see that labour pains come on and delivery is completed six to eight hours after the convulsions start. At the hospital, injections are given once every half hour to stop the fits. Most women respond to these injections. For those who don't, labour will probably be induced, even if the pregnancy has not reached nine months. If a vaginal delivery can't be done, a caesarian operation may be necessary; the only way to control the fits is the delivery of the baby.

Eclampsia, along with septic abortions and anaemia, tops the list of causes for the deaths of pregnant women in India, particularly women in rural areas. Long distances to travel without transport, lack of support systems and money for medical treatment are the major causes of the failure to treat eclampsia. Almost 10% of pregnant women are affected by the milder form of this problem, which is toxaemia. Causes for toxaemia are not very clear yet. It is known that toxaemia occurs more frequently during first pregnancies than in subsequent ones; that there is a higher risk of its occurring in twin pregnancies or in cases of Hydramnios. Toxaemias usually seem to appear in the third trimester, and only very rarely in the second. Poor women whose diets are inadequate in calcium which is found in milk are far more likely to develop toxaemia than well-nourished women. Women's groups argue that stress due to the psychological adjustments that women are required to make throughout their lives, beginning with marriage, migration and moving from the natal family (village, town, state) to the husband's place may also be an important cause of high blood pressure.

8.5.5. Twins:

Approximately one pregnancy in sixty four is a twin pregnancy. This happens when a single egg gets fertilized and splits into two, in which case the twins are identical, of the same sex, or when two eggs are fertilized at the same time. In this case, the twins may be either of the same sex or of different sexes; they may be dissimilar. Triplets (three babies in one pregnancy) and quadruplets (four) occur far less frequently than twins. If there is a family history of twins, chances of conceiving twins are more. So also if the woman has been under treatment for infertility, especially if a drug called Fertyl (chlomid) has been used. This helps ripen more than one egg at a time and if these eggs are fertilized, the result is a multiple pregnancy.

A belly growing at an unusual rate or extreme fatigue (also due to anaemia or sleeplessness) may indicate twins, which can be confirmed by an ultra sonograph or even by a doctor or experienced midwife. Good nutrition and rest is important, as also frequent and regular antenatal check-ups. When the babies are due, it is safer to go to a hospital. Twins stretch the uterine muscles and there may be abortion, bleeding during pregnancy, excessive water, a 'tense' uterus setting off premature labour, toxaemia, small babies, and anaemia. The extra care minimises any complications due to these. Bed rest, especially in the last month, appears to help more than any other treatment to see that the babies are fine, and there is no complication.

First stage labour, in a twin pregnancy, tends to be rather prolonged because the uterine muscles are overstretched by the bulk of the babies inside. This is not really a cause for worry; the fact is, caesarians are seldom required in twin deliveries, unless there is some complication—such as when one baby blocks the passage of the other. Usually, nothing more than a glucose

drip or some gentle manipulation is required for a successful delivery.

After the first baby is born, the uterus rests for about five to ten minutes, after which the contractions start again. The second baby is almost always born within half an hour of the first. The danger to be conscious of at this stage is of a post-partum haemorrhage (see the section on PPH) which is a possibility because of the special strain on and stretching of the uterus. The doctor may be alert to this possibility, but family members should be let in, immediately after the at least delivery, as the mother may not know of heavy bleeding (normally you lose about 200-300 ml of blood during a delivery - a glassful).

Generally, the birth weight of each of the twin babies is slightly lower than that of a baby born out of a single pregnancy, though the total weight of both is greater than a single baby's. Since their birth weights are low, twin babies may have less general resistance, and therefore need more care than other babies. Occasionally, one baby turns out much smaller than the other. This happens when there is an uneven distribution of blood between the two foetuses; one baby grows at a normal rate, but the other is slowed down significantly. The weaker baby will need special attention, as also the mother.

8.5.6. Complications in childbirth:

Glucose drips to induce labour :

(a) Induction of labour may be necessary when labour does not begin despite the pregnancy's having reached term (40 weeks or more), (b) when normal labour pains set in, but diminish or stop altogether, (c) when complications of pregnancy (Toxaemia, RH factor, diabetes, bleeding before delivery (APH), Hydramnios) call for the immediate delivery of the baby to save the mother or baby even if 40 weeks are not over or (d) if the baby dies in the uterus or there is a gross abnormality. If the baby remains in the uterus after full term, its baby's head becomes hard and too big to negotiate the birth canal. This is called post-maturity. Doctors usually wait for 10 days past the due date for normal pains to start, before trying artificial induction. In cases, where normal labour pains are not continued, the baby cannot be kept waiting halfway out of the womb: once labour has started, it must be completed within a certain time-frame. A syntocinon (glucose) drip is used to artificially stimulate uterine contractions so that the baby can be delivered vaginally. Contractions should begin soon after the drip is started, and the baby is delivered in 8-12 hours. Artificial rupture of membranes (ARM) is another method used to stimulate labour pains. This is done only after the cervix has already relaxed and dilated (to around 4 inches). In this process, the membranes of the amniotic sac are ruptured and the water flows out of the vagina. This is done only in the hospital to speed up the delivery when natural contractions have started, or in combination with a syntocinon drip. Health activists and women's groups point out that induction is now being abused and even offered as a sort of convenience, sometimes for the patient, and very

often for the doctor. Despite these risks of chaotic and very strong contractions of the uterus, induction is done in some hospitals as a matter of routine. In some private nursing homes, the drill is : a drip, whether required or not, followed by a caesarean section, whether required or not.

8.5.7. Forceps delivery :

When labour is almost through, but the mother is too exhausted for the last push, if the mother has other problems like heart problems, TB, anaemia, Ante-Partum Haemorrhage or acute illnesses, she is not allowed to get exhausted during the delivery. if she has toxaemia, if the baby's condition is poor (lack of oxygen) for breech babies (babies with legs first), a forceps delivery can help cut short the period of peak strain, and may be responsible for saving both the mother and the baby.

The use of a forceps is not simple. A forceps is an instrument with a pair of large blades, shaped rather like a pair of tongs. These blades are shaped to fit the curve of the baby's head. If the necessity arises, they can be inserted into the vagina and used to grip the head of the baby gently. The doctor can hasten the delivery by easing the baby's head out with the forceps instead of waiting for the ineffective labour pains to push it out. An episiotomy is always performed in a forceps case.

In inexperienced hands however, it can injure the baby and/or the birth canal (the cervix, vagina and the perineum of the mother). So the decision has to be taken keeping in view the relative risk of using the forceps, as against the risks arising from a slow and protracted delivery. Like any other intervention in medicine, forceps too can have side effects. It is possible that forceps are resorted to unnecessarily in our teaching hospitals by young enthusiastic students tempted to "experiment" with forceps.

Experienced doctors in private nursing homes have also been known to use the forceps to hasten delivery so that they can get their work done. The fact that forceps deliveries cost double the amount `normal' deliveries cost also opens up the possibility of malpractice.

The important thing to watch out for is any unusual problems the baby might have, while suckling for instance. At a later stage, the child's `birth history' should always include the mention of a forceps delivery.

8.5.8. Caesarian Section :

Approximately nine out of ten babies are born in normal vaginal deliveries; only 6 - 12% of all pregnancies may present complications that make any kind of surgical intervention during the delivery necessary. Among these is the caesarian section, now called LSCS (lower segment caesarian section). Some years ago, the commonly performed caesarian

section was of the upper segment (of the uterus). Nowadays, only the lower segment of the uterus is cut open, thus the term being LSCS. Before caesarian sections became common, many women died during delivery because of prolonged labour, there was foetal death, infection, bleeding, etc. The Caesarian section was a boon to women who had problems that needed surgical intervention, and has made the difference between life and death. Even today women in the remote corners of the country either delivers dead born babies or suffer, even die because facilities, caesarian operations are not there.

A caesarian section becomes necessary when there is a hitch during childbirth that endangers the life of either the mother or the baby, or both. This surgical procedure involves making an incision in the mother's uterus through the abdominal cavity, and taking the baby out through this cut. Since it shortens the entire process of labour, it is obvious how it can be of use when the baby or the mother is in distress.

A caesarian section becomes necessary if the cavity of the pelvis was too small and narrow, or if the baby's head was larger than the pelvis (the medical term for this complication is cephalopelvic disproportion (C.P.D.). On the whole, this particular crisis is rare among women who are well-nourished, and have access to a hospital; the unusually small build or bone structure that causes it, is generally the result of poor nutrition in childhood. A caesarian section may also become necessary if a fibroid was found next to the baby in the uterus, which would obstruct the baby's passage into the birth canal, if uterine contractions are too weak to push the baby out (and if a glucose drip with syntocinon does not stimulate contractions) if there has been profuse bleeding during the pregnancy (it is highly likely that, during childbirth, complications will arise that make a caesarian section necessary). If during labour, the umbilical cord comes out first and gets compressed,('foetal distress'— breathing difficulties— will result from the baby's blood and oxygen supply being cut off; it may also result from the cord winding itself around the baby's neck), if the mother has had earlier abortions or still-births for whatever reason, the baby is precious, and a caesarian section will minimise the possibility of another unhappy ending, if there has been toxaemia during pregnancy, caesarian may be necessary.

The issue of informed consent is important here, because of the misuse of caesarian operations in the private sector. Informed consent means - is the patient aware of the diagnosis, has she been told of different possibilities of treatment, outcome and side-effects?. Caesarian sections are frequently recommended in urban private nursing homes where they are not necessary, and not available when they are. Rural health care centres rarely offer this option to women who come to them after several hours of labour. In some cases it is more convenient for the doctor than carefully monitoring a woman who may be in labour for many hours, perhaps through out the night. Doctors have also advised caesarians because they stood to gain by the high cost of operations. In private hospitals, upto 40% of all deliveries are caesarians. The same rate for all-India deliveries is just 7%.

All advertising is commercially oriented. The contra-indications are in difficult-to-read fine print, while the sales campaigns both to doctors and people is aggressive. Another feature of the drug racket is that medicines banned in the first world countries (which have strict drug-testing laws) are dumped in the third world. So medicines, particularly during pregnancy or lactation have to be considered very carefully. It is better to avoid all medicines for the first three to four months of your pregnancy. Later on medicines should be used judiciously, when there is ahigh fever or a severe infection treatment becomes necessary but popping pills into the month unnecessarily must be avoided. Most of the time iron tablets are necessary and may be taken regularly after the 4 or 5th month of pregnancy.

The possible effect of medicines taken during pregnancy and lactation on the foetus and the newborn

Medicine	Type of defect
Excess vitamins A&D (these dissolve only in oils, so they are not thrown out in urine)	Vitamin A may increae the fluid tension in the brain or cause Malformations of the brain and the renal system. Vitamin D can change the blood chemistry of calcium in the new born.
Antibiotics	
a) Penicillin	When taken during lactation secretion in the milk can sensitize the newborns to pencillin and cause reactions. Can be taken in pregnancy if the mother is not sensitive to the drug.
b) Tetracycline	Affects the teeth of the foetus and newborn - not to be taken in pregnancy or lactation.
c) Chloramphenicol	Causes dangerous side effects in foetus - should not be taken at all.
d). Sulphonamide Including Septran & Bactrim	Can cause jaundice in the newborn.
Streptomycin and Kanamycin	Can affect the hearing in the foetus.
Metronidazole especially Flagyl	Should be avoided in pregnancy specially in the first 4 months at any cost
Pain killers -	

a) Aspirin (Salicylates)	Causes a wide range of problems.
b) Ibuprofen and (oxyphenbulazone) (Brufen,Suganril)	Can involve the heart.
c) Pethidine and Morphine	Can be addictive - can make the baby drowsy - if the delivery takes place before it's effect wears off. Can cause dizziness, starts nausea and vomiting also. Sometimes morphine can slacken the uterine contractions.
5. Sedatives	
a) like Barbiturates	Used in epilepsy - can cause left palate (Gardinal, luminal)in foetus. Can affect the baby's behaviour if given to the mother in labour.
b) Diazepam (calmpose)	This is given for trivial reasons in pregnancy. It is not a safe drug and should be avoided. It can cause malformation, make the baby drowsy when given in labour.
6. Steriod hormone Progesterone Diethyl -stillbestrol (an estrogenic hormone)	can cause masculine changes in the genitalia of a female foetus and has been known to cause vaginal cancer in the female babies after they were 20 years old.
7. Corticosteroids used in asthama or chronic infection	Left palate
8. Antithyroid drugs, insulin in Diabetes, radio-active substance for diagnosis, anti hypertension Drugs and anticancer drugs, Anti-coagulant.	These are all potentially dangerous, should only be used under medical supervision, but it is better to avoide altogether.

8.7. AFTER CHILDBIRTH AND LIFE WITH THE BABY :

After a normal delivery, the body begins to resume its normal functioning within a few hours after childbirth. The uterus gradually diminishes in size, and will sink from its abdominal position back into the pelvic cavity by the tenth day after childbirth. The shrinking

of the uterus is felt as contractions which can last upto two weeks after childbirth. These contractions are stimulated by hormones released during breastfeeding.

In the first two weeks after childbirth, there will be a bleeding called the lochia. This fluid gradually turns from red to pink to yellow or white over a period; if at any point it seems to have a foul odour, it may be a sign of an incipient vaginal or uterine infection. Non-lightening in colour may indicate that some pieces of the placenta have been retained in the uterus. Though the body resumes normal functioning, pregnancy and childbirth are unusual upheavals - most women's bodies demand time and rest before they can resume their normal functions. Tiredness is extremely common; there may also be profuse sweating, loss of appetite, and constipation.

We detail below minor complications that can make life miserable, that may happen to some women. Episiotomy makes defecation difficult. A high fibre diet along with plenty of fluids will prevent this. Diet at this stage should include plenty of fibrous vegetables and fruits, milk, buttermilk, fruit juices, rasam. Mild walking around will help the bowel and urinary functions return to normal. Any burning or pain should be reported to the doctor at once, in case it signals an infection.

Periods may not come again for anything between two months to a year after childbirth. The lowering of the oestrogen levels in the body, which follows breastfeeding, prevents the formation of the ovum each month. Breastfeeding on demand, rather than at fixed hours helps delay periods for as long as a year to begin.

For a normal delivery mother and baby can go home on the day after childbirth; but if there has been an episiotomy, about five days stay, and if a caesarian section, about a week, in hospital may be necessary. In the hospital, the baby would have a full check-up. At home, the mother needs adequate rest, fluid intake, extra nutrition for recovery and for breast-milk. The foods that are generally believed to stimulate the secretion of breastmilk include: protein-rich food like meat milk; fruit juices; asafoetida, jeera, garlic and greens. The usual diet advice applies: plenty of green vegetables, pulses, ragi, fruit, eggs and milk are recommended. Much of the advice older people give about what can be eaten is very useful; most of what they say about what can't be eaten (citrus fruit or guavas, for example) may be disregarded, since it is usually the result of food taboos.

Teeth and gum may need special protection through regular cleaning. Some people advise not to have a bath for ten days; this is owing to a justifiable fear of infections from exposure to cold air. If there is a protected bathroom and no chance of exposure, this fear is out of place, and bathing the day after delivery and every day is good. If a bath is difficult on certain days, a sponge bath with a damp towel dipped in warm water is possible. An episiotomy needs special care; washing the vulva with warm water after urinating and applying the antiseptic cream the doctor has recommended.

Emotional tension should be minimised so that it doesn't interfere with recovery. This is of course easier said than done with the arrival of an infant on whom all attention is focussed, but the mother too needs special care.

At the hospital, temperature would be checked regularly. A postpartum fever needs attention; a fever can be associated with: a urinary tract infection(UTI) signalled by a burning sensation when urinating; infections in the vagina, indicated by bleeding or a foul vaginal discharge; breast abscesses/engorgement- if the baby is not suckling enough or frequently enough, breasts may become engorged and painful. For pain-relief, pressing out the excess milk out with fingers or appling hot compresses to the breast helps. Getting enough rest is important. It is everyone's experience that even before the arrival of the baby the pregnant woman does not get enough sleep, owing to the discomfort of the last few weeks of pregnancy. After childbirth, when the body craves rest, the baby begins to make its innumerable demands - feeding, washing, changing nappies, comforting—requires continual attending to. Mothers often develop a chronic backache and other signs of extreme fatigue.

Rest is also vital to the production of breastmilk, especially in the days immediately after the delivery. Customs in some areas of the country allow three months after the birth, as the lying-in period - a period of seclusion, rest and adaptation for the mother. In upper class Hindu society, women are regarded as 'unclean', 'untouchable' and excluded from religious and household activity for a period of 10-40 days, and sometimes conveniently (for the family) only for the first baby. Close women relatives used to come and stay to manage the household work. Today, only a vestige of this custom of rest and help from other women remains. Help is crucial, particularly with the break-up of the joint family.

Emotional responses to motherhood may also not be what is expected. The arrival of the baby naturally changes the entire pattern of existence-relationship to self, other children or relations, work, and partner will now be very different. Husbands do not make the effort to make the transition to this new role easy. Older children may also be more demanding and fractious when there is a new rival in their mother's affections. Bonding with the new baby may also take time. Though many women have positive experiences, many women go through what is called a post-partum depression or depression following childbirth. This can be really severe and can last for a long while. Such attacks of depression may be caused by the sudden changes in the hormonal levels in the woman's body after childbirth, by the shock of the actual delivery, or by psychological unpreparedness for the enormous responsibility of motherhood—a responsibility that may make the mother feel totally cut off from everything that made her life meaningful earlier. The mother may or may not feel no interest at all in her baby and may show all the signs of acute depression. Postpartum depression is rather more common after a first baby. A woman suffering from it will need all the love and caring she can get to overcome the depression, especially since there are no 'cures' for this state.

Much can be achieved by rest alone. In many South Indian communities, women followed the sensible custom of going to their natal homes for childbirth and the period of convalescence after it. Complete rest could usually be guaranteed by this arrangement. Today's nuclear family set-up leaves the new mother not merely resuming her household or other work long before her body has got enough rest after childbirth, but also sometimes looking after guests who have descended on her home to celebrate the arrival of her baby.

8.8. TAKING CARE OF THE BABY:

Feeding:

Most women in our country breastfeed their babies. It is easier if there is someone close who has breast-fed her own child. For others it takes practice and patience. In the West, many working mothers express their milk, that is, they take it out manually into containers, chill it, so that it can be used to feed their baby when they are not around. In India, when the mother is not around, other relatives who are also lactating mothers feed the baby. If the mother is not able to breast-feed, either because of her work or because she does not have milk, bottle feeding is taken recourse to. The fact is, formula milk cannot replace many of the qualities of breast-milk. Breast-milk is by far the best food for the baby until it is about three to six months old. Apart from being easy to digest (even babies who can't keep anything else down thrive on it), it makes the baby resistant to a range of diseases from staphylococcus infections to polio to the e-coli bacteria that cause diarrhoea. The colostrum that is produced in the first few days after childbirth is especially important because of the high concentration of antibodies in it. Also, the physical bond that develops between you and your baby when you are breastfeeding is of great psychological significance to the baby.

Whether breastfeeding or bottlefeeding, it is best to feed the baby whenever it cries in the first few months. Routine will set later on; feeding on demand actually increases the mother's own milk production. On an average, a mother will produce a little over half a litre (about 600 ml.) of milk per day in the baby's first six months, after which it may diminish slightly, coming down to around 450 ml. by the second year. When the baby is bottlefed, thoroughly wash the bottle and nipple and sterilizing both is important since harmful microbes may be present. Sterilization involves boiling both in water for at least ten minutes. To mix a feed, use boiled (and cooled) water. Never use milk that has been in the bottle for some time; mix each feed afresh. It is important to stick to the proportion of feed to water specified on the tin.

The baby needs a variety of foods by the time it is five months old, in order to keep up a steady weight gain. In the beginning of the fourth month, the baby can be given fruit juice and other fluids. Solid food can be started at five months, and even earlier for babies with a good digestion. Formula foods and tinned foods should be avoided. The calories are made up by the addition of artificial nutrients which are not half as effective as natural ones. The best

natural foods for the baby include mashed rice and dal and curd, mashed boiled eggs, mashed ripe bananas. Ideally, if the mother's own diet is well-balanced, the baby can eat exactly the same food as she does, but without the salt and the spices (chilli and masalas). However the baby should not have more than one new item at a time. Additions should be after observing the reactions to the new food for a while.

Some babies have allergic reactions to some food that isn't agreeing with them. A nappy rash, a puffy face, a bloated abdomen, diarrhoea or sleeplessness may indicate some allergy. In the case of a very sensitive baby, this food may be in the breastmilk itself or to formula milk, in which case soya milk may be tried. Eggs, fruit juices, some vitamin preparations and many ready-made baby cereals are commonly found to be allergens. A baby may also have a physical allergy to such substances as wool, certain soaps, washing powder or shampoo. It is best to use the traditional bath powders like moong dal powder, etc. But allergens are difficult to isolate. The child should outgrow the allergy eventually. The earlier the baby develops an allergy, the quicker it outgrows it.

Baby discomfort and fussiness and constant crying is sometimes described as colic. It helps to carry the baby on the shoulder (with its stomach resting on the shoulder) or be patted on the back lying stomach down on the laps, most of the time. In many cases, colic is thought to be due to the immature digestive system of the baby. Bottle-fed new-borns are more likely to develop colic. It helps if formula feeds and processed baby food are avoided, and the baby is fed on breast milk. Usually, colic lasts for 3 weeks to 3 months. It also helps if the baby is put to sleep stomach down, and burped after every feed. Life with a new baby may mean coping with the monotony and isolation of long hours spent alone with the baby. Women need to go back to work, or create a space for themselves, make new friends, and re-discover old ones.

Sexual Intercourse:

It is usually recommended that intercourse with penetration be resumed only after at least two months have passed since childbirth. If there has been a caesarean section, or any complications during childbirth, it should be deferred for longer than this. Women may not be interested in sexual intercourse even after it is theoretically safe to have it, for various reasons. The decreased levels of oestrogen in the body can reduce the capacity to feel sexual desire and, physiologically, to produce the lubricating vaginal mucus; or she may be just too tired to want sex. When intercourse is resumed, it is best to use a barrier method of contraception; since breastfeeding cannot always be relied on to prevent ovum-formation and conception; the hormonal substances in oral contraceptives can pass into the baby's body and harm it.

8.9. SUMMARY:

Most women go through pregnancy and childbirth little realizing the complex process which result in the birth of a normal baby. It is felt that the scientific knowledge presented here would go a long way in helping the student appreciate the problems faced by women in far flung areas with little support during pregnancy and a total absence of the modern health care system. Even today about 80% of women deliver at home. This unit therefore provides useful information which contributes to knowledge and provides a basis for understanding individual needs of women

8.10. MODEL EXAMINATION QUESTION:

I. Answer the following in 30 lines each.

a. Describe the changes in the mother during pregnancy.

b. What are the causes of bleeding during pregnancy ? Write about abortion or miscarriage and the problems faced by women.

c. When do the doctors do a caesarian section ? Write about the procedure and the special needs of women.

II. Answer the following in 15 lines each.

a. What are pregnancy tests - describe any one in detail.

b. Describe Toxaemia of pregnancy

c. Why swhould women avoid medicines during pregnancy.

d. Advantages of breastmilk

e. Rest after child birth

f. Work during pregnancy

8.11. GLOSSARY:

a. **The Rh factor -** Blood is either Rh positive or Rh negative. 85% of people are Rhesus positive and 15% are Rhesus negative; it is estimated that in 10% of marriages, the wife will be Rh negative and the husband Rh positive. If the foetus is also Rh positive, problems may occur. When an Rh negative woman carries an Rh- positive foetus, antibodies against the Rh factor can build up in her blood. The most likely time for this to happen is at the end of the pregnancy, whether by abortion, miscarriage or birth. Government hospitals, routinely check for this. If Rh negative women are given a Rhogam injection, the Rh problem is virtually eliminated. This can be done within 72 hours of birth or after a spontaneous or induced abortion.

8.12. RECOMMENDED BOOKS

1. David Werner, *Vaidyudu leni chota, (in Telugu) Publ. Hyderabad Book Trust*, Hyderabad. 2000.
2. Veena Shatruna, K. Lalita, Shyama Narang, Uma Maheshwari, Gita Ramaswami and others, *Savalaksha Sandehalu, Streelu - Arogya Samasyalu (in Telugu), Publ. Hyderabad Book Trust*, Hyderabad. 1998.
3. Jane Maxwell and others, *Manuku doctor leni chota (in Telugu), Publ. Hyderabad Book Trust*, Hyderabad. 1998.
4. *The New Our Bodies, Ourselves, The Boston Women's Health Book Collective, Publ. Simon & Schuster*, New York, London, 1992.

UNIT 9 : BIRTH CONTROL METHODS

9.0. OBJECTIVES

This section helps you with a brief history of birth control in India. It also lists out the various types of contraceptives available, their mechanism of action, side effects and usefulness to women. It also helps you understand why women cannot use certain contraceptives and the need for men's involvement in family planning in India.

After going through this unit you will be able to discuss the

- Different birth control methods.
- Inadequacies of responses to women's needs

9.1. INTRODUCTION

Birth control is neither new nor modern. Women through the ages have been using a variety of methods to avoid having babies. Abstinence through prolonged periods at the mother's home and prolonged breast-feeding later, often worked. Withdrawal has been used since recorded history. Other methods used were to insert stones, seeds and sponges in the vagina. Tribals in India traditionally use herbal extracts or decotions to prevent conception. 'Modern methods' like the diaphragms and condoms were privately available in India before Independence. What is new in today's context is the availability of these options to many more women, entry of the state in a massive way to fund research, testing and application of these methods (what we call family planning interventions) and the deep involvement and concern of the women's movement with family planning. The Indian State began its family planning programme in 1952 with the condom, the loop and sterilization. Spermicidal foams

and jellies also made their appearance in the private market a little later. Legalization of abortion came in 1972, while male sterilization was introduced in a big way in the mid-seventies (Emergency). Oral contraceptive pills also made their appearance at the same time. Injectables and implants were introduced on a trial basis in the mid-eighties, but by this time the women's movement had begun its own serious involvement with issues in family planning. The mass trials without proper screening, of the injectables was questioned in campaigns and in the Supreme Court, and the Indian state retreated. The state family planning policy today rests on female sterilization and the free marketing of IUDs, condoms and pills.

9 . 2 CONCEPTION AND BIRTH CONTROL

During sexual intercourse, sperms are ejaculated through the man's penis into the woman's vagina. About 300-500 million sperm come out in one ejaculation. The acid environment of the vagina is hostile to sperm, so sperm in the vagina die in about eight hours. Those sperm deposited near the cervix swim through the cervical opening, through the woman's uterus and into the fallopian tubes. They swim fast — an inch in eight minutes — so a sperm may reach an egg in as little as thirty minutes. In exceptional circumstances, it is also possible for some sperm deposited in or near the lips around the vagina during sex play to swim into the vagina and follow the route to fertilize the egg.

Another interesting observation is that sperm can move more quickly in the few days around because of the nature of ovulation the cervical mucus at that time. Once sperm get to the uterus, however, they can live for three to four days.

Breast-feeding helps prevent a new pregnancy by suppressing ovulation, ie. the release of the egg itself. When breast feeds are being supplemented by cereals, milk-flow weakens, and this may even trigger off a pregnancy without a period occurring in between. The reason is that when milk-flow weakens with the beginning of supplements, the pituitary gland may send down a signal to the ovaries to ovulate and an egg may be released. While this takes another 15 days to be expelled from the uterus, (occurrence of a period) sexual intercourse without protection may lead to pregnancy in this short interval. When the woman gets pregnant, she will not get periods, and hence it may be months before she even knows that she is pregnant again. Hence birth control (non-hormonal) should be planned while starting supplementary feeding.

9.3. BIRTH CONTROL METHODS:

9.3.1: Natural birth control:

This method is based on avoiding intercourse on the days a woman is ovulating and therefore fertile. Which are the days of a menstrual cycle when it is not possible to get pregnant? Women are fertile only for a small part of the menstrual cycle, and for the rest of the time,

conception may not occur. A woman ovulates once each cycle (if there is a second ovulation, as in the case of dissimilar twins, it occurs within 48 hours of the first ovulation); the egg lives 12 to 24 hours and then disintegrates if not fertilized. Under favourable cervical mucus condition, sperm can survive as long as 3-4 days within the body. Therefore, a woman is fertile only for a week - five days before ovulation and two days after. The actual length of time a woman is fertile varies from woman to woman and from cycle to cycle.

By the calendar method, also called rhythem method when a women has regular cycles, it is estimated that a woman is fertile roughly 4-6 days after her period is over till about 10 days before the next. By observing and feeling the mucus from the vagina, this can be confirmed - when ovulation and the unsafe time draws near, the mucus is slippery and can be stretched between two fingers. It takes some months however for a woman to learn to gauge when she is fertile. On these days, unprotected sex should be avoided. If a woman has irregular periods, infections, is using oral pills, or has an uncooperative partner, this method is not reliable.

Withdrawal is the other method which is both simple and practiced worldwide. The man withdraws his penis before he ejaculates sperm. However, the drops of semen containing sperm may enter the woman's vagina during fore-play and may cause pregnancy.

9.3.2: Barrier methods - condom, diaphragm, spermicidals:

These are called barrier methods because they create a physical barrier between the sperm and the egg.

a. **The condom** is a soft, thin, rubber, single-use sheath, designed to fit over an erect penis to prevent the semen from entering the vagina. It comes rolled up and, on opening, unrolls to about 7.5 inches; the open end has a diameter over an inch and the closed end is tipped with a little nipple to hold the semen. It is unrolled onto the erect penis just before it enters the vagina. After intercourse, one holds the rim and slips it off. It is available off the counter at all medical shops at a price ranging from Rs. 2 to Rs. 10 for a packet of 3, and also freely supplied by the Government.

   The condom is an important method for men and if used with care, pregnancies are rare. It can be one way for the man to share the burden and fuss of birth control. What is more, condoms provide protection against certain vaginal infections, sexually transmitted diseases like AIDS, etc. and also protect against cervical cancer. Women do not have to put up with the side-effects of pills, injections or the discomfort of the Copper-T. Many men in the developed world are switching to condoms - the women's movement also claims that the use of the condom is an indicator of the equality between the sexes.

b. **The Diaphragm** : This was one of the earliest forms of contraception, much before

the pill and IUD made of soft silicon material. It is a shallow flexible cup with a flexible metal rim. It is placed in the vagina so that it covers the cervix and is locked in place behind the pubic bone and the back wall of the vagina. It should be inserted before intercourse and removed not less than six hours after intercourse. For added effectiveness, a spermicidal jelly or cream is coated onto it (the part which touches the cervix) each time you put it on. The diaphragm prevents pregnancy by acting as a barrier to stop sperm from entering the cervical canal, and also holding ajelly or cream against the cervix thereby immobilizing any sperm that manage to swim round the rim of the diaphragm. However, good-quality diaphragms are rarely available in India. Very few Government agencies or programmes use them, and the quality of the diaphragms used may be sub-standard. If a woman wants one, she will have to first visit her doctor and ask her to take vaginal measurements.(This involves estimating the diameter of the vagina -the doctor does a pelvic exam ; stretches two fingers inside at the deep end of the vagina, and estimates the gap in between). Now because of the risks related to hormonal methods and IUDs, there is increasing interest, especially among feminist groups in barrier methods. One group has even begun marketing imported diaphragms. Feminist groups feel that the diaphragm has been completely discarded by 'family-planning' experts, because the state feels women cannot be trusted to use it (putting it on each time before intercourse and removing it after intercourse). In the beginning the diaphragm has to be fitted with a doctor's guidance (just like the IUD), the diaphragm is reusable and may last for 2-4 years; it is possible that multinationals do not find it profitable to market or popularise it. It also gives some women control over their fertility and minimizes the fear of pregnancy.

c. **Spermicidals** : Spermicidal means 'that which destroys sperm'. These come in the form of creams, jellies, and tablets. Just before intercourse, the cream, jelly or tablet inserted into the vagina forms a film over the cervix which blocks the sperms' entrance into the cervix, inactivates or even kills them. Use of the condom during fertile periods heightens effectiveness. There may be complaints of vaginal irritation with spermicides. They also tend to drip long after intercourse. If sexual intercourse is not frequent, this may be a useful method. The most popular brand of spermicidal tablet costs about Rs.15 for 5 tablets.

9.3.3: Hormonal Methods (Centron, Oral Pills and Injectables):

These are chemical substances that can alter the normal hormonal profile of the woman, and therefore interfere with either the preparation of the endometrium and the release of the egg, the transport of the egg through the fallopian tubes or the embedding of the fertilized egg in the uterus.

a. **Centron** : Marketed as Saheli, this is a non-hormonal oral contraceptive pill. Though research on this drug was completed long ago, the Indian Government. did not put it

on the market, preferring oral contraceptives. Since 1994 however, certain State Governments are actively pushing Centron as a pill which does not seem to have side-effects like vomiting, nausea, breakthrough bleeding, etc. The chemical in Centron, called Centchroman, is supposed to cause changes in the endometrial lining so as to prevent implantation. The woman has to take the pill twice a week for the first three months beginning with the period day. As a matter of extra precaution, a barrier method like the condom should be used in the first two months. After completing 3 months, one can take it once a week for as long as one wants contraception. With Centron, the menstrual cycle is likely to be delayed upto 15 days beyond the normal. After a few months of use, the cycle is expected to regularise.

Nursing mothers, women with a history of jaundice or liver disease, any ovarian disease or cysts, chronic cervicitis, tuberculosis, renal disease and women prone to severe allergies should not use Centron. While on this pill, it is important to have regular check-ups (once a month initially, later once in 3 months.

b. **Oral Pills** : These are synthetic oestrogen and progesterone hormones and come in 21/ 22 or 28 pills pack which one takes continuously. Most pills are a combination of two hormones (Progestogen and estrogen) The estrogen prevents pregnancy primarily by stopping the development of the egg in the ovary. The progestogen helps the cervical mucus to remain thick, which makes it difficult for the sperm to climb. Also the lining of the uterus does not become fully developed, nor does it develop to time with ovulation, so that even if an egg does ripen and is fertilized, there is little likelihood that it would successfully implant.

The combination pills are fully effective, if taken with care. Pregnancy can occur if one forgets to take the pill for 2 or more days, and if the pill schedule is juggled. While most doctors and the family planning establishment prescribe the pill for as long as ten years, feminists disagree. They argue that long-term effects on women and their post-pill children will not be known for many decades. They suggest that if the pill has to be taken for two or three year intervals with three month breaks in between may be better. Birth control pills are dangerous for some women, and in quite a number of other women can cause side effects that range from nuisances to major complications. In the packet of pills, drug companies publish a list of contradictions, or conditions that prohibit the use of the pill. These should be checked by the doctor.

The Contraindications are :

1. Suspicion of pregnancy
2. A smoker
3. Women over 35
4. A nursing mother (the pill may dry up milk, and the oestrogen may pass through the milk to the infant)

5. If the woman has had jaundice, hepatitis or any other liver disease (as it is the liver metabolizes the sex steroids, progesterone and estrogen)
6. If the woman has had any abnormal genital bleeding, or a growth or cancer or any blood disease like sickle-cell anaemia, a history of tuberculosis, has had rheumatic fever during childhood, a history of blood-clotting, varicose veins, heart defect or disease.

The manufacturers of the pill often recommend it under medical supervision, even if the woman is diabetic or pre-diabetic, hypertensive, has cardiac or renal diseases, a tendency to depression or any other psychiatric problem, chloasma, migraine, epilepsy, asthma, or sickle-cell trait. Women's groups also differ with this as they see no sense to aggravate a situation that is already problematic.

Although at present in India, pills belong to the Schedule L group of prescription-only drugs. In practise they can be easily bought over the counter. It is safer to have a doctor's examination - an internal pelvic exam, breast exam, eye exam, pap smear, blood pressure, blood and urine tests, apart from medical history before taking the pill.

In the West, use of the pill is declining. Apart from unwanted side-effects, women are questioning the pills's placing of entire responsibility of contraception on them.

Complications and Side Effects of Oral Pills:

It is a medication that enters the blood stream and travels around the body, affecting many tissues and organs just as natural estrogens and progesterones do. Inspite of being on the market for twenty years, newer side-effects are still being discovered and reported every other day. Of course many women notice no side effects other than some nausea at the beginning. Also, most side effects are reversible— they will stop when the pills are stopped. Some of the complications include nausea, usually going away after two months; fatigue, again lasting for a few months; changes in menstrual flow, including a lighter period or sometimes missing a period; vaginitis and vaginal discharge; headaches; breast tenderness; weight gain; vaginal bleeding or staining between periods; rise in blood pressure; skin problems; gum inflammation; liver and Gall Bladder Disease. Also, a higher incidence of new cases of epilepsy and asthma, urinary tract infections, chicken pox and other viral infections, vitamin deficiencies occurs among women taking the pill. Pill users have also reported depression and changes in intensity of sexual desire and response.

Women who take the pill run a considerably greater risk of incurring blood clots which can lead to pain and hospitalization. The clots may be in the leg,in the lungs(usually travelled from the leg) and in the brain (stroke). Incidence of blood clots are also higher in general among all women over thirty - five years of age, and among smokers. The signs to indicate blood clots are severe headaches, sudden blurring of vision, sensation of flashing lights, severe leg or chest pains, or shortness of breath. Women on birth control pills run a higher risk of heart attack.

The pill causes polyps (non-malignant tumors) to grow in the lining of the cervix in some women, and causes changes in the cervical cells of others. The pills do cause increases in the number of cells in the ovaries, uterus and breasts; these conditions are thought not to be precancerous, but many doctors feel that not enough long-term studies have been made to prove absolutely that such effects are not an indication of precancerous conditions. It is known that estrogen can aggravate existing cancer, which is why checks for pelvic and breast examinations and Pap smear before taking pills and bi-annually later is necessary.

Congenital limb abnormalities have been reported in increased incidence among babies of mothers who were taking the pill by mistake, while pregnant, who had taken hormones to help maintain their pregnancies; who had been given progestron for withdrawal bleeding; or who had become pregnant within three months of stopping the pill. The pill also has been linked to: diabetes among some women, pleurisy, suppression of bone growth in young women, arthritic symptoms (swelling of joints); visual disturbances; ulcers in the mouth; bruising; lupus erythematosus, a disease of unknown origin which may be caused by an allergic reaction; and abnormalities in the cervix of the uterus.

All combination pills are priced ranging from Rs.2/ (for Mala-D) to about Rs.40 - for a month's supply. The public sector undertaking IDPL, manufactures a pill for free distribution through government hospitals and family planning clinics. Among the advantages of the combination pill, apart from full effectiveness is the regularity of menstrual period every 28 days and lighter flow during periods, relief from premenstrual tension, if any, fewer menstrual cramps or none at all; an estrogenic pill may clear up acne for some women. The pill often brings a sense of well-being and a new enjoyment of sex because the fear of pregnancy is gone.

The disadvantage is that women have to remember to take a pill every day. It may also be a disadvantage that being on the pill makes women available all the time for sex. The underlying assumption behind the aggressive marketing of the pill for developing countries is that the man's sexual urges need not be regulated nor controlled, it is the woman who has to be available all the time, yet safe from unwanted pregnancy.

Progestin-only pills :

This must be taken every day with no gaps in a month. It contain no oestrogen, but it contain small doses of the same progestin available in combination pills. Contraceptive action is through changes in cervical mucus that make it hard for sperm to get through; inhibiting the travel of the egg through the tubes; partial inhibiting of the sperm to penetrate the egg; partial inhibiting of implantation; and possible inhibiting of ovulation. This pill is also used as an emergency morning-after pill, when there has been unprotected intercourse.

Some of the side effects seen with the combination pill are also reported for the progestin only pill. Specific side-effects being allergic skin rash,gas and bloating.A common complaint is that menstrual bleeding is very irregular in amount and duration of flow and length of cycle.

When women are on the pill, they should get regular check-up such as BP, blood sugar, pap smear, breast exam, and any other exam for side-effects.

c. **Hormonal Implants and Injections, Net-en and Depoprovera** Net-en and Depoprovera are both progestorone preparations. They are injections of medroxyprogesterone acetate (Depo-provera) and Norethisterone given every three months, in the first five days of the cycle. These hormones stay in the body for upto 3 months and change the pattern of the menstrual cycle by altering endometrial lining, by suppressing ovulation, preventing embedding of the fertilized egg, by even preventing fertilization. It is said to suppress ovulation, and most importantly, to cause a delay in the return of fertility or sometimes stop the return of fertility permanently.

In Bombay the Family Planning Association of India uses Depo in its contraceptive campaign. Depo is available on the market of course, as an injection vial and costs Rs.150 for a 150mg/ml injection. Net-en costs Rs. 126 per vial, and like Depo, it is given as an injection in the buttock or arm muscle.

Among the probable side-effects of these injectables are nausea, irregular, prolonged or heavy bleeding especially during the first few cycles, possible amenorrhea later, back pain, weight gain from 2-25kg. and fluid retention. There may be headaches, even migraines, breast tenderness, itching, rash, acne, excessive facial hair growth and sweating, and decreased interest in sex.

Among the more serious side-effects are cervical erosion, and blood-clotting. The other side effects like depression, bloated feeling, back pain, pain in lower abdomen, effect on bowel movement including constipation, lack of energy and tiredness and the many other adverse effects brought on by hormonal injections, are most probably symptomatic of serious problems that we do not know about. It is now known that progesterone in pills, injection and implants (like Norplant) can cause clotting defects leading to thrombophlebitis, heart attacks or stroke and of course a BP. It can cause birth defects in humans, and predisposes us to cancer. Animal studies using very high doses of injectable hormones showed both breast and endometrial/endocervical cancers. Preliminary studies showed that women who used Depo for more than 5 years had an increased incidence of cervical cancer compared with women not using it.

Added to the adverse side-effects as with the injectable hormones, Norplant has been found to cause ovarian cysts in women indicated by pain and swelling in the area of the abdomen around the ovaries. If sterile conditions are not maintained, infections can result both in insertion, and in the removal.

Among all contraceptives, Net-en has raised serious questions about women's health and the attitude of the medical system among women's groups. This is because these injectables have an unique potential for abuse by doctors. In a country where being poor and illiterate carries particular disadvantages in medical care, an injection which cannot be withdrawn from the blood stream is dangerous, particularly when facilities for base-line screening for contra-indications like vaginal infection, cancers, liver problems like hepatitis, diabetes, heart and kidney problems etc. do not exist.

The arguments by the family planning establishment for injectables are based on a distrust of poor women - that they cannot be trusted with other contraceptives- they forget the pill, they have the IUD pulled out, they cannot get their husbands to use the condom, etc., and heavy bleeding, severe headaches, depression, vaginal infections, etc. are minor discomfort and women should not complain. Interestingly, these injections and implants are being used on indigenous peoples, blacks, women on doles, women in jails and in mental hospitals in the West.

Injectables are not popular among Indian women for the side-effects like continuous bleeding or amenorrhea (absence of periods). Heavy and prolonged bleeding can lead to anaemia, blood loss, weakness and exhaustion. Amenorrhea or no periods continuously for months together can create a sense of bloatedness and so much tension in women who are taking these injections to prevent a pregnancy, because the last thing they would like is a missing period.

NORPLANT:

Norplant is a subdermal (under the skin) implant of 6 capsules containing progestin that would leak into the blood a little every day, achieving the same effects as the progestin-only pill, said to work for a five-year period. The capsules are implanted under the skin in the inside of the upper arm under local anaesthetic through a small incision (minor surgery). Removal of the capsules is by a similar process, though the surgery is complicated. (Doctors are many times unable to locate all 6 implants as layers of fibrous tissue form around them). Norplant has all the disadvantages of an only progesterone method, and can stay on for 5 years. It is not yet used in India, but is being used in Indonesia, Brazil, Bangla Desh, etc.

Through campaigns about the side-effects, lack of control by women after the injection or Norplant has been given, and the patriarchal assumptions of the family planning programme, and by filing a public interest litigation in the Supreme Court, women's groups have succeeded in blocking the active pushing of injectables in the family planning programme by the State.

9.3.4. The Intra-uterine Device or IUD :

Sometimes called the loop or Copper-T, this is a small flexible device that is inserted by the doctor into the uterus. In India it is a plastic in the shape of a T, wrapped with a copper wire (explaining the name Cu-T). It has a 'tail' of plastic thread that extends through the cervix into the vagina so that the woman can check that it is still in place by feeling for the threads. How the IUD prevents pregnancy is not completely understood. The most widely accepted theory is that the IUD constantly irritates the inner lining of the uterus so that it prevents implantation of the fertilized egg. Another theory is that the presence of the IUD may speed up the normal contractions of the fallopian tubes so that when the fertilized egg reaches the uterus, the endometrium is not ready to receive it, and the egg is discharged with the next menstrual flow. Still another theory is that the IUD causes an inflammation or chronic low-grade infection in the uterus so as to prevent implantation of the fertilized egg. The copper ions expelled by the IUD are also supposed to prevent implantation. Normally the IUD is replaced every 2 years. The IUD should not be inserted immediately after abortion or childbirth.

Contra-indications include :

if the woman has excessive bleeding, abnormal Pap smear, or any kind of vaginal or uterine infection, an earlier ectopic pregnancy, a fibroid. It is always better to use an IUD after the birth of at least one child.

Side-effects :

Many women, especially those with no children, have increased bleeding and/or cramping. These symptoms may be more for the first six months after insertion, and may decline later. The increased bleeding leading to anaemia make many women fatigued and causes the unpopularity of the IUD. IUD users may be more susceptible to sexually transmitted diseases. The most serious long-term effect is infertility caused by PID (Pelvic Inflammatory Disease). Women who use the IUD run a significantly higher risk of developing PID (anywhere from 1.5 times to 9 times the normal risk). The body fights severe PID by laying down scar tissue, which can eventually block the fallopian tubes and lead to infertility. The IUD is available free of charge at a Govt. hospital or family planning centre, alongwith insertion by a doctor. At a private nursing home, the charge for the IUD may be about Rs.200 alongwith the doctor's fees.

9.3.5. Medical Termination of Pregnancy :

MTP or abortion as it is popularly called, was legalized in 1972, when the Government of India enacted the Medical Termination of Pregnancy Act by which theoretically, any and all women are entitled to demand an MTP in a Government Hospital free of charge. MTPs are also available, for a fee, in many private nursing homes in all cities and towns. Unlike as in

the West, MTP was legalized in India, not due to popular demand, but as part of the family planning programme.

The Act itself allows termination of pregnancy under the following circumstances;

a) **On therapeutic grounds :** Where the continuation of the pregnancy would involve a risk to the life of the pregnant woman, or of grave injury to her physical and mental health.

b) **Eugenic grounds:** Where there is substantial risk that the child, if born is likely to suffer from such physical or mental abnormalities as to seriously handicap it.

c) **On humanitarian grounds:** Where the pregnancy has been caused by rape.

d) **On social grounds :** i) where the pregnancy in a married woman is the result of contraceptive failure or ii) the environment of the pregnant woman after delivery would involve risk of injury to her health

The Act actually implies if a woman abortion on demand needs an MTP, the law applies in this fashion - if she is married, her contraceptive method - whether withdrawal/ condom/any other has failed. If she is unmarried, the pregnancy will cause her grave mental agony. Under the Act, only a registered medical practitioner having gynaecological and obstetrical experience can perform MTPs. The written consent of the guardian is necessary only for MTPs in women under 18 years of age and in women diagnosed to have unsound mind. MTP services are to be provided in the hospitals in strict confidence.

While in theory, all adult women can have abortion on demand, in effect, most Government hospital doctors consent to do an MTP only if the woman agrees to have an IUD inserted (if she is childless) or a sterilization performed (if she has had children). A poor and young woman, is more likely to meet an overtly hostile doctor. Besides, the lack of MTP facilities in rural areas force most women to go in for 'illegal' and very often, unsafe abortions. (26 years after the Act, 91% of all abortions in India belong to this category. These figures have been arrived only by noting the botched abortions that come later to the Govt. hospital. How many abortions have actually been performed successfully is still unknown !)

In an MTP also called abortion, the foetus, placenta and built-up tissues on the lining of the uterus are removed surgically. Different methods are used, depending on how large the foetus has grown. These are:

1. Suction and evacuation with Dilatation & Curettage (also called D&C): This is done under local anaesthesia, from 6 through 12 weeks LMP (last-missed period) at the nursing home or hospital. In a Government hospital, it is free of charge and may range anywhere from Rs.1,500 - 2,000/- in a private clinic. In the rural areas,doctors offer it for as less as Rs. 300/. Complications, even in a safe MTP may be heavy bleeding (incomplete abortion), nausea and vomiting, heavy cramping or fever indicating possible infection

2. Induced MTP with an extra-amniotic infusion of a fluid: Done from 16 through 24 weeks LMP,in a hospital or nursing home, it is like an induced delivery and must be in a hospital.

3. Hysterotomy: This is only used if the induction mechanism fails, or sterilization is done simultaneously. It is like a caesarean section and is a major operation.

9.3.6. Sterilization :

Both male and female sterilization are irreversible methods of contraception. Cutting the tube carrying the sperm in men is called a vasectomy, and cutting the fallopian tube transporting the egg in women is called tubectomy. Generally, couples wait till their second child is 2-3 years old to go in for sterilization. Vasectomy, as male sterilization is called, is far simpler than female sterilization, and requires no rest comparatively. In India we have excellent facilities for sterilization and the personnel are skilled. For urban and rural poor, sterilization, along with abortion has become the most widely birth control method. Indian women are rapidly learning how to use the system to control their fertility. Women have found that the pill and IUD have undesirable side-effects, and that presently use of barrier methods require cooperation by male partners.

Sterilization became an official part of the government family planning programme in 1956 (abortion only in 1972). Twenty years ago, open coercion was the norm; nowadays, there is a mixture of subtle coercion, inducement, population control information and camps, even in remote areas. While feminists acknowledge that the government programmes on sterilization have enabled many women to control fertility decisively, they question the programme in the absence of other choices. The Govt. offers more financial incentive for a female sterilization as compared to a vasectomy. The concentration of female sterilization raises troubling concerns, since it is a more complicated and riskier operation than vasectomy, and takes longer to recover from. In sharp contrast, the amount of money spent (in terms of propaganda, camps, hospital outlay) on male sterilization is minimal.

Methods of Sterilization :

The main methods for male and female sterilization used in India are:

a. Male Sterilization also called Vasectomy.

The sterilizing operation generally done under local anaesthesia, takes about fifteen minutes or less. The doctor makes one or two incisions in the scrotum, locates the two vas deferens (tubes that carry sperm from testes to penis) removes a piece of each, and ties off the ends. It is a simple and safe operation requiring only out-patient care. The very few complications that may arise are wound infection (as in any operation), and pain and swelling caused by accumulation of sperm. This may appear 10-14 days after the operation. They will subside on their own.

After the man has had about 12 ejaculations (the sperms remaining in the prostate gland have to be ejaculated) no more sperm are produced.

b. Female Sterilization or Tubectomy:

Female sterilization involves blocking the fallopian tubes so that the eggs do not travel to the uterus. Generally it is simplest after delivery : within about 10 days after delivery. The advantage is that at this period, the doctor can easily access the uterus, through an abdominal incision. If the delivery was through a caesarian section, tubectomy can be done simultaneously. If tubectomy is not linked with delivery, and laparascopy is not advisable, it is the rare case when the abdomen is cut open as for a caesarian for access to the tubes. Vaginal tubectomies are rarely done nowadays because of the high rate of infections.

The complications are as in any other major operation. Bleeding and infection, pain in the abdomen, high temperatures, pus from the wound, tight abdomen (inability to pass gas) are some complications that may result. Rest is crucial. Among the poor women where sterilization is the commonest form of contraception, complaints of persistent pain in the pelvic area and lower back are common. The absence of rest after the operation contributes to this.

In laparoscopy, a loop/ ring obstructs the Fallopian tubes, with the use of an instrument called the laparoscope. A laparoscope has long and specially designed operating instruments, all in one shaft, i.e., the doctor can both look and cut through the same system. This system can therefore function through a single small incision (cut) generally in the abdomen. The advantage is minimal hospitalization, about 6 hours. Nowadays, this is the most common form of sterilization in India, and a woman who goes to a hospital only for sterilization, is likely to have a laparoscopy done. Camps are frequently held in villages and taluka centres also. As in any other operation, bleeding, infection and failure may be possible. Women who have any cardio-respiratory problems and hiatal hernia, any previous bowel surgery, pelvic TB or PID should avoid laparoscopy.

9.4 INADEQUACIES OF RESPONSES TO WOMEN'S NEEDS :

The majority of Indian women use contraception as a terminal method, that is to end child-bearing. Early marriage and child- bearing are the norm. When the required family size is completed, women in the family agree to sterilization. Some urban middle-class women, however resort to contraception to space out children and postpone child-bearing. Here other safe, reversible and comfortable options are needed. The women's movements argue from the reality of women's lives that contraception is not just about methods; using it involves our feelings about ourselves, our sexuality and our partners. The fear of pregnancy prevents many women from enjoying their sexuality. Today, even though there are many more

contraceptive methods, women still get pregnant when they don't want to. Deciding which method to use involves questions about women's health, They feel that decisions on contraception should involve the participation of the partner and his willingness to take responsibility too. Sensitive doctors too are required. State interventions have largely been directed at women.

The State programme is unfortunately not woman-friendly and largely coercive. It rests on the premise that women do not know what is good for them, and that harmful side-effects should not be as important as the effectiveness. As a result, what is pushed in the official programme are contraceptives like the pill, the IUD, that have side-effects for many women, or sterilization that is largely irreversible. Other options like the diaphragm, natural fertility, etc. are never discussed. Choices are limited, adequate information and counselling are never given, pre-screening, follow-up and the overall health of the woman is neglected. Extensive birth control services do exist for most poor women, but always coercive, and in the absence of other services and information essential for basic health care needs. Population control programmes like the surgical interventions and hormonal contraceptives receive massive Govt. funding, while abortion, barrier methods and research on women's experience with existing contraception do not receive any funding. Some doctors, realizing the great need of women for safe birth control, and seeing the monetary benefit for themselves, have set up private clinics that specifically deal with say, MTPs. Here the counselling is active, and treatment gentle. Yet, because the necessity is commercial, and MTPs satisfy the immediate need, even these doctors rarely go beyond the available alternatives of contraception.

9.5. SUMMARY:

This section shows women through the ages have been using a variety of methods to prevent pregnancies. The modern era has changed women's lives. It is possible to control our fertility and prevent a pregnancy. There are a large number of devices such as barrier methods,, pills, IUD's sterilization and even the natural birth control methods, which can be used confidently. Unfortunately women are not taken seriously, they are not involved in decision making and not surprisingly programmes not only result in failure to achieve their targets, they may end up being harmful to women's health. It is obvious that birth control is desired by all women and there is a need for transparency at every stage.

9.6. MODEL EXAMINATION QUESTIONS:

I. Answer the following questions 30 lines each.

a. Give details about any 2 barrier methods of birth control.

b. What are the complications and side effects of oral pills and IUDs.

c. Describe sterilization in men and women and explain why it is safer for men to have a vasectomy, when compared to a tubectomy in women.

II. Answer the following question in 15 lines each.

a. Give the history of birth control in India.

b. How do the barrier methods act ?

c. Write 10 lines about the MTP Act.

d. What are the side effects of IUD ?

e. Explain vasectomy

f. What is a diaphragm ? how is it used ?

9.7 : GLOSSARY

a. **Lactation:** breast-feeding

b. **Ovulation** : when an egg is released from one of the ovaries during the middle of a woman's monthly cycle

c. **Pituitary** : a gland located in the brain which controls the release of oestrogen and progesterone from the ovary.

d. **Cervix, vagina, endometrial lining,**etc.: please see Unit 7

e. **Breakthrough bleeding :** staining/bleeding between periods

f. **PID** : pelvic inflammatory disease (infection of the reproductive parts in a woman's lower abdomen)**g. Foetus** : baby growing inside the womb

h. **Placenta** : also called afterbirth which because it comes out after the baby is born, it is a spongy organ inside the uterus that gives the baby everything it needs to grow during pregnancy.

UNIT-10: OTHER COMMON HEALTH PROBLEMS OF WOMEN

10.0. AIMS AND OBJECTIVES

This section will attempt to highlight problems which are chronic and require many months for treatment. Health problems like Anaemia, and backpain become a part of women's lives. Even though they are simple, 80-90% of women suffer from these problmes, Hypertension, cancer and tuberculosis require the support of the family, doctors and a whole range of other facilities for treatment and cure. These health problems have been included to highlight the special health needs of the poor and specially women living in the rural areas.

After giong through this unit you will be able to discuss

- Common Health probles of Women.

10.1. INTRODUCTION

Some of the most common problems are the most difficult to treat. Women spend a lifetime with anaemia or backpain or a blood pressure and find that the health set up, the family and her work do not allow her to get treated. Most of these illnesses are long drawn out. Visits to the doctor for checkup, diagnosis and follow up assume that women have time, and the necessary resources. Government Public Health facility prevent any kind of "scientific or thorough" care. The privatization of medical care at all levels will further worsen the health problems of women and the poor.

10.2. COMMON HEALTH PROBLEMS OF WOMEN:

10.2.1. Anaemia:

This is very common and usually due to a lack of iron in food. Red blood cells contain haemoglobin which is made up of protein and iron atoms. Haemoglobin does the actual work of conveying oxygen from the lungs to the other organs, and brings back carbon dioxide back to the lungs. To produce haemoglobin, the human body depends on a small but regular intake of iron in food. The quantity of iron required everyday is measured in terms of a few milligrams. The normal levels of Haemoglobin (Hb) in gm/100 ml of blood are 13 for a man, 11 for a child, 12 and over for a non-pregnant woman, and 11 for a pregnant woman. If Haemoglobin is not being produced sufficiently, there will not be enough oxygen in the blood - this is anaemia. Anaemia affects more women than men.

The signs and symptoms of anaemia are not specific - tiredness, and early fatigue. There may be pain in the back, or between the shoulder blades, and even bone pains. Severe anaemia may cause breathlessness and cause a rapid heartbeat. It can cause a transient blackout. Anaemic children do badly at school, as their concentration is poor, and they feel drowsy and sleepy.

Severely anaemic (Hb 5-6gm) people may fall ill more often, and take a longer time to recover. Women and children catch infections easily, because anaemia lowers their general resistance. The most disturbing possibility associated with severe anaemia is the effect on the heart, because the heart muscles cannot keep working without an adequate oxygen supply.

A pregnant woman who is anaemic may have many of the symptoms of anaemia described above. Her baby is likely to be of much less than average weight. The baby may be born prematurely, and may also be anaemic. The weight gain during pregnancy may not be enough. Any crisis during delivery, like bleeding, can create problems for an anaemic woman. (Anaemia and heavy bleeding are directly or indirectly responsible for about 30% of maternal deaths during pregnancy or childbirths, especially in the rural areas.)

The most common cause is the lack of iron in the food normally eaten. Foods like liver and meat have a high iron content. Green leafy vegetables, beans and dals also have some iron. It is not enough if there is adequate iron in the foods. This iron must be absorbed. Only 2-5% iron in vegetarian foods is absorbed. Due to the presence of substances called oxalates in vegetables, which binds iron and prevents its absorption. In addition, traditional vegetarian cooking in many parts of the country makes use of certain substances like tamarind in small quantities which prevents iron absorption. Tannin in tea, betel nut and tamarind inhibit the absorption of iron. These substances act so that even the small quantities of iron in food are flushed out.

Apart from inadequate iron anaemia is also linked up with inadequate folic acid (a B vitamin), Vitamin C, proteins and many other micro - nutrients (nutrients required in small quantities). So actually a diet (which is rice, wheat, or millet/based, with no dal, vegetables, milk or fruit) results in multiple deficiencies. Anaemia will have to be treated, not just with iron tablets or tonics, but for better nutrition.

In young girls and women, another important cause of anaemia is excessive loss of blood during heavy menstrual periods or heavy bleeding due to insertion of Copper T, after an abortion, fibroids, or dysfunctional bleeding. Pregnancy tends to deplete iron reserves in the mother's body, especially in the last three months, when the baby's need for iron is at its peak. Pregnancies that follow one another in quick succession and do not give the mother enough time to make up for the blood loss during childbirth, also lead to low haemoglobin levels in her blood. Any chronic infection or illness like malaria, stomach problems, hookworms, or kidney problems, may make a person anaemic.

Anaemia, like TB, is definitely associated with poverty, poor quality food, unhygienic surroundings, and a life of deprivation. Over 80%. poor Indian women are anaemic during pregnancy. But even women from the middle classes (about 30-40%) may be anaemic during a pregnancy, when the need for haemoglobin-rich blood is particularly great. Severe anaemia arising from worm-infestation and poor nutrition is common in children. An iron-deficient diet devoid of meat, greens, and pulses, causes anaemia among large sections of well-to-do women also.

To cure or prevent anaemia, women need to eat better iron-rich food. The following foods have over 5 mg of iron per 100gms of edible portion -

bajra (8mg)
rice flakes-poha (20 mg)
millet (5 mg)
cow pea (8.6 mg)
lentil- masur dal (7.58 mg)
dry peas (7.05 mg)
beet greens (16.2 mg)
betel leaves (10.6 mg)
mint (15.6 mg)
parupu keera,
gangavaila koora (14.8 mg)
onion stalks (7.3 mg)
dry coconut (7.8 mg)
gingelly seeds (9.3 mg)

rice bran (35 mg)
puffed rice-murmura (6.6mg)
roasted Bengal gram (9.5 mg)
horse-gram (6.77 mg)
moth beans (9.5 mg)
soyabean (10.4 mg)
bengal gram leaves (23.8 mg)
cauliflower greens (40 mg)
mustard leaves (16.3 mg)

dry lotus stem (60.6 mg)
dry sundakai (22.2 mg)
coconut meal deoiled (69.4 mg.)
black til (56.7 mg)

cumin seeds (11.7 mg)

(all condiments have

iron in them)

water melon (7.9 mg)

Most fish,meat, egg.

dried dates (7.3 mg)

raisins (7.7 mg)

Food cooked in iron vessels also provide iron and guards against anaemia. Anaemia can also be prevented if bleeding problems (in menstruation, due to the use of an intra-uterine contraceptive device, at the onset of menopause and so on) get immediate medical attention. Hb levels are checked with a fairly simple blood test. Treatment with iron supplements and a good diet will cure anaemia though over a period of some months.

10.2.2. Tuberculosis:

TB is an infection like any other, except that the bacteria which causes TB is tougher, settles down in deep corners of the body, and is very difficult for diagnosis to locate and treat. The bacteria is like a microscopic rod, and travels from one person to another in sputum droplets. When a person suffering from lung TB coughs, sneezes or talks, a large number of TB bacteria enclosed in the droplets of spit are sprayed in the air. In the open, the droplets dry easily, and the bacteria do not survive long. However in dark, ill-ventilated rooms, the spray of bacteria is inhaled by others around, and there is a possibility of infecting people around.

Once the bacteria is inhaled by an uninfected person, it is quickly carried to nodes in the lung. In most instances, the body defence against TB works with the white blood cells trying to attack it and stop its spread. The TB bacteria may stay in the node or some other part of the lung, trapped sometimes for years. In some cases, it may go further beyond the lung. Spreading further in the bloodstream, it can travel to any spot in the body such as the brain, bones, uterus, fallopian tubes, etc. It is possible that the trapped bacteria may be released by the node later in life, especially when one is ill, over-overworked, and undernourished, such as women in their reproductive years, and men and women when they grow old. Almost any organ can contract TB. TB of the lungs is the most common manifestation of the infection, but it can also affect other organs in the body. Of course, other infections can also do this, but TB is the greatest offender because it is chronic, and difficult to treat. (TB treatment takes a minimum of 6 months, while other infections can be cured in 5-10 days' duration).

The symptoms are deceptively similar, if a little fever, to those of a common cold or a 'general weakness'. Other symptoms could be feverishness in the evening accompanied by sweat, gradual loss of weight over 2-3 months, perhaps with a loss of appetite and chest pain, coughing for a month or more, sweating in the night, having chest pain and/or shortness of breath, a change taking place in the menstrual cycle, either in the quantity of blood flow, or in the

duration of the cycle, skin is pale and waxy, or voice is hoarse, any painless lumps (lymph nodes) in the neck, which have been there for some months, coughing up blood-stained sputum. Any more than two of these two symptoms should necessarily entail going in for tests for tuberculosis (TB).

Diagnosis :

A stigma is attached to TB. The disease is seen as an incurable one, the touch of which can only lead to death. Women who have TB have been known to be abandoned by husbands and family. Every kind of TB can be cured if the right steps are taken, but becomes worse if left untreated. The lungs become small pockets of pus, the general condition of the person deteriorates, and the bacteria may begin to invade other organs once the pus finds its way into the bloodstream. At this stage, the infection can cause profuse bleeding - coughing of blood, which indicates that the disease has progressed to a serious or complicated stage.

These tests are done free in Government hospitals :

a. **ESR (Erythrocyte Sedimentation Rate):** An inexpensive blood test to check the ESR levels. A high ESR by itself does not always mean TB. The diagnosis is generally confirmed by an x-ray. Along with the ESR test, a white blood cell count should be conducted.

b. **Chest x-ray:** A "shadow", visible in a chest x-ray confirms the diagnosis of TB of the lung, only when accompanied by the other symptoms of cough, loss of weight, and fever of over 1-2 months duration. But TB in the other organs is more difficult to spot on X-ray.

c. **Sputum Examination:** If both the symptoms and high ESR indicate TB, but the x-ray is not clear, a sputum examination for the presence of organisms is recommended. Even with a positive x-ray, this may be done to confirm. A positive result confirms TB and since the organisms are present in the sputum, this is an "open case" - infective one. But a negative test does not rule out TB; it may only suggest that the TB lesion is well "tucked in" so that the bacteria are not coughed out and that the case is not infective. Sputum culture will determine sensitivity to drugs.

d. **Mantoux Test:** This is a test used mainly for confirmation. It is an immunological test based on exposure to the TB organism. The test itself involves giving an injection in the forearm and examining the size of the resulting patch 3 days later. TB is the likely diagnosis if the diameter of the patch is more than 15 mm. This test is more accurate in children.

If none of these tests conclusively establishes a diagnosis, a course of regular antibiotics may be begun. If there is no improvement in general health, anti-TB treatment is indicated. Government centres are better equipped to diagnose TB than private clinics though the

formalities and procedures are tiresome. The Govt. hospital does start the patient on a standard firstline regimen at the beginning, and follows up when there is default.

Women who are less than 3-4 months into a pregnancy, and find they have TB, might be advised to terminate pregnancy after starting therapy. A mother with a baby may breastfed, but the baby might need some preventive treatment if the mother is an open case. If either of the parents are 'open cases' of TB, it is better to have the young children also tested for TB, as they are particularly vulnerable.

Treatment :

This is of long duration and involves frequent visits to the government hospital/centre. Thus entailing time and money, it is not surprising that only 20% of patients with TB manage to complete the 1 1/2 year course of treatment in a government hospital, despite the free supply of drugs. Women especially find this difficult. With a little improvement in condition, they are not encouraged by the family to continue treatment. As TB generally strikes women during their reproductive years, they have to survive pregnancies, child care, cooking, and a dozen other household chores at precisely the time when they need rest more than anything else. A good diet for women is particularly difficult in poorer families. The family is just not structured to provide for women in their illnesses. These are the reasons why feminists argue that it is not enough to treat TB as a purely medical problem. When the drugs are stopped in mid-course, the bacteria in the body develop resistance to these drugs, and the next line of treatment will entail more expensive second-line drugs.

Until the patient stops coughing bacteria in 3-6 months while on drugs,it is a good thing for him/her to

1) be isolated in a separate room or go into hospital and stay away from children and old people
(2) cover the mouth during coughing;
(3) use separate bed clothes and vessels;
(4) use a spittoon - swallowing saliva (even own's own) entails the risk of intestinal TB
(5) get the family investigated for TB and
(6) vaccinate small children against TB.

In India the control of TB and its treatment has been taken up as a national programme. Under this programme, TB centres have been set up all over the country for the diagnosis and treatment of tuberculosis of the lungs. Earlier treatment favoured rest, good food and supportive care in sanatoria. Today, the domiciliary method has been adopted —this means that the patient is allowed to take her supply of drugs home and come back for the renewal of the supply every month. Whether the family is supportive in her nutrition, rest or well-being is not looked into. The medical system is no longer responsible for the cure; the patient herself is.

The drugs are classified under the following categories :

a. First line of drugs, or standard regimen of 12 months

b. Second line of drugs of short course regimen of 6-8 months. With the regular standard regimen for 12 months or the short-term regimen for 6 months, it was soon found out that in most countries, people did not complete the treatment, the reasons being many, important among which were:

c. Intolerance of side effects

d. Difficulties to travel to the TB centre for the medicine supply even if it was once or twice a month

e. Cost of medicines when bought outside was prohibitive

f. There was little information available about the need for complete treatment.

When people stopped the treatment, they came back later with a serious flare-up of TB resistance to the first line of drugs. In such instances, the second line of drugs (more expensive with more side effects) had to be tried. In the meantime, a large number of people got infected with TB which was resistant to drugs. In most cities of India, a foreign funded programme to control TB is on called DOTS (directly observed treatment, short course),this strategy requires the patient to visit the TB centre, where he/she has to take the 2nd line of drug in front of the doctor every day, or twice or thrice a week.

Feminists and health activists have been arguing that there is no reason to expect that those people who have not completed their course will visit a TB centre daily or twice/thrice a week for direct administration of the drugs. People coming to the TB centres are now given the second-line treatment. What happens when second-line drug resistant TB spreads? The third line of drugs are really not available, We have no facilities in most of the TB centres for sputum sensitivity tests. The drugs should be administered depending on whether it is a relapse case, new case, sputum negative or positive. Depending on foreign aid to give everyone 2nd line at the 1st visit may be risky. Once the aid stops the cost of the drugs in the free market is prohibitively expensive. At the metropolitan Govt. hospitals, a few samples are kept for VIP requests only.

Side Effects of Drugs:

These drugs usually cause gastritis, nausea, loss of appetite; they can cause loose motions, griping pain and general discomfort; some can affect the liver and cause jaundice; some can cause anaemia. Fruits, fresh vegetables, meat (especially beef), bone soup, etc., contain substances which help the liver and kidneys to process medicines. Drinking plenty of water helps the kidneys throw out the drugs. Drinking milk, porridge, or eating foods like boiled soft rice, khichdi/pongal, curds, etc. soothe the stomach lining. A certain number of side effects is inevitable; but beyond a point, they are an indication that the drug should be withdrawn.

TB as a social problem. 15-20 million people in India have TB. While it has now become the leading killer, more women are also dying because of TB than due to all other causes of maternal mortality put together. It is a disease that is directly linked to poverty. Most people know that improvements in socio-economic conditions (better wages, enough food, fresh air, better housing) can control the spread of TB. This was a lesson learnt in Europe even before the discovery of new drugs in the 19th century. The incidence of TB in many European countries fell steadily as living conditions improved.

The importance of healthy living conditions to the control of TB has to do with the way the disease is spread. TB is transmitted to persons living in close contact with the patient(in the 'open case'---i.e when the bacteria are in the sputum) when she coughs, sneezes or spits, thus leaving bacteria in the air. Cramped surroundings, ill-ventilated, smoky homes or work spots brings them in close contact with the germs, whereas chronic hunger, overwork and smoking further debilitate people and make them particularly prone to infection.

10.2.3. Hypertension :

Blood pressure is a measure of how hard the blood presses on the inside of the blood vessels. A blood pressure measurement has two numbers. For eg., BP 120/80 - 120 is the top (systolic) reading (the force of the blood in the arteries when the heart is pumping out blood), and 80 is the bottom (diastolic) reading (the force of the blood in the arteries when the heart is filling with blood). Around 120/80 is optimal. Whatever the age, if blood pressure exceeds 140/90, it indicates hypertension. Even though BP is more common as one grows older, all BP (of more than 140/90) needs care and treatment.

Symptoms:

A fairly large percentage of people have BP, but do not have any symptoms. Until the doctor has informed them, they do not know. Otherwise, hypertension may have symptoms like : an unexplained throbbing headache in the mornings, general fatigue, dizziness, and ringing in the ears; irritability or reacting with panic to minor incidents; not sleeping well; if even mild exercise causes palpitations and shortness of breath; occasional pain in the left shoulder and chest; frequent nose bleeds.

Though the cause for high blood pressure cannot be pinpointed accurately, several factors are associated with it: high-fat, high-cholesterol (blood-fat) diet, obesity, stress, heredity, chronic untreated urinary tract infection, pill use, smoking etc.

A high-fat, high-cholesterol diet helps blood-fats settle in the internal lining of the arteries making them narrower and smaller. This is called arteriosclerosis; the diastolic pressure can get very high. The blood fat levels increase in some people even when their fat intake is low. In such cases, the problem can usually be traced to a very high carbohydrate intake in the

form of rice, wheat, jowar, or maida. Since excess carbohydrates are converted into fat for storage, they can also appear as deposits in the arteries. The other food factors associated with hypertension include a high salt intake and a low calcium intake.

Stress may be the most important of the factors that precipitate hypertension in women. Women are all subjected to subtle or overt control by family, society, religion, politics and other institutions and often to humiliation. Marriage and conformity to new roles adds stress. Another stress-causing factor is the poor self-esteem of women who are forced into conformity. In fact, more and more women are being diagnosed as having hypertension at an early age. The incidence is the same as for men or even higher in women of older age groups. Women's groups argue against the popular perception that only men have BP as most research is carried out only in men. They point to parallels of the higher incidence of BP among blacks in America than among whites, and that more black women have BP than black men or white men and women.

Like marriage, migration is stress-causing. A study on immigrant Indian women in London showed a very high incidence of hypertension in them and at a much earlier age than in their family members who continued to stay in India (this survey was conducted with reference to women from Punjab). The incidence was 80% in women over 50 years of age who had settled down in England compared to around 10-15% in those who were living in India.

Complications :

With proper medication and care, one can lead a fairly normal life. Untreated hypertension in the long run can result in a heart attack when the artery supplying blood to the heart is thickened and closed due to clot formation in a narrow artery. Stroke, causing paralysis when the brain's arteries are blocked or start bleeding. Damage to the retina (the inside of the eye), and so on. The heart itself begins to lose its elasticity and gets enlarged sometimes because of the strain of pumping blood at a high pressure. Headaches are common enough, but even fits can be caused by very severe uncontrolled hypertension.

Diagnosis:

The most important diagnostic sign is a blood pressure which is more than 140/90. on three or more recordings with an interval of a week each or on consecutive days and taken at the same time show a high pressure. Either a high systolic (more than 140) or a high diastolic (more than 90) indicate BP. Sometimes the early morning BP may be normal after a restful sleep but it may rise in the evening, suggesting a stressful day brings on BP. So consecutive records both in the morning and evening are necessary, and if all the recordings of the evening show high BP an oncoming hypertension is obvious. Readings that are high both in the morning and in the evening will definitely clinch the diagnosis.

Tests will be done for (i) total triglycerides (or fats), (ii) cholesterol, and (iii) high density lipoprotein - HDL cholesterol; (iv) blood sugar (to check for diabetes), (v) blood urea (to check kidney function) (vi) urine examination (to rule out a kidney infection). An ECG and examination of the eyes should also be done.

Treatment:

If the person is obese, a low-fat and a low salt diet is recommended. To get over hypertension, it is important to learn to relax. Situations that cause stress need to be dealt with. Older people with hypertension need to make or resume contact with friends, spend time with them or go out with them. Reading, listening to music, meditation are good ways of relaxing. A brisk walk for 30-40 minutes everyday (when it is not hot) on at least 4-5 days of the week works wonders for most people with high blood pressure. Atleast 7-8 hours of undisturbed sleep everyday is good. If there is difficulty sleeping, sleeping tablets can be used.

Drug Treatment for Hypertension:

This is to bring BP down to below 140/90, that is around 130/85 or even 120/80. This alleviates the immediate problems that a very high blood pressure can cause. The doses will need adjustment from time to time. If the drugs are diuretic, they tend to leach out potassium, alongwith sodium and water in the urine. Eating plenty of fruits is good because they are rich in potassium. Other drugs can have a few side effects like dizziness, light-headedness, headache, weakness, nausea, muscle cramps, swelling of arms and legs, a wheezing nose, stomach upsets, nausea, diarrhoea, etc. Most of these side effects disappear in a short time, say a week. If they do not, the prescription may have to be changed. No drug should be stopped suddenly.

10.2.4. Back pain:

This is so common in women that the complaint represents a challenge to the medical system at many levels. Normally when 10-15% of a population suffer from an abnormality, it is medically called an epidemic. Back pain affects over 60% of women of child-bearing age, and a greater percentage of older women. Yet medical science, far from treating it as an epidemic, has never tried to find out rational treatment of the same. Medical science terms it 'non-specific' and since doctors are trained to administer drugs for 'clinically well diagnosed diseases' and backpain does not fall into any definite category.

Causes :

The backbone is made up of small components of bone called vertebrae which are balanced vertically, one over the other, by the action of numerous muscles and fibrous ligaments. The bones are kept in place by the oppositional play of these muscles, whose tone and coordination

are factors that affect the normal functioning of the back. Without the support of the muscles the little bones would rotate over each other and may even collapse like a column of bricks.

Another factor that helps to keep the bones in position is their own integrity. A very thin fragile bone can not be held in place even if the muscles are theoretically strong and well toned; the bone could in fact crack with a muscle pull.

When the critical balance between the small bones and the connected muscle is upset, it alters the finely turned structure of the back, resulting in pain. The nerves radiating from the spinal cord (enclosed within the backbone) are then caught between the badly balanced vertebrae and cause excruciating pain. As these nerves originate in the spinal cord and go a long way to the distant muscles of the arms, legs, and other regions of the body, the pressure on the nerves near the spine causes a radiation of pain from the back to the groups of muscles supplied by these nerves. These muscles then tend to stiffen, further distorting the architecture of the back.

Tautness of muscles are affected by lack of exercise. Women adopt a single posture for long hours—through the working day, sometimes, and later, while doing housework—and their back muscles seldom have a chance to stretch or contract or achieve anything like the variety of movements they are designed for.

Integrity of the bone is affected by depleted calcium intake resulting in drawing on bone calcium. Thus bone calcium is used up, leaving the bones thin and porous. Indian women's intake of calcium falls far short of the required quantity (0.5 gm-1 gm), being (on an average) only about 200-300 mg a day. Foods rich in calcium like milk, curd, cheese, and pulses are expensive. Women who go through many pregnancies and breast feed their babies (also putting in, very often, long hours of work) invariably have unhealthy bones and sagging back-muscles, the classic causes of backpain. Calcium deficiencies in children stunts their growth, weakens their bone mass and makes them vulnerable to back problems later in life.

Availability of Vitamin D is crucial to the absorption of food calcium from the intestines. If this is lessened, calcium is depleted. The use of Corticosteroids in the treatment of diseases like asthma and arthritis results in bone thinning because its action removes calcium from the bones. Anaemia and protein/energy deficiency can exacerbate the problems arising from calcium deficiency. Very thin, emaciated women are prone to bone-wasting because of the absence of fat in their bodies. Fat is needed for producing and storing the small quantities of estrogens in the menopausal phase. Immobilization of some part of the body or prolonged bed-rest has an adverse effect on the bones. Also, women lose bone-calcium faster than men after the age of forty, possibly as a result of low oestrogen levels.

Diagnosis :

If a woman reports backpain, x-rays can check for sciatica (the collapse of the spinal bones) or osteoporosis. But there are no laboratory tests to identify calcium deficiency.

Treatment:

Medical science, argue feminists, have not taken back pain seriously, and options range from anti-inflammatory pain-killers to rest and women can hardly think of rest. There is really no treatment for back pain, women learn to live with it but the following may help, foods which include a calcium-rich diet: foods like fat free skimmed milk, curd, and greens. Excess weight especially if it is around the abdomen (putting an additional load on the back(must be shed. Good posture and exercise may help. A back pain must be prevented because really there is no way one can reverse these changes.

10.2.5. Cancer:

Cancer in the primary stages is curable; it can be retarded. Many older women who are diagnosed as having cancer will probably live almost to their full life-spans. Out cancer is a serious problem, as patients coming with advanced cancer cannot be cured. In India, breast cancer and cancer cervix are the common types of cancer. In the Govt. Cancer Hospital at Hyderabad, out of 10,000 fresh cases every year of both men and women, at least 4,000 are those of cancer cervix in women.

What is Cancer:

Cancer starts when some cells in the body begin to grow out of control and take over parts of the body. Cells in our bodies divide normally, some quickly and others slowly. All the cells of the skin, or the inner lining of the intestine, for instance, are shed and replaced by new cells every few days. Normally, when cells divide to replace old layers of skin or organ surfaces, they do not distort or drastically change the organ or its surface. The cells of our skin, of the inner linings of our mouths, intestines and vaginas are continually being shed and replaced; but the proliferation of cells is regulated and controlled by chemical signals. Each cell divides into two, and then into four, into eight and so on. The chemical signals halt the cell division as soon as the relevant surface is covered. Thus these signals prevent cells from growing one over the other or from forming abnormal and unwanted layers over the surface. If for some reason they fail to do so, other checks come into play. These offending cells are quickly mopped up by scavenger cells so that the surface of the organ is left smooth and its architecture unchanged.

It is believed that when there is an irritation or constant stimulus on the organ continuously for many months or years, the result is an uncontrolled division and growth of cells. This growth is what eventually becomes a cancer. For example, people who have been smoking for

years can develop lung cancer because of the constant chemical irritation of the lungs and throat. In India, some women have skin cancers around their waists, along the groove produced by petticoat strings tied very tight. The chafing of the same area over many years by the fibres of the string can lead to skin over-growth and cancer. Infections that persist in some parts of the body have the same irritant effect. Persistent vaginal infection and chronic cervicitis can lead to cancer of the cervix.

Cancerous cells, then, are the result of a normal process gone haywire, causing a change in the cells. These cells behave abnormally; the scavenger cells, usually vigilant cannot recognize the abnormal cells and so become ineffective. The actual growth of the cells and the absence of any checks to this growth speeds up the development of the cancer in some cases.(Some cancers grow faster than others).

At first localized in a particular organ, these cancerous cells gradually spread and colonize surrounding organs, enter the blood, lymph, and eventually move to distant parts of the body through the bloodstream. The cancerous cells suspended in the blood attach themselves to new organs, so that cancer cells from the bone or the uterus can reach the lungs and lodge there. Thus a primary cancer in the pelvis or lungs can produce secondaries in the bones or the brain when the bloodstream or the lymphatic system transport the cancerous cells.

Symptoms:

In the initial phases there is no pain or discomfort and no disturbance in the bodily functions. This period of latency could last for as many as five to ten years. Smokers, for instance, may have lesions in the lungs for years without suspecting it; this fact may, however emerge only on a routine X-ray or when secondaries in the bones or other organs cause problems.

Causes:

This cannot be pinpointed but we can state who is prone to cancer. Those women who are exposed to environmental pollution of a high degree(including radiation, dust, asbestos, pesticides), who smoke and chew tobacco have higher incidence of lung, mouth or skin cancer, who use hormone or birth control pills for long periods have higher incidence of breast cancer, those women whose diet contains an excess of certain types of processed foods (smoked hams, foods with additives, etc.) have higher incidence of cancer of the colon, those who have chronic untreated vaginal infections, cannot use clean cloth/pads for periods and do not have sufficient water to wash the private parts have higher incidence of cancer cervix. Cancer is more often found in older people, as it can take as long as twenty years to reach a detectable state. Heredity also plays a role. If one parent or siblings had cancer, there is a greater chance of contracting it in the family.

10.2.5.(a). Cancer of the breast:

Self-examination of the breast looking out for any marked difference in their shape, feel or texture and especially any lumps helps. This can be both lying and standing up. With the arm raised, the breast should be felt with the palm of the hand. The most common location of tumours is between the nipple and the armpit. Any lump which does not disappear over the next menstrual cycle must be investigated, not because this means cancer, but because the possibility should be ruled out. A pathologist's microscopic examination of cells from the lump (from a biopsy) will be required. The diagnostic procedures may be either a needle biopsy (when a needle is inserted directly into the lump) or a surgical biopsy when the whole lump and a bit of the surrounding tissue may be removed by the surgeon, or a section of it might be carefully excised. In India, breast cancer is usually detected late. In the West, due to high public consciousness, it is detected early, followed by treatment and a near-normal life.

Treatment for Breast Cancer :

The accepted treatment in almost all cases is radical surgery, sometimes along with radiation or chemotherapy. Mastectomies (removal of the breast) are major operations, done under general anaesthesia. A simple mastectomy removes only the breast, leaving intact the surrounding tissues, including the auxiliary nodes and the pectoral muscles. A radical mastectomy involves excising the entire breast, all the axillary nodes, and the pectoral muscles under the breast—the idea is to prevent spreading and recurrence of the cancer. If there is spread treatment calls for the use of radiation and drugs. Early detection of cancer followed by surgery, radiation or chemotherapy may either completely check the disease or effectively postpone spread (called 'secondaries') for 5 years or may be even 10-15 years. That is why breast self examination is worthwhile.

A person on drugs or radiation will feel weak, with a loss of appetite, and generally more ill than can be explained by the size of the growth. The reason is that drugs and radiation also destroy normal cells—specifically, the red and white blood cells which grow rapidly, leading to anaemia, and this may cause exhaustion increased susceptibility to infection.

10.2.5.(b). Cancer Cervix:

Symptoms of Cancer Cervix :

The cervix is the opening of the uterus into the vagina and is situated right in the middle of the pelvic cavity with the bladder in front and the rectum behind. The cancer can therefore affect any one or more of these organs; it may, on the other hand, only/also spread through the lymphatic system and the bloodstream to other organs in the body. A young woman in the age-group of 25-45 years should not ignore the following symptoms, especially if they are of

long duration : chronic white discharge, with or without smell, bleeding on intercourse, swelling in the lower pelvic area with bloating, chronic urinary tract infection, fever that doesn't go away and loss of weight with occasional fever. Post-menopausal women should watch out for bleeding. At more advanced stages there may be blood in the urine or while passing stools, pain and bloating of the abdomen and even swelling of the legs.

Diagnosis:

The first stage in the investigation will be a Pap smear. This involves scraping the cervix to collect enough cells for examination under the microscope. If there are any suspicious cells, they can be rechecked and if necessary a cone biopsy can be done to remove the affected tissue from the cervix for confirmation of the diagnosis. Very often, the cone biopsy is also sufficient to remove the entire mass of cancerous tissue, and so is a form of treatment for early cancer.

Treatment:

When the cancer has been detected early, both surgery and radiation are equally effective options. Sometimes both are used. Surgery usually involves an extended hysterectomy: the uterus, tubes, ovaries, lymph nodes, cervix, and part of the vagina are removed. The reason for extended surgery for even early cancer is to eliminate all cells to which cancer may have spread, no matter how small the cancer itself. Whenever a cancer is detected early and treated, the quality of life is very good and the life span almost "normal". The problem is with delayed diagnosis and treatment. Women must try to report any abnormal discharge from the vagina as early as possible.

10.3. SUMMARY

This section highlights some of the most common health problems of women which are also the most difficult to treat. The medical system has a long list of investigations, treatments including rest for each condition, but women's lives do not allow them this luxury of going about their illness step and scientifically. It is not surprising that in the 21st century we still have with us 80% of pregnant women who are anaemic, 50-60% of women with backpain and only 20% of women with a completed anti TB drugs treatment. It is therefore surprising that more women have not demanded universal access to health care irrespective of one's capacity to pay.

10.4. MODEL EXAMINATION QUESTIONS:

I. Answer the following in 30 lines each.

a. Problem of anaemia in women, it's causes and cure.

b. Symptoms, causes and treatment of blood pressure.

c. What is cancer ?

II. Answer the following in 15 lines each.

a. Tests for Tuberculosis

b. Symptoms of Cancer Cervix

c. Backpain

d. How will you suspect TB ?

e. Food rich in iron

f. Side effects of radiation

10.5. GLOSSARY

a. **Cholesterol** - A fat like steroid substance found in animal fats. Also present in various organs of the body like liver, kidney, brain etc.. Largely responsible for gall-stones and atherosclerosis.

b. **Stress** - an adverse stimulus or event [(physical, mental or emotional) for example. Accidents, emotional disturbances due to various causes like failure in exam etc..] that tends to disturb a person's wellbeing. It may lead to large number of disorders.

c. **Heredity** - the genetic transmission of a particular quality or characteristic from parents to the offspring.

d. **Diagnosis** - 1. The art of distinguishing one disease from another. 2. The determination of the nature of a case of disease.

e. **Microscopic exam** - Examination under or observation by means of the microscope (i.e. an instrument used to obtain an enlarged image of small objects and reveal details of structure not otherwise distinguishable).

f. **Biopsy** - The removal and examination (usually microscopic) of a small piece of tissue from the living body performed to establish precise diagnosis, e.g. biopsy of growth on any part of body.

g. **Radiation** - the treatment of disease by ionizing radiation, e.g. treatment of cancers.

h. **Chemotherapy** - The treatment of disease by chemical agents. Commonly used for treatment of cancer.

10.6. RECOMMENDED BOOKS

1. David Werner, *Vaidyudu leni chota, (in Telugu) Publ. Hyderabad Book Trust,* Hyderabad. 2000.
2. Veena Shatrugna, K.Lalita, Shyama Narang, Uma Maheshwari, Gita Ramaswami and others. *Savalaksha Sandehalu, Streelu - Arogya Samasyalu (in Telugu), Publ. Hyderabad Book Trust,* Hyderabad. 1998.
3. *Jane Maxwell and others, Manuku doctor leni chota (in Telugu), Publ. Hyderabad Book Trust,* Hyderabad. 1998.
4. *To Know Our Bodies, Ourselves, The Boston Women's Health Book Collective, Publ. Simon & Schuster,* New York, London, 1992.
5. Veena Shatrugna and others. *Backpain the Feminine Affliction, Economic and Political Weekly,* 1989.

UNIT - 11: RURAL ENVIRONMENT AND WOMEN'S HEALTH

11.0. OBJECTIVES

After going through this unit you can discuss the

- The links that exist between environmental degradation and health.
- Kinds of environments crisis
- Impact of these on Women's health

11.1. INTRODUCTION

While there have been many positive features of development, the threat to environment is a major problem. It is now accepted that survival of humankind is linked to survival of nature, and this is even more true of women's survival. As Vandana Shiva says "The earth is rapidly dying : her forests are dying, her soils are dying, her waters are dying, her air is dying."(Staying Alive p.XV). Deforestation or the indiscriminate cutting down of forest, desertification or the deterioration of land into deserts unable to support vegetation, or produce food; soil degradation or the loss of fertility of tropical soils, salinisation or rise in salt content of soils and water logging due to intensive irrigation are the major environmental problems that face rural India today. At a global level, some 456 million people are reported to be starving or malnourished because of the desertification of croplands and a large number of them are to be found in the Central African region. The destruction of forests, water, land and air, which are our life-support systems, has serious implications for our health, particularly women's health. As women are involved in the collection of firewood, fodder and water, the destruction of the environment or their local biomass forces them to spend more time and energy in these activities.

This link between environment and health is not new. Many forms of degradation are undermining human well-being—the damage to forests and soils is impairing the quality of life, especially among the poorest, and the pollution of air and water is taking a heavy toll of

human lives. Nearly all diseases are linked to the environment and most illness is environmentally triggered. The poor are the worst hit as they live in the worst environments and most polluted zones. Among the poor, it is the women and children who bear the brunt of the deteriorating environment.

Though the role of environment in health has long since been recognised, yet the emphasis on curative aspects of health care ignored the importance of preventive aspects which includes the environment. As mentioned in the previous section, the traditional systems of medicine viewed health as closely linked to environmental conditions but this changed with the coming of western medicine. Today there is growing realisation about the adverse effects on health by the changes in environment, particularly some of the processes of development. The euphoria of the early 20th century that epidemics and diseases would be controlled and some even eradicated has now been replaced with pessimism. Old microbes are becoming resistant to drugs and new diseases are reported, new viruses and microbes identified and there are new threats to health. One major reason for all this has been the damage to the environment in the name of development. From the level of individuals, to the families, communities and nations, the health problems emerging from deteriorating environmental conditions are multiple.

Environment has a triple significance in assuring better health. First, is the more direct result of the pollution of water, soil, air, food etc ; second, is related to environmental degradation and the associated problems of procuring materials for basic needs; and third, related to difficulties of producing basic food needs due to deterioration of environmental resources.

It was at the Earth Summit or the United Nations conference on Environment and Development (UNCED), held at Rio de Janerio in 1992 that Global leaders came together in large numbers for the first time to discuss environmental issues. One of the reasons that environment has become such a discussed subject in recent years is because of the awareness of the adverse effects on health of a degraded environment.

The aim of this Unit is to discuss the close links that exist between environmental degradation and health, specially women's health. This section first discusses the major kinds of environmental crisis and then determines their impact on women's health.

11.2. WOMEN, HEALTH AND ENVIRONMENT

Women as providers of basic needs to the family and also producers of food have close connections with their local environment. The linkages between water, food and fuelwood and the environment are best understood by women as it is they who take care of these basic needs in the family. It is not only the scarcity of food that poses a problem, women also have to now contend with the scarcity of clean water and woodfuel. Women thus, experience dual burdens, one, to provide their family's basic needs and, second, face problems related to their own and the family's health or rather ill-health'.

Women's gender connects them with the internal household and outer environment due to their conventional roles as providers of basic needs and caretakers of the family's health. The WHO Position Paper on Women's Health prepared for the Fourth World Conference on Women in Beijing in September 1994 points out that historically, women's health has been largely defined by family and community interpretations of culture and tradition, and by a medical profession in which men are the main decision-makers. In other words, what women perceive as ill-health and the measures to deal with it differ from community to community and region to region. Notions of what is good during pregnancy,after childbirth and for the infant are all influenced by culture. Further, framing of health policy and priorities are influenced by patriarchy. In addition, the resources required to achieve and maintain health have for too long been denied to individual women. The definition of health as applied to women and the resources allocated for this - have been influenced by social perceptions of women's status and role, in conjunction with issues of class, caste, race and ethnicity.

Changes in thinking regarding women's health in relation to the environment over the last decade have been radical and profound. These changes reflect the revolution in thought regarding the environment itself and the parallel acceptance of women's and gender issues as the essential and integral part of the development process. For women, the recognition and acknowledgement of their close connection and interaction with the environment has been of great importance - a connection which has both positive and negative connotations for their health and well-being. While the local environment has traditionally provided them with resources, its degradation in the last decades has created additional pressures and increased their workloads. Although this connection between women and their environment has always existed, it is only now, with the simultaneous rise of both the environmental and women's movements, that they are being addressed and the health implications recognized. The last decade has revealed, often only implicity, the linkages between women's health and environmental factors, although the work of researching, documenting, and acquiring specific data on health impacts is only now starting. Relevant indicators in the area of women, health and environment also need to be established, data on mortality, maternal mortality and disease patterns in relation to environment need to be collected.

In both rural and urban areas of developing countries, the age-old issues of access to safe water, poor domestic hygiene and dependence on traditional low-grade fuels for cooking and heating continue to pose particular problems to the health of underprivileged women. Rapid urbanization and industrialisation exposes women to other hazards in addition such as pollution, inadequate housing, exploitative and insecure employment in the informal sector, and stress coupled with physical violence. Exposures of women specially pregnant and lactating women, to pesticides and other toxins, either through employment in agriculture or from domestic use, has not yet been addressed in depth. For pregnant women exposure to these toxins affects the foetus leading to stillbirths and abnormalities. Lactating mothers

exposed to toxins pass on to the breastfed child. In AP, Guntur district is known to have the highest user of pesticide per acre (for cotton) and the implications on the health of rural women are yet to be addressed. Although the impact of the environment on women's health is profound, few causal links have been established due to the dearth of medical research in this area and the fact that much of women's environmentally-related illhealth is socially constructed. Appropriate methodologies for this purpose have still to be evolved for a proper understanding of these connections.

Over the last few years there have been a number of studies that seek to understand the linkages between a poor environment and health. Most of such studies are concerned with the effects of pollution on health. There have also been some significant studies on the effects of environmental degradation and women's health.

Some of the pioneering contributions on the links between environment and women's health from a gender perspective are listed below.

* Rachel Carson - "The Silent Spring" - 1962
* Sandra Griffin - "Women and Nature" - 1978
* Carolyn Merchant - "Death of Nature" - 1980
* Centre of Science and Environment - The State of India's Environment 1984-85
* Vandana Shiva - "Staying Alive-Women, Ecology, and Development" - 1988

11.3. THE ENVIRONMENTAL CRISIS AND HEALTH

* Responsibility for fuelwood and fodder collection in rural India rests largely with women.
* India has lost 34% of its forest cover between 1974-84.
* Two-thirds of land is degraded by water and wind erosion.
* 70% of all diseases are water-borne.
* Only 18% of rural India has access to tap water.
* Only 8% of rural and 38% of urban India has sanitation facility.
* 80-90% of all Cancers are directly or indirectly environmentally determined.
* Nearly 60,000 tonnes of pesticides enter the Indian environment each year.
* WHO reports 30 new diseases in recent years.
* Over 30% of Indian babies have low birth weight.

The purpose in emphasising the above facts is to bring out the close links between environment and health. The deterioration of our environment that is deterioration of our air, water, and soil leads to deterioration in our health - chemicalisation of the environment leads to chemicalisation of our bodies. Women are said to recognise this connection as they interact with the

environment more, and realise that a poor environment both rural and urban, is damaging to health, specially of their children. The main causes of child mortality are, malnourishment (55%),diarrohoea (19%) and perinatal causes (18%) all factors that are linked to poor environment.

The effects of a degraded rural environment on Women's health can be studied under four sub-headings : (1) Land degradation, (2) Water pollution, (3) Deforestation, and (4) Modernization of Agriculture.

11.3.1. Land Degradation and Health

The world has 1.5 billion hectares of arable and land under cultivation and of this about 5 to 7 million hectares is lost for agriculture every year through soil degradation. Soil degradation means the loss of top soil due to deforestation, wind erosion or heavy rainfall. This means that the soil fertility decreases as its materials are lost. Soil degradation also occurs if soil becomes alkaline or saline. In the case of India, about 61% of the country's agricultural lands and at least 72% of non-agricultural lands are degraded to some degree. Cropland losses affect the well-being of the people and example from history have proved this point. Water and wind erosion gradually thin the topsoil, thereby decreasing the valuable nutrients and organic matter present in it, thus resulting in loss of soil fertility. Among the states of India, the highest acreage under wastelands, or degraded lands unfit for cultivation, is in Madhya Pradesh, followed by Rajasthan and Andhra Pradesh.

Land degradation is manifested in various forms, desertification, salinity and alkality and water-logging and natural disasters. Desertification is found in semi-arid lands bordering the deserts where overcultivation and loss of plant cover or due to the degeneration of the natural resource base, there is a rising vulnerability to drought and the productivity of these lands is reduced. Human suffering associated with desertification results from three sets of factors. The first, rangeland or pastureland degradation, usually involves severe erosion and a conversion of vegetation from nutritious perennial grasses to weeds that are useless for animals. The second, involves the loss of productivity of rainfed croplands as the topsoil and nutrients are lost due to over - cultivation. The third factor relates to the rise in salinity, alkalinity of water-logging in irrigated areas due to poor water - management practice. For centuries, these arid and semi-arid lands were productive and supported groups of people but the development patterns of the last few decades were not in harmony with the ecological limitations of these fragile zones and thus created a crisis. New crops and farming practices introduced during colonial period in parts of Africa is one such example. Plantation agriculture and monoculture of crops for export resulted in depleting these areas in the Sahel region of Africa of their nutrients. Over a period of time these lands can support no vegetation and turn into deserts.

Ecologically unsound development has affected the livelihoods of large numbers of people living in these drier areas and this has in turn had an impact on their quality of life. As land degrades and livelihoods become difficult, poeple's health in these areas suffer. Food is scarce, as cropping patterns change from food crops to plantation crops for export, and under-nutrition becomes a perennial problem leading to hunger and starvation deaths, as seen in Somaliain Africa. Somalia was forced to shift from food crops to cotton for export. In situations of starvation, it is the young children and pregnant women who are the worst affected. The health setbacks or debility that people suffer during times of droughts and starvation may cripple them for life. In Andhra Pradesh, there are reports of desertification occuring in parts of the drought-prone Anantapur district. Drought affects not only the health of humans but also of the livestock, thereby causing further suffering and loss to rural people. There is also large scale migration of men from such area further increasing the workload of women and creating new problem for the populations in these regions.

Other forms of land degradation are largely a result of large-scale irrigation practices. Canal irrigation has lead to a rise in the water table and consequently there is water - logging and a rise in the salinity, or salt content in the water. As a result of this about 20% of India's irrigated area is today unfit for cultivation. Land irrigation exposes stagnant water to evaporation which over the years results in the salts in the water getting more and more concentrated, thereby leading to salinity. Also with water-logging there are a number of associated health risks which will be discussed in the section on water. At this stage, the point that needs to be made is that any decrease in land productivity has serious consequences for the poor and among them the women and children whose already low food intake is further reduced.

Another major problem in rural areas is the environmental destruction caused by natural disasters. In coastal areas, the cyclones and tornadoes not only cause havoc to nature but destroy human life as well. In the inland areas, floods, earthquakes and landslides are a threat to both the natural environment and human life. Particularly vulnerable is the health of infants and children during times of such disasters, as drinking water sources and food supply are affected. Pregnant women also suffer. Women live in a state of semi-starvation and futher disasters have a deleterious impact on them food intake leading to abortions, premature births, stillborn babies and death of everysmall infants during such calamaties.

11.3.2. Deforestation

India has 18% of the world population in only 2% of the world area and only 1% of the world's forest areas. The per capita availability of forest in India is 0.08 hectare which is only 1/10th of the world average of 0.8 hectare. Dependence of some communities on forests for their basic needs, like cooking fuel, building materials and food is very high. Forests also perform important ecological services as they help to recycle water, oxygen, carbon and

nitrogen. Loss of forest cover results in soil erosion, flooding, water-logging, increasing soil salinity, and alkalisation, thereby leading to reduced agricultural productivity. Infact, deforestation is a major cause of land degradation and the two processes are closely linked. Some of the worst impacts of loss of vegetation or tree cover are found in the semi-arid regions which originally had sparse lightly wooded vegetation. Today, the extent of deforestation is highest in the tropical forest regions which house the largest variety of flora and fauna. Brazil, Maxico, Malaysia and Malonesia have rapid rate of deforestation. In India deforestation is high in the states of M.P, A.P and Maharashtra.

The major reasons for deforestation or cutting of forests are, spread of agriculture, firewood collection, demand of timber and other forest products and development programmes like roads, dams, etc. The spread of farming into forested areas and the clearing of forests to make way for large plantations are largely responsible for forest loss. Pushed by lack of access to land or jobs, cultivators are clearing mountainslopes and farming on them, little aware that these slopes becomes sites for severe erosion when cleared of trees.

Firewood collection as mentioned earlier is usually done by women. Where a balance between tree growth and the human numbers exists, the dead wood and branches are used for fuel without felling any trees. However, the decrease in forest cover in the last few decades has forced vilagers to cut trees for fuelwood and this in turn has further reduced their sources of fuelwood. One finds that cutting of trees for fuel needs is most common around urban centres where commercial markets for fuelwood exist. Most villagers do not cut trees for their fuelwood needs, it is only for the commercial markets that involves large scale fuelwood operations that the trees are cut down. The scarcity of wood fuel affects women the most, as it is they who collect this. Most women in rural India spend time and labour in gathering firewood - they do not buy fuelwood as they cannot aford it. Recent reports from various parts of the country and the Third World speak of the long hours women spend now in the collection of fuelwood. In parts of India, like Bihar, women trek 8 - 10kms everyday for wood. The situation in the desert and hill areas fuel becomes scarcer and in these areas women have to work longer hours than men. People specially women, may cut back on essntials - they will cook only once, cook foods that will cook faster, get less warmth and have less nutrition. In most of rural India, the village commons or common groves that were earnarked for pastures and fuelwood used by all in the village, have all been taken over by the government or privatised.

How does this affect the health of women? It does so in some direct and some indirect ways. First, are the effects of the long hours spent in collection of firewood. Studies are few on this aspect, but the few that are done speak of the long-term consequences of headloads or the exeecessive weights that the women carry over long distances. This may not affect the health of the women immediately but its effects are visible in their old age. Women suffer from back aches, stiffness in the neck and shoulders, and of more serious concern are the premature

deliveries and miscarriages that are linked to the porterage of fuelwood. There are also problems with the menstrual cycle, with heavy bleeding that women suffer from. Second, is the nutritional impact of fuelwood scarcity. There are studies that report that women in Nepal have cut back on the consumption of those vegetables that require longer cooking. Closer home, studies show that there is a change to faster cooking cereals like rice from the earlier bajra. Also, women who usually eat the last, get to eat less even of this. It is therefore not surprising that most rural women are anaemic and suffer from malnutrition. Further, loss of forest cover means loss of plant varieties. Greens and vegetables that were available for free now need to be bought as they become scarce. The fuelwood crisis has also aggravated the vitamin and mineral deficiencies in rural populations as now less variety gets cooked to save on fuel. But the most important problem of food is the time which is spent on collection of fuel. Women seem to plan the whole day with these tasks upper most in their mind - their quality of life is thus affected.

The third problem is linked to kitchen smoke which is the biggest intra-household pollutant that largely affects women. The narrow cooking space leads to high levels of pollution concentrations with adverse effects on health. The ill-effects of wood smoke are reported to be a cause of a heart disease called corpulmonale, in which the right lower chamber of the heart enlarges and fails because of a disorder in the lungs. Women exposed to smoky primitive fireplaces and using dung cakes, wood or charcoal are most susceptible to this disease. Kitchen smoke also leads to higher levels of chronic bronchitis, cough, and respiratory tract infections. Further, there are studies to show that the concentrated smoke inside the house causes high incidence of acute respiratory infection leading to illnesses and even mortality among infants. Other health problems reported by women are running eyes and nose and pain in the chest. What is more disturbing is that these affect poor women for whom the avenues to seek medical treatment are limited unless the problem is very severe. The effect of chronic lung disease is that the capacity of blood to carry oxygen is reduced leading to breathlessness and heart failure. This has serious implications for women most of whom are already anaemic and can lead to impaired foetal development. The two major pollutants in kitchen smoke are carbon monoxide and formaldehyde. Both these pollutants besides harming the health of women and infants, also affect the unborn child leading to lower birth babies and higher infant mortality.

The fourth factor is the loss of bio-diversity. It needs to be mentioned here that the loss of tree cover has resulted in fewer species of trees available for fuelwood. Earlier villages distinguished different species of fuelwood on the basis of their smokiness. Baval wood was generally preferred as it gave least smoke, but today with deforestation the women have no choice. They are forced to use the available species, like neem, which is most smoky. The loss of biomass has affected the daily needs of rural families as it provides food, fish, fuelwood, fodder, organic manure, building materials and medicines. As the forests shrink many species of not just trees

but plants, of which India has a rich variety, are lost. The loss of sacred groves and plant species means that many medicinal plants and herbs that women used earlier are now unavailable to them. It is well known that women usually first looked into backyards or the village groves for remedies to deal with a number of health ailments of the family. The decrease in forests and the resultant loss in bio-diversity is limiting these options for women who now have to depend totally on the health care system.

The fifth problem linking deforestation to health and not just women's health, is the rise in incidence of existing diseases and the emergence of new diseases whose cause can be traced to the clearing of forests. A good example is the resurgence of malaria, particularly the more virulent form of falesparum malaria which earlier was endemic to forested tracts. With deforestation, the disease vector was disturbed and moved into new areas causing epidemics. Similar is the case with the Kayasamur forest disease confined to Shimoga district in Karnataka. The outbreak of this disease is linked to the felling of trees in the region which destroyed the habitat of the vector, in this case the ticks fastening on to monkeys. With the forest and the monkeys gone, the ticks searched for new hosts and moved on to humans, thereby spreading the disease from a local focus and causing 139 deaths in 1983. Another example is that of Goitre, an iodine deficiency disease found in the foothill areas of the Terai region of the Himalays. Iodine is picked up from the environment in water and soil but due to deforestation, soil erosion and floods this iodine is lost as run off. Today, due to environment degradation there are new areas of iodine deficiency in Chotanagpur in Bihar, tribal Madhya Pradesh and Gujarat. Generally more women, than men get Goitre. To women in goitre - prone areas who are pregnant, one in 25 babies born to goitrous mothers suffers from brain damage. One notes that it is women's health that is worst affected when deforestation occurs. Therefore it is not surprising that the grassroots people's movement Chipko in the Himalayan hills of Uttar Pradesh largely comprises women who oppose the exploitation of their forests. Begining in the 70's the Chipko Movement found women embracing the trees to protect them from commercial exploitation. Today similar movements are found in H.P, Karnataka and M.P.

11.3.3. Water and health

In the Third World, 2 out of every 5 children die before they reach the end of childhood. A prime factor in this mortality is polluted water. Poor water supply and sanitation have led to resurgence of a range of gastrointestinal diseases. Diarrhoeal diseases claim a heavy burden on health, particularly of children. Only 81% of the Indian population has access to safe drinking water and a dismal 29% has access to sanitation facilities. These two basic factors affect the quality of life of people. Water can be linked to health in two major ways; (a)the scarcity of water, and (b) the pollution of water.

a. Scarcity of Water

In India, there are predictions that the scarcity of water will worsen in the coming years. Already, one finds that drought conditions in rural areas are spreading each year. Added to the problem of scarcity is the factor of wastage of water. It is reported that wastage of water in domestic use is about 16-25%, in irrigation about 40-50%, in Industry 20% and in construction, etc 25%. The depletion of water is due to various factors, including growing population, rapid urbanisation, deforestation, soil erosion and wastage.

With regard to drinking water villages can be categorised as follows: (a) Villages lacking a source of drinking water within reasonable distance (1.6kms), (b) villages endemic to water borne diseases like Cholera, Guinea - worm etc, and (c) villages where the available water has an excess of salinity, iron, fluoride, arsenic or other toxic elements.

At an individual level, the lack of drinking water poses threats to health. In Tamil Nadu, there are one lakh villages that have no water and in many parts of rural India women walk miles to get water. If safe drinking water is not available close-by women use of less water use or are forced to use contaminated water. The further the source of drinking water from it means that women have to carry the loads of water that much longer. This has implications for their health, the most vulnerable being pregnant women. As a result of carrying pots of water from greater distance, women complain of backache,shoulder pain and neck pain. For women who are already undernourished and weak this burden of carrying water does leave them physically exhausted. Moreover, if water is scarce, food and vessels are not washed properly and this leads to higher risk of infections.

One of the primary health impacts of water carrying is a high expenditure of energy, contributing to malnutrition and anaemia, which in turn makes women susceptible to other diseases and reduce their economic productivity. Often rural women have to opt out of the labour market as fetching water consumes so much time and energy. In Africa 40% of non-pregnant women and 63% of pregnant women are considered to be anaemic. In India the figure is much higher at 80%. The energy used to carry water may consume one-third of a woman's daily calorie intake. In areas of difficult terrain or where water is in particularly short supply, calories used may be even greater.

The period of the dry season, when women may carry water over extremely long distances, naturally corresponds to the period when they consume the least food and when their burden of work in the fields may be considerable. For pregnant women and mothers of young children, the health impact of water bearing is particularly severe. Heavy work coupled with decreased calorie consumption can affect the growth of the foetus. After the birth, when women are forced to resume water bearing, the quantity and quality of breast milk may be impaired. The effects of the burden of water are clearly intergenerational.

Skeletal damage is a second major health problem. Over time, the burden of water carrying may damage the vertebral column. The discs become thinner and no longer act so effectively as shock-absorbers. Increasingly, the women begin to experience pain. She may find her mobility reduced and has to stretch for some time before she can get up in the morning.

Carrying water on the hip or the shoulder can lead to curving of the vertebral column. When girl children carry water, their growing bones are particularly vulnerable to deformity. Deformed pelvic bones incurred in childhood may cause severe problems when a women gives birth to her own children. Women carrying water are also at risk of accidents causing injury. One study suggested that 50% of people treated for broken necks in Bangladesh had fallen while carrying a heavy load on the head.

b. Water Pollution

The major sources of water pollution are domestic waste water, industrial waste water and effluents, and agricultural wastes and run off. The more immediate threat to health comes from domestic and human wastes polluting water as this causes many water-borne diseases., The major water polluting industries are leather, pulp and paper, textiles and chemicals. These industries though located in urban areas pose a threat to rural health as they discharge effluents into rivers, sea and ground water. In India, almost all surface water sources are contaminated and unfit for human consumption.

The diseases that are caused due to use of contaminated water are diarrhoea, cholera, hepatitis, acute gastro-enteritis, dysentery, typhoid, trachoma and intestinal worms. The major killers among these are Cholera and acute diarrhoeal diseases. The most common source of contamination is human wastes. Inadequate access to safe drinking water and imoproper sanitation facilities leads to high infant mortality and high incidence of intestinal diseases. About 80% of children in villages suffer from parasitic worm diseases. The irony in this is that while irrigation is a high priority, the provision of safe drinking water and sanitation has received low priority, even though the health problems linked with the latter are serious and chronic. Children and adults who get treated for diarrhoea and worms, keep having relapses because their physical environment remains the same - polluted and with no facilities.

Intestinal helminth infections and schistosomiasis can affect pregnant women and impact upon maternal, infant and child mortality and foetal wastage. Often pregnant women are offered no treatment for water and sanitation related diseases because of fears of health consequences for the foetus. In addition, the loss of appetite and weakness that are associated with schistosomiasis and intestinal helminth infections, can affect women's economic productivity and therefore the health of their families.

The problems for women are greater, as it is they who take care of the sick child and also are the regular users of water for washing clothes, cleaning the household, bathing the children and therefore are more prone to infections. Increasing contact with polluted water results in skin irritation for women, while the helminthic (worms) diseases further reduce their haemoglobin levels making them weaker. Daily contact with dirty polluted water also exposes women to higher risks from fungal infections,urinary tract infections and reproductive tract infections.

Pollution of water is also linked to overuse and natural pollutants. In 13 states of India, including Andhra Pradesh, drinking water sources are contaminated with excess flouride. This causes dental and skeletal flurosis in children leading to brittle bones that damage easily. Prolonged use by adults also causes skeletal deformities. In Andhra Pradesh., Nalgonda district reports high flouride content in water. The effect of this on pregnant women is so worse as it may impair foetal development besides harming their own health. In some states there are reports that there is excess nitrates in the water due to use of fertilisers, and because of this blue babies are born. Recently there are reports of arsenic poisoning from 6 districts of West Bengal along the Ganga-Hoogly rivers, with Malda district the worst affected. In all these cases, the presence of these compounds in water is natural, but over the recent decades the indiscriminate use of ground water has increased the concentrations of these substances in water, thus posing a grave threat to health. There is also the growing threat of pollution from toxic wastes, which include lead, radioactive materials and new harmful compounds which have serious health risks, particularly for pregnant/lactating women and infants.

Another important aspect related to water pollution is the pollution of coastal and reverine waters. The well known incident of mercury poisoning that took place at Minimata in Japan in 1953 was responsible for killing and maiming almost 300 persons. Mercury from the toxic wastes of a rayon factory and chemical plant entered the human food chain through contaminated fish and resulted in the tragedy. In recent years there are regular reports of oil spills in coastal areas and the deep seas which result in loss of marine life. As a result, the fish and other sea resources are threatened and production suffers. This impacts on the health of the coastal and fishing communities who lose both livelihoods and nutrition as they eat less fish. Fish is an important and inexpensive source of nutrient for the poor in river basins and coasts and with pollution of rivers and seas their diet is affected. Needless to add, it is again the women who are the worst hit as they end up eating the worst foods and the left overs.

11.3.4. Modern agriculture and health

Due to lopsided development today we find the return of many tropical diseases that were earlier confined to forest zones. Clearing of forests and land for development and agriculture has created new transmission sources of disease by disturbing old habitats. Newly built

reserviors, ponds, irrigation canals provide today new areas of high desease incidence. Modern means to travel and greater mobility of people ensure that the spread of disease is faster.

The examples of plague in Surat and dengue in New Delhi are recent warning of the consequences of ecological disruption. In agriculture, the Green Revolution, while tiding over the food crisis of the 60's and 70's has also created a new set of problems to health. The demand for irrigation, the use of chemical fertilisers and pesticides due to use of high yielding seed varieties, the changes in cropping patterns with preference to cash crops over food crops and the rise in monocropping have all contributed to new dangers to the health of the people. One can study these changes under four broad headings : (a) irrigation and dams, (b) pesticides and fertilisers use, (c) Aquaculture and modern fishing, and (d) women in the food chain.

a. Irrigation and Dams

It is now increasingly recognised that some development policies have implications for health. Modern agriculture with its demand for intensive irrigation through the year resulted in the building of large dams and canal irrigation. The construction of embankments or dams across the major rivers in the country have created a host of new health problems. Dam building has been shown to be associated with a rise in Malaria, schistosomaises, haemorrhagic fever, Bilharzia and in parts of Africa it is linked to the emergence of some new diseases. The very attempt to provide irrigation and access to water has in some cases led to health disasters. The most recent example is that of the Indira Gandhi canal in Rajasthan - a new perennial water source in a desert environment. This availability of water in an arid zone without adequate sanitation and drainage has led to the spread of diarrhoeal pathogens and provided a breeding source for the malaria vector. As a consequence, the last few years have seen epidemics of Malaria in this region where the disease was earlier not prevalent in this form. Also linked with perennial sources of irrigation is the rise in incidence of Japanese Encephalitis and its spread to new areas in Asia and India.

b. Pesticides and fertiliser use

In the past 40 years nearly 10,000 chemicals have been synthesised. India uses 100,000 tonnes of pesticides every year and 70% of these are banned in the Western countries. A WHO study found 50% of food samples in India having a high concentration of pesticides. About two-thirds of the pesticides used are on just two crops, cotton and paddy, and most of this use is concentrated in only 80 districts which are in the irrigated areas. There are warnings that the cotton - growing areas of Andhra Pradesh and elsewhere have become harvests of death and this is now brone out by the recent sucides in these districts of Andhra Pradesh. Ironically, the deaths of the farmers came through consuming pesticides themselves.

Prolonged exposure to pesticides affects the central nervous system, lowers immune responses, leads to higher risk of cancers, causes enzyme imbalances and skin and allergic reactions. In 1992, there were 8000 reported deaths due to pesticides in India. Pesticides do not just pollute fields, they pollute our bodies and therefore pose a serious threat to our health. Further, many of our rivers and lakes are getting polluted by agricultural run-off, which includes toxic chemicals and heavy metals. As a result the fish and other aquatic life in such waters either die or get polluted and their consumption by humans may cause diseases. Another related problem is the eutrophication of water bodies, in which algae proliferate and then decay in a water body, using up its oxygen and rendering it useless for fish life. Agricultural pollution of lakes and streams has contributed to declines in inland fisheries. This happens due to the high presence of phosphates and nitrates which are found in agricultural run-off. Intensive use of fertilizers in agriculture has also contaminated ground water sources with nitrates, the levels far exceeding the safe drinking levels.

Modern agricultural practices have also changed crops grown and led to neglect of leguminious crops. As a result the composition of foods has changed in various parts of the country and diets are affected. Further, it is noticed that due to modern agricultural practices, that grow two to three crops in a year, there is created a zinc deficiency in soils and plants. This is found in rice grown on alkaline, wet and water-logged soils. Reports from Bangladesh confirm poor zinc content in fruits, vegetables, legumes and grains. This loss affects the nutritional status of people and women above 45 years feel the adverse effects of less zinc in the diet, particularly those suffering from joint pains. Changes in cropping patterns and diets also result in deficiencies in other trace minerals in the food consumed.

It is indeed sad that over three decades after the publication of Rachel Carson's disturbing book 'Silent Spring', that spoke of the dangers to health from use of pesticides, there is no legislation in India to regulate its use. DDT banned in many developed countries, is profusely used in India. The mixing, repackaging, distribution and use of pesticides is handled by a large population who are never informed about its potential dangers by the seller or dealer. Farmworkers thus, pay a heavy price for using pesticides. But it is not just rural people who suffer, pesticide residues in food consumed in urban areas are also increasing, whether it is milk, vegetables, fruits, cereals, meat or fish. High concentrations of DDT in mother's milk is reported, specially among farming communities. Chemicals in the air or water affect all, but again it is women, specially pregnant women who are most vulnerable.

c. Modern Fishing and Aquaculture

Modern developments in the fishing industry have created new problems in this sector. Deep - Sea fishing with its trawlers led to excessive harvesting of marine resources, specially those that had a export value, prawns. Modern fishing methods are environmentally more destructive as they stir up the ocean floor in search for fish and prawns and consequently

destroy young fish and spawners thereby causing depletion of marine resources. The other equally serious consequences of modern fishing is that it has created problems for the traditional fisher people, who now have less fish to catch. As a result fisherwomen who usually took care of the selling of fish and running the household with the money earned, now find there is very little income. Fish catch in some coastal areas and inland fisheries has fallen by 50%. This has therefore had two effects on the fishing community : (a) they have less catch and less money, so become poorer, and (b) their fish intake (which was an important source of nutrition) has been reduced. This means that women who earlier depended on this source of nutrition are now unable to get it. Diets in many poor households along the coast have suffered as a result of this as earlier fish was their main source of protein in the diet.

A more recent problem has been that of acquaculture, wherein, agricultural land along the coast has been converted to shrimp farming in response to global market demand. Since the 90's fertile lands and mangroves in Tamil Nadu, Andhra Pradesh, Kerala and the west coast have been destroyed for acquaculture. As a result of this trend, today there is an increase in salinity in the water in these areas as sea water is required for some shrimp farms. With rise in salinity, the ground water and nearby surface water sources have become unfit for human consumption. Reports from Tamil Nadu and Nellore district of Andhra Pradesh, where most of such activities are concentrated, warn of a drinking water crisis in many villages. For women this means that they now have to spend more time and labour in the collection of drinking water.It is indeed ironical that this water crisis is happening in coastal areas where water is not scarce, but is now polluted.

d. Women in the Food Chain

Women have been in agriculture since ages as "plant breeders, soil scientists and water managers", who understood the relationship between seed, soil and water. Women domesticated plants and animals, invented selective breeding and maintained soil fertility. In rural societies women play a productive role: they feed the animals and take care of them, they prepare compost and fertilise with organic manure, manage mixed and rotation cropping and store the seeds for the next crop. Studies show that women contribute upto 60% of the total agricultural work. With modern agriculture and green revolution there is found a displacement of women in their role as food producers. Companies now sell high yielding varieties of seed and machines have replaced the labour of women and peasant farmers. The switch to cash crops means less food crops—wheat and rice are now taken to the mills for de-husking and polishing which renders them less nutritions and denies women their traditional roles in agriculture. It may be argued that modern agriculture practices save labour and the drudgery of hard work. This is true, but to a large extent it is seen that it is in the jobs that men do in agriculture that technology has benefited most. Most of the farm work done by women (weeding, transplanting) continues to be of low technology, or they have been displaced by technology, as in the case of collection and preservation of seeds. Women in agriculture

now have a reduced role. Further, women who traditionally looked after the livestock and milk collection now find this milk being sold to the dairy cooperatives for cash. A consequence of this is that the family is denied having milk - particularly the women and infants. All this has implications for the health of women and their family.

Even today, the agricultural work women do is back-breaking. They work in the flooded paddy fields doing tranplantation of the rice saplings. As a result of working in the flooded fields women are prone to hookworm, malaria and fungal infections, besides suffering from back-ache due to the bending nature of their work. Further, environmental degradation of their villages has added to women's problems. Earlier, they used to breed fish in the flooded paddy fields and this used to supplement their nutrition. Now, due to the high use of pesticides in rice, the fish in the rice fields are destroyed and this vital source of nutrition is lost to the family. Also, the use of weedicides has destroyed the reeds whose fibre women used for rope-making. Another instance is seen in the case of some leafy vegetables that have high nutritional value and grew with wheat, but are now killed with the use of weedicides. The change to wheat and rice from ragi and jowar is a result of the changes in cropping pattern in favour of the former cereals. But in terms of nutrition composition ragi and jowar are better balanced cereals than wheat and rice. All this means that there is a decline in the nutritional intake of families in rural areas, specially the poor. In any conversation with older women they always talk of how they are much stronger and better they are than women of today.

Compounded with the fact of lower nutritional lends, is the fact that women now have to walk and work longer for water, fodder and fuelwood and this adds to the strain on their health. Another major factor that one needs to remember is that with modern agriculture and land degraded, many peasant male farmers are forced to out-migrate seasonally in search of work. The women, children and family are left behind in the village whose local ecosystem is already in crisis. This places the women heading these households under tremendous pressures as they have to take care of the basic needs of the family and also look after the agricultural work. As a result, their own needs are often ignored and this is at the cost of their own health.

11.4. SUMMARY

A degraded environment affects everyone's health, but it is women who are the worst affected as they interact with the environment more in their role as providers of basic needs for the family. As they are the users of natural resources like water, fuelwood, cow dung, and fodder they are the main victims if their local environment is destroyed. Also, throughout their lives, women are more exposed to toxic chemicals from air pollution and water pollution, in making and carrying cow dung and from smoke emissions while cooking. While this exposure is most harmful to pregnant women and the new born, in the long run it has adverse effects on the health of women depending on their age and the length and type of exposure.

It is now recognised that women are good resource managers. But laking status, education, land, the property rights, their needs have not been considered in the development process and they were marginalised. Now environmental degradation has further added to her burden. It needs to be understood that environmental problems are social problems. The more time a woman spends on basic needs collection, she has less time for the family and herself. There can be development only if women can have sustainable livelihoods and for this a sustainable environment is necessary. It is therefore not surprising that recognising this crucial inter-connection women are in the forefront of the restoration and conservation of the environment.

11.5. MODEL EXAMINATION QUESTIONS:

I. Answer the following in 30 lines each:

a. What are the major environmental problems facing the world and India ?

b. Write an essay on the relationship between women and environment.

c. How does deforestation affect women and their health?

II. Answer the following in 15 lines each:

a. Write a note on women in the food chain?

b. How does polluted water affect women's health?

c. Discuss the impact of land degradation on women's lives?

d. Name the important contributions to the writings on environment by women,

e. What is aquaculture ?

f. What is the role of women in fuelwood collection ?

11.6.GLOSSARY:

a. **Eutrophication** : dying of lakes and water bodies due to pollution

b. **Biodiversity** : the range of life forms, that includes plants, animals and micro-orgamins, and the habitats they line in is called biological diversity or biodiversity.

c. **Biomass** : the range of vegetation resources like fuelwood, fooder and food available from the local environment.

d. **Spawners** : pregnant fish

e. **Aquaculture** : farming of fish and shrimps now done through large farms and for export.

11.7. RECOMMENDED BOOKS :

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UNIT - 12 : URBAN ENVIRONMENT AND WOMEN'S HEALTH

12.0. AIMS AND OBJECTIVES

After going through this unit you will be able to discuss

- The sources of pollution and its impact on Urban Women's health.

12.1. INTRODUCTION

Environmental degradation has become a crucial issue since the beginning of Industrial Revolution. Epidemics keep recurring because of the changes in the environment brought about by modern methods of development. In the last few decades, economic growth and technological development with concentration of population in the cities have prompted both social and ecological disruption. A recent Worldwatch paper points out that every "development" enterprise in Third World countries gives rise to a range of diseases, deforestation and dam building have been shown to be related to a rise in malaria, schistosomiasis, haemorrhagic fever and new diseases hitherto unknown in human populations such as lyme disease and Rift Valley disease in Africa. In India, it was interesting to note that the intimate connection between changes in the environment and disease patterns was recognised as early as at the time of Bhore Committee in 1946, which recommended that all irrigation projects should include a health impact component in their plans.

Apart from the environmental degradation, overcrowding due to the increase in migration to the slums and lack of basic amenities such as water supply and sanitation compounded by poor hygiene in urban areas have promoted a resurgence of a whole range of gastrointestinal diseases, including new strains of pathogens which had been brought under control. The

health of millions of people has been threatend by contaminated drinking water and particulates in city air and smoky indoor air caused by use of cooking fuels such as dung and wood.

The World Development Report of 1992 has highlighted the effects of pollution on health and reported that in poor countries (a) there was an increase in diarrhoeal diseases as a result of contaminated water, which kills about 2 million children and was responsible for about 900 million episodes of illness each year, (b) indoor air pollution from burning wood, charcoal, and dung endangers the health of 400 million to 700 million people, (c) dust and soot in city air cause between 300,000 and 700,000 premature deaths a year, (d) a quarter of all irrigated land suffers from salinization, and (e) tropical forests — the primary source of livelihood for about 140 million people are being lost at a rate of 0.9 per cent annually. The above facts speak for themselves about the alarming situation that many developing countries are facing including India due to environmental degradation. In general, at any time of scarcity of resources, women being the vulnerable section of population, get adersely affected.

The main aim of this unit is to enlighten the student about urban environment and women's health.

12.2. URBAN ENVIRONMENT

Census classifies an area into 'urban' based on population, density and relatively low participation of the local labour force in agriculture. But in reality since two-thirds of the urban population in India live in cities of one lakh population and above, which are mostly centres of administration or industry, urban implies large population agglomerations. According to 1991 census in India, out of total population of 844 millions, 25.7 percent live in urban areas and this is likely to rise to about 40% in the next decade. Certain activities of urban areas such as presence of large factories, or the agglomeration of small ones, the concentration of vehicular traffic will raise the levels of air pollution. Modern means of communication and travel and the greater movement of populations, generally from the periphery to the metropolitan areas but also the other way around, have meant that the spread of diseases is much more rapid. The urban habitat has deteriorated greatly over the years with basic infrastructure unable to cope with the growing demands for housing, water, sanitation, roads and transport. Migrants to cities are pushed out of impoverished rural economies and come to the urban centres where they subsidise the urban economy. But they are denied the urban infrastructure facilities and have to fed for themselves.

Urban poor living in slums, face multiple health hazards. Their poverty and lack of health care renders them particularly vulnerable to communicable diseases and poverty related diseases, such as tuberculosis, diarrhoea, intestinal worms, respiratory infections, etc., All the above lead to high rates of maternal and infant mortality. The plague episode in Surat

is an example of the results of unplanned urban growth and associated health problems. The dengue fever "epidemic" in New Delhi is another example of how urbanisation and urban conveniences and modernisation without health planning can lead to the spread of disease.

According to a study by Lave and Seskin in 1970, there is a definite evidence of an "urban" effect on lung cancer. Among smokers the likelihood of dying from lung cancer is many times greater if one lives in an urban area. For nonsmokers also the urban effect appears to be even greater. They argue that there is a definite association between air pollution and several diseases. Apart from air pollution, city dwellers face greater levels of smoking, occupational exposure, less exercise, additional tensions and stress, all of which have a bearing on stress-related diseases such as diabetes, blood pressure, heart ailments, etc., Distress migration from rural to urban areas, mostly among the low socio-economic population leads to the growth of slum population in all cities, and more so in metropolitan cities. For some metropolitan cities, slum inhabitants comprise over 35 per cent of the population.

A study in 1993 by National Institute of Urban Affairs reported that problems associated with the growth of slums multiply. Only 79.2 per cent of the total urban population is covered by water supply schemes and only 40.4 per cent of the same is covered under sanitation. The noise produced in urban areas due to industrial activities, increase in traffic, etc., also cause tensions and stress- related disorders. The Survey of the Environment by "The Hindu" 1997 reports that environment-related diseases in Mumbai are on the increase from 1991-95.

12.3. SOURCES OF POLLUTION

The urban environment is polluted mainly by three major sources, viz., water, air and noise, the details of their contribution and the health effects is described in the following sections.

12.3.1. Water Pollution

The most widespread contamination of water is from disease-bearing human wastes, usually detected by measuring fecal coliform levels. Apart from human wastes, water gets polluted through industrial effluents.

a. Human Wastes

In urban areas also most of the places are not serviced or inadequately serviced by sanitary facilities leading to flow of untreated human and animal wastes into ponds and streams and very quickly into homes and food chain. In fact, the limitations of space make urban areas more vulnerable than rural areas to general pollution, adversely affecting the health of workers and residents alike. The problem is certainly increasing in those urban areas where groundwater resources lie beneath crowded communities not connected to sewerage systems. The average urban resident with connections to water and sewerage services frequently uses

150 litres of water per day. A household of five persons will therefore produce 750 litres of wastewater per day. Thus a city of one million people will discharge 150 000 m^3 of wastewater each day, representing a major health hazard when discharged directly into local lakes, rivers or coastal waters and ground water, polluting drinking water sources. The above figures speak about the magnitude of the problem. The wastewater becomes a source for many pathogens causing water-borne diseases. The direct impact of water-borne diseases is huge, specially for children and the poor (who are most at risk). World Development Report of 1992 reported that unsafe water is a source for many cases of diarrhoeal diseases, which, as a group, kill more than 3 million people, mostly children, and also cause about 900 million episodes of illness each year. At any one time more than 900 million people in the world are affected with round worm infection and 200 million with schistosomiasis. Intestinal helminth infections and schistosomiasis can disrupt pregnancy, and impact upon maternal, infant and child mortality and foetal wastage.

In 1990, Kanpur's water treatment and pumping plant showed an increase in the Chemical Oxygen Demand (COD) and abnormal levels of chloride and nitrate which suggested the increased presence of coliform bacteria in water indicating gross contamination of river water by sewage. The after effects are that hospital records in Kanpur in January-April 1991, registered 48 deaths, of which, 13 were pregnant women who died from a serious and fatal infection of hepatitis E. Another well known fact was that for every person with jaundice during an epidemic, there are usually at least 8-10 persons who are infected but in whom the symptoms are not manifested. Therefore in this epidemic as estimated, 7 lakhs people were probably infected (one third of Kanpur's population). It was reported that in many localities of new Bhopal, the number of cases of jaundice rose from 96 in 1994 to 770 in 1995. The main reason for the above is polluted water supply.

b. Industrial wastes

Increase in industrialization without proper planning and control leads to indiscriminate dumping of industrial waste into the surrounding environment. One of the principal origins of groundwater pollution is seepage from the improper use and disposal of heavy metals, synthetic chemicals, and other hazardous industrial wastes. In Latin America, for instance, the quantity of such compounds reaching groundwater from waste dumps appears to be doubling every fifteen years. Sometimes industrial effluents are discharged directly into groundwater.

The major components of industrial pollution are industrial effluents in the form of chemical pollutants and toxic metals. Unfortunately most of the chemicals discharged or used in the industry end up in the environment. A high proportion is sent down the sewers and ultimately into rivers, lakes and oceans. Some of them find their way into the food chain disrupting or impairing the natural biotic cycle and threatening populations of organisms with extinction.

Chemical pollutants

Use of all kinds of synthetic chemicals is increasing in everyday life. Throughout the life cycle, females may be exposed to toxic chemicals which may affect the foetus and newborn, children, teenagers, adult and elderly women and impact on health vary according to age, length and type of exposure. Exposure may occur in uterus, during lactation and later on, during different activities where women work with chemicals, both in their homes and workplace. When women are exposed to chemicals during conception, pregnancy and childbirth, some chemicals may alter the reproductive role and/or affect the foetus and newborn.

Toxic metals

One of the major toxic metals found in the enviromnent is lead. Lead is found in our water, food, and air. Most of the lead (70 to 80 per cent) comes from antiknock compounds added to automobile fuel. Humans absorb lead from the air they breath, from the water they drink and from the food they eat. Even though most lead contamination starts out as air borne pollution, it eventually settles onto land, water and buildings. Lead enters the blood by inhalation and ingestion. Absorbed and carried by the blood, it is accumulated in liver, kidneys and bone. Typical samples contain between 2 to 4g of lead per litre with an average of about 2.8g, whereas the permissible limit of concentration is 0.1mg per litre. City dwellers are more exposed to lead from car exhaust fumes. Thus, urban residents have greater levels of lead than rural residents. Inorganic lead acts as an agent to cause a variety of effects on human health including liver and kidney damage, gastrointestinal damage, mental health effects in children, abnormalities in fertility and pregnancy.

Studies conducted by the Department of Geology of Banaras Hindu University showed that effluents of paper and opium factories increased levels of lead in the sediments of Ganga in Varanasi and Ghazipur. According to a report of the Department of Environment of the Rajasthan government, chemical industries have polluted the waters of rivers and wells in Pali, Balora and Jodhpur which has been causing cancer, skin diseases and deformities. Lead contamination of foods leads to chronic illness characterised by severe anaemic conditions and changes in kidney arteries. Nitrates also accumulate in food. Spinach contains as much as 3600 ppm of nitrate. Lettuce and radish are also high in nitrates containing about 200mg of nitrates per 1000gm material.

c. Pesticides and Insecticides

Pesticides are substances used to control organisms which may adversely affect public health, or organisms which attack food and other material which are essential to mankind. Such organisms include vermin, insects, nematodes and fungi. When a pesticide is sprayed, much of it reaches the soil. Water becomes contaminated from direct application or run-off.

According to WHO estimate in mid 1970s, 750,000 people are poisoned by pesticides every year, 14,000 of which are fatal. Three- fourths of these occur in third world. Cosmetic pesticides are sprayed indiscriminately on fruits and vegetables in major cities in India to improve the 'looks'. For example, Methyl parathion on cauliflower gives an extra white look; ladyfinger ('bhindi') is dipped in copper sulphate to look greener. Since mostly women handle the vegetables and fruits at home, they are more at risk and their bodies absorb them. They may affect the foetal development and reduce the duration of lactation.

Among the insecticides, Chlorinated hydrocarbons are most prevalent pesticides in the environment. The most persistent of these compounds are DDT. Most of the problems caused by effects of DDT on non target organisms are the result of its being used in excessive amounts. The excess finds its way into ponds, lakes, rivers and ultimately, the sea. Agarwal in his study in 1983, has compiled data on mean levels of DDT residue in some worked-out river and lake waters of India. During 1976-78, the DDT residue in River Yamuna at Delhi was 0.249 ppm in upstream and 0.558 ppm in the downstream off Wazirabad. Some newspapers reported that the research done at the Centre for Cellular and Molecular Biology, Hyderabad during 1996 and 1997, found that the levels of estrogen like substances in the environment is rising, which may be due to the increase in the usage of plastics, petro-chemical products and pesticides and insecticides. The onset of menarche for girls is early and the onset of menopause for women is delayed in urban areas, thus exposing the women for greater years to risks from diseases such as breast cancer.

The DDT levels in Delhi's drinking water is 20 times higher than that of the permissible limit. It was pointed out by a study done by Dale et al in 1964 that in Delhi, the human fat samples showed a mean level of total DDT to be 26 ppm, the highest concentration detected in general population. This was later confirmed by Ramachandran et al in 1974. However, the sample sizes of the above two studies was small. In humans, DDT was associated with nerve and brain damage. Children exposed to DDT while in the mother's womb showed dangerously high levels of a metabolite of DDT in their blood samples.

12.3.2. Air pollution

In India, the major sources of air pollution are from industrial production, automobile exhaust, suspended particulates, and from domestic burning of non-commercial fuels, including wood, cowdung, agricultural wastes. Air pollution may affect the respiratory tract causing, from loss of alertness to illnesses such as asthma, bronchitis and tuberculosis. The long-term effects could be cancer. The major sources of air pollution are as follows:

a. Industrial effluents - The major industrial effluents in India are from : (a) Thermal power stations - the main effluents are fly ash, soot and sulphur dioxide. The preliminary results of a survey of workers of Indraprasta thermal power station by the New Delhi TB Centre, show that TB incidence among them is about twice the normal levels.

(b) Fertiliser factories - The main effluents are fluroine gas, particulates, sulphur dioxide and trioxide from sulphuric or phospharic acid units and nitrogen oxides, ammonia, hydrocarbons and particulates from nitrogen-based plants. The above cause irritaion to the eyes and coughing.

(c) Textile Mills - The major effluents are cotton dust, smoke and other combustion wastes, kerosene or naptha vapours, sulphuric acid, nitrogen oxides, chlorine, formaldehyde and chlorine dioxide. Continuous inhalation of cotton dust by workers and residents sourrounding the mills causes weakness of respiratory functions.

A study of 4000 people conducted by KEM hospital and the Air Pollution Prevention Cell of the Bombay Municipal Corporation in 1977-78 compared the health of residents in a clean, western suburb of Bombay like Khar with that of residents of the mill areas of Lalbaug and the Chembur area with its concentration of petro-chemical plants found that the residents of the latter group were found to be suffering from a higher incidence of diseases like chronic bronchitis, TB, skin allergy, anaemia and irritation of the eyes.

(d) Leakages/Accidents from the Industries - Though there are numerous incidents of poisoning due to leakages all over India, the major incident is Bhopal's gas leakage from Union Carbide Factory in 1984, in which over ten thousand people were killed and many more were seriously affected. After the Bhopal gas tragedy, ICMR launched an extensive survey covering about one lakh population (about 21,000 families). There was a considerable effect of gas on women and children, in particular on pregnant women and unborn children. In a population of one lakh, there should be some 3000 pregnant women at any time. By mid-March 1985, ICMR had identified 40,497 of women who had delivered. Of these five had still births, another 17 already had abortions, and 3 newborns suffered from birth anomalies. Most of the babies examined were full term but low in birth weight.

Studies conducted at Bhopal by the Medico Friends Circle (MFC) have revealed that there were a high degree of gynaecological problems among women. Dr.Shyama Narang and Dr. Mira Sadgopal found that among the women they surveyed in the two most affected areas of J P Nagar and Kazi Camp in Bhopal immediately after the disaster 90 per cent suffered from leucorrhoea (white discharge), 79 per cent from pelvic inflammatory diseases (which could affect future pregnancies), 31 per cent (of non-pregnant women) from excessive menstrual bleeding and 59 per cent from suppression of lactation which meant that infants were being weaned without adequate supplementation. All these figures were several times higher than those found in non-affected Bhopal colonies.

Studies conducted between 1976 and 1990 in Bombay conclude that the growing concentrations of air pollutants have led to increased incidence of chronic bronchitis, cold and a general decline in lung function. A study carried out in 1990 has noted that the incidence

of respiratiory symptoms, cardiac disease, respiratory tract infections, and skin allergies was 5-10 per cent higher among the communities that lived close to factories in Chembur, Bombay. A number of industries on the outskirts of Hyderabad discharge effluents that pollute the ground water. Sarangi and Cohen (1995) while examining the pollution of two industrial estates surrounding Hyderabad metropolitan city, i.e., Jeedimetla and Patancheru, reported that residents surrounding the industrial estate of Jeedimetla adjacent to Hyderabad complain of asthma, skin diseases, menstrual irregularities, spontaneous miscarriges, etc., According to a health survey conducted by Jagruti, a local environmental organisation of 6000 people in six residential areas surrounding Jeedimetla industrial estate, 64 per cent were suffering from exposure-related illnesses. One third of the women in the reproductive age group had up to three miscarriages, while 25 women in the sample group had suffered seven to nine miscarriages. Elevated irritability is the most common mental disorder. According to Kishan Rao, a local physician practicing in Patancheru, there is one village in the area where all women have stopped menstruating due to toxic exposure from industrial emissions.

b. Vehicular pollution

Carbon monoxide is highly toxic if inhaled in sufficient quantities. It is produced as a product of incomplete combustion of fuel used in automobiles. Haemoglobin, the oxygen carrying substance in blood, has a much greater affinity for carbon monoxide; together they form a stable compound, carboxy haemoglobin (HbCO), that decreases the amount of free haemoglobin available for oxygen transport. If HbCO levels become high enough coma and death can occur. It is generally believed that 5 per cent HbCO is an appropriate part per million limit for avoiding detrimental acute effects in a large population. There is a growing body of evidence that points to a strong link between chronic CO exposures and both heart disease and impaired foetal development.

There are several factors that make women particularly susceptible to CO exposure. Women generally have less haemoglobin reserve than men, which make them more prone to anaemia, which also makes them more vulnerable to lower doses of CO than men. During pregnancy there is an additional demand on haemoglobin, further lowering their reserves and making them more sensitive to CO. This exposure can also affect the unborn child leading to reduced birth weight and increased perinatal death rates (that is, still births and deaths in first week of life). A study in Los Angeles in 1977 reported a significant negative impact of air pollution (the major component of CO) on birth weight. It is not surprising that respiratory diseases are a leading cause of death among girls and women .

A study in Bombay reported that the high density of traffic in Lalbaug, apart from the concentration of mills, was responsible for the frequent colds and coughs among the residents.

Cancer of the lungs can be linked with benzopyrene levels which are high in Bombay because of a large number of cars. Past studies as well as anecdotal evidence suggest that the health of Greater Bombay residents, especially those who live in high density traffic areas or near industries, is under assault.

Research carried out by Dr P Anand in the allergy laboratory of the Indian Institute of Sciences, Bangalore has shown that almost 20 per cent of the 5 million city's populataion suffer from allergy and allergy related disorders. According to the Survey of 1997 by 'The Hindu' on Environment about 5 million Delhites suffer from respiratory illness.

c. Domestic pollution

The WDR of 1992 identified indoor air pollution as one of the four most critical environmental problems. In cities like Delhi the air contains a daily average of 500 micrograms per cubic metre of total suspended particulates. Non-commercial sources of fuel such as firewood and cowdung, used in open chullahas for cooking are other contributors to air pollution. The narrow cooking space has heavily resulted in severe indoor pollution with adverse effects on human health. Blowing smoky hearths does not cost only the energy of blowers but becomes catastrophic because, coughs, running eyes and nose, and pains in chest damage women's health and affect others as well, especially children and old. During rainy season the women's exposure to smoky kitchens is quite common among the households who do not have fuelwood stocks. It is important to note that indoor air pollution poses a major threat to human health, especially that of women who spend many hours indoors cooking over open fire. Chronic obstructive lung diseases, heart diseases like corpulmonale, cancer (particualarly lung and nasopharyngeal cancer), acute respiratory disease resulting from the decreased ability of the lungs to clear themselves, and low birth weights of children born to mothers exposed to wood smoke and adverse pregnancy outcomes such as stillbirths, are among some of the major effects that can be expected from wood smoke.

A survey carried out by Padmavati and Arora over 15 years on hospital patients in Delhi suffering from Cor Pulmonale, found that its incidence in men and women was similar even though 75 per cent of the men as compared to 10 per cent of the women were smokers because mostly women are exposed to indoor smoke in the kitchens. In addition, the age of onset in women was much lower. It was further concluded that the women are exposed to smoky primitive fire from childhood.

12.3.3. Noise Pollution :

Violent noises can cause temporary or permanent impairment of hearing, thus the expression "deafening." Continuous noise can lead to gradual decline in auditory acuity and eventual deafness. Prolonged exposure to noises may have other effects that are more serious.

Noise causes several undisirable effects. Damage to hearing and loss of sleep are only two of the more obvious insults to the relationship between man and his environment. Noise interferes with speech, sometimes making it unintelligible; sounds of warning misunderstood or not heard. Even low-level noises impair verbal communication because they require more attention and effort and cause misinterpretations. Noises produce irritability and a feeling of fatigue and may reduce a worker's efficiency. There is evidence that noise is one of the major causes of stress and many of the other human afflictions associated with tension—anxiety, insomnia, accident-proneness, high blood pressure, and other cardiovascular diseases. Even in its less serious forms, noise is commonly a source of annoyance and cause for complaint.

Surveys carried out by different agencies in selected residential, commercial and industrial areas of Calcutta show that the average ambient noise levels are above the standard during day and night. The high levels cause deafness and neurological disorders even in children and affect pregnant women.

The effects of noise on the foetus are not fully known. Medical scientists have noted that an unborn child will move and kick when there is a loud noise. It also responds with a sudden increase in the heartbeat as though it were disturbed or frightened. Apart from the above three major sources of pollution, urban health gets affected due to overcrowding, increase in the amount of generation of solid wastes and occupational hazards.

12.3.4. Overcrowding

In urban areas there is overcrowding in houses as many of the families live in single room accommodation and in many cases there is no separate kitchen. Such situations lead to indoor pollution. The main reason for overcrowding in urban areas is due to the lack of provision of proper housing to a large section of urban population.

a. Slums

Most of the distress migrants from rural areas live in slums in urban areas. Slums in urban areas are typically characterised by single room accomodation without a separate kitchen and inadequate toilet and latrine facilities, unhygienic and unsanitary conditions. A survey conducted by Delhi Development Authority in 1986 estimated that a typical family of four in the slums of Delhi lived in a space of approximately 7.5 square metres. A report of the GOI in 1988 reported that more than 67 per cent of Calcutta's total urban population lived in one-roomed housing.

Pollution from a variety of sources was possibly one of the most important health risk factors in the slum areas. The potential for indoor air pollution and associated risks is indicated by the number of the families who cooked and lived in the same room. It is well known that the

toxic constituents of kerosene and chemicals from the combustion of biomass fuel can cause acute respiratory infections (WHO, 1991). Its health impact on women, children and old persons who sleep and live in this area can be considered serious (Boyden, 1991). As expected, single roomed housing and use of biomass fuels were associated with poor households.

A field based study by Gulati in Delhi slums, reveals that 95 per cent of women residents in slums are suffering from reproductive tract infections. He found that the basic reason for the wide spread of reproductive tract infections in the urban slums are lack of water, poor toilet and latrine facilities, unhygienic and insanitational conditions.

A field based study done by Sapir on a total of 2603 families and 14999 persons in Calcutta slums reported that specified environmental risks and potential hazards associated with small scale economic activities in the slums were exceedingly high. Some examples anecdotally observed by epidemiologists in the study team, indicated the high potential for occupational risks in many of these slum communities. For example in the Biplabikhudirampally slum in Calcutta, several small factories produce sulphuric acid, the vapours of which engulf the slum all day. In Auxilium parish slum in Calcutta, the main slum 'industry' is to recover and recycle metal from old car bodies which is then used to manufacture telephone cables. At the final stage, the sifting process produces large quantities of fine metal dust which the worker continuously inhale. The above study reported that the rate of pregnancy wastages (abortions, still births and miscarriages) was relatively high in this sample (87 per 1000 live births). In addition, this figure may be an underestimate because of unrecognized and unreported miscarriages.

b. Solid waste

As urbanisation increases, the dimensions of the solid waste problems also multiply. The quantum and type of waste generated in any urban area are functions of the size and character of the urban centre. The solid wastes generated can be categorised into (i) Household/Commercial refuse; (ii) Hospital waste; (iii) Industrial waste, (iv) Street sweepings; and (v) Construction and demolition debris.

(i) Household/Commercial waste

For the country as a whole, per capita waste generation varies between 0.1 kilograms and 0.6 kilograms(Bhinde, 1990). Bangalore is estimated to generate about 0.5 kilograms per capita per day or 2000 tonnes of waste per day (Desouza 1991, Rosario 1992). Although for Delhi and Bombay precise data for waste generated (as distinct from waste collected) are not available as a rough estimate based on a daily per capita generation norm of 0.5 kilograms it works out to about 4800 tonnes for Bombay. In Delhi, the daily waste generated has been increasing by about 200 tonnes every year. Waste here refers to Municipal waste and does not include such industrial waste. Compared with developed countries, waste generated in India

reflects a much higher proportion of compostable matter and fine earth whereas the former has a higher paper content. Although across different areas within an urban centre such as residential, commercial market and industrial, the waste composition is likely to vary significantly, it is estimated that overall, of the Municipal waste generated in urban centres, any where between 40 and 75 per cent constitutes organic matter. It is also important to note that waste composition varies significantly across areas of different economic levels of residents. The specific needs of a set of people, as pointed out by Ali (1993), play an important role in determining waste generation patterns. He points out that unlike in high income areas, low income areas, in addition to domestic waste, generate waste resulting from a variety of informal sector activities pursued from home or surrounding areas. Intra-city variations could be extreme. In Bangalore city for instance, a study carried out in different residential, commercial market and industrial areas found that the organic content ranged from 13.7 per cent to 76.9 per cent (Rao 1990). Indiscriminate dumping of waste around waste bins, on the streets, and in water bodies, give rise to air and water pollution. Unlimited waste from storage points causes health risks. The recent outbreak of plague in Surat is an example of the diseases that can spread due to the non- management of solid wastes in urban areas. In the case of waste dumped at landfill sites, improper selection of the site causes groundwater pollution through seapage. During periods of heavy rains, runoff could also cause surface water pollution.

Air pollution can result from spontaneous combustion of waste at disposal site. Based on an estimate of two cubic metres of methane gas generation from one tonne of garbage, R C Jain (in Shunglu 1993)calculated the total methane released into the air every day in Delhi is 7000 cubic metres. Methane is harmful and contributes substantially to the greenhouse effect.

The health effects of wastes are not gender specific, although women may be more exposed than men. Women's domestic responsibilities and their level of interaction with the local environment increase their exposure to and contact with uncollected wastes. In many developing countries, in poor urban areas there is no or little infractructure for waste collection and disposal. Uncollected waste frequently piles up around low-income family homes and neighbourhoods, representing a permanent risk of pollution, infection, and injury and skin problems.

Inadequate collection and unmanaged disposal of waste present a number of problems for human health and productivity. Uncollected refuse dumped in public area or into waterways contributes to the spread of disease. In low income neighbourhoods that lack sanitary facilities, trash heaps become mixed with human excreta. Municipal solid waste sites often receive industrial and hazardous wastes, which may then seep into water supplies. More localized problems are air pollution from burning, gaseous emission, and even explosions occur around improperly managed disposal sites. In the United States epidemiological evidence on the 2-3 per cent of all cancers associated with environmental pollution suggests

that exposure to hazardous wastes is a less important risk than exposure to indoor smoke and to pesticide residues on food stuffs. A study conducted by Jeevan Rao and Shantaram at Amberpet and Golkonda landfill sites at Hyderabad revealed that the groundwater samples are not suitable for the purpose of drinking.

(ii) Hospital waste

Disposal of healthcare and slaughterhouse wastes requires special attention since it can create major health hazards, the best documented of which is the transmission of viral infections, such as hepatitis B and C, through wounds caused by discarded syringe needles. All too often, infectious waste from hospitals, other healthcare establishments, medical laboratories and research centres, and small scattered sources (such as clinics, and households where healthcare of family member is undertaken) are disposed of together with regular waste. The people most at risk are healthcare workers, waste handlers and hospital maintenance personnel. About 80 per cent of wastes generated by healthcare providers is non-hazardous, and comparable to municipal waste. The remainder hazardous waste, comprising of pathological waste, infectious waste, sharp articles, Pharmaceutical waste and chemical waste and radioactive waste can pose a variety of health risks to waste handlers.

(iii) Industrial waste

In general as the level of industrialization increases the proportion of industrial waste also increases. The toxic, non-organic and non-biodegradable waste, particularly, packaging material and paper increases.

12.3.5. Occupational hazards

One of the best examples of workplace toxic effects is the so called "psychological instability" affecting a large number of women in the microelectronics industry and diagnoised as "mass psychologenic illness". It was finally demonstrated that affective and personality disorders were due to organic solvent toxicity. (Bowler et al,1992). Certain occupations dominated by women increase their exposure; for example, scavengers are recognised as high-risk group. In many countries, women constitute a high percentage of scavengers, and are therefore intensively exposed to the harmful impact of wastes. Nurses and nursing aides, who are predominantly women, are another occupationally exposed group who are at particular risk from hazardous medical wastes and blood infections. Waste picking is another occupation, which is dominated by women. Estimates suggest that there are 25,000 waste pickers in Bangalore, a southern Indian city with a population of 4.1 million.

Although many workers in the informal recycling sector are men, street waste picking is done mainly by women and children. Waste picking is tiring and heavy work which exposes women to illness and infections which, combined with inadequacies and deficiencies of their

domestic environments and limited access to health care, constitute a threat to their health and their children. Some of the hazards are dog bites, and risk from infection or rabies; exposure to hazardous substances such as hospital wastes or toxic chemicals; cuts from sharp materials on hands and feet; and exposure to climatic effects.

Workers handling waste come in contact with waste and remain exposed to the impact of wastes. Studies have shown that such workers suffer from skin diseases due to contact with waste from respiratory and opthalmic diseases due to inhalation or contact with infected dust; and from ulcers and infected wounds (Giroult nd). Studies carried out by the National Environmental Engineering Research Institute on waste workers found them suffer from skin and eye infections, respiratory diseases, jaundice, etc., (Bhide 1990). A study in Ahmedabad found that more than 15 per cent of sweepers suffered from tuberculosis (TB) and that prevalence of TB among sweepers was three times higher than the national average.

Operators at the screening stage of composting plants are exposed to wounds and blood infections, and those at manual composting plants are exposed to insect carriers of germs (Giroult nd). Workers at landfill sites similarly are exposed to methane gas explosions.

12.4. SUMMARY:

There are three major sources of pollution in urban areas — water, air and noise. Apart from the above health of the urban people gets affected by overcrowding because of growth of slums, increase in the volume of solid wastes and occupational hazards related to urban location.

Human wastes enter into water and food chain causing schistosomiasis which can disrupt maternal functions, such as pregnancy and impact on maternal, infant and child mortality and foetal wastage. When women are exposed to the industrial wastes dumped into water sources, during pregnancy and childbirth, some chemicals may alter the reproductive role and affect the foetus and the newborn. Lead, one of the toxic metals, produced as a result of industrialisation, gets deposited in the food and travels into human bodies causing chronic illness characterised by severe anaemic and changes in kidney arteries. Pesticides and insecticides, especially DDT cause damage to foetal growth and other abnormalities and is a cause for increase in breast cancer.

Urban air gets polluted through industrial exhausts, automobile exhausts, and indoor exhausts, if inhaled for longer duration may cause increase in the incidence of tuberculosis, irritation to eyes, respiratory problems such as asthma and also birth anomolies and menstrual irregularities.

Noise pollution in urban areas causes stress and anxiety related disorders in population. However, its effect on foetus is not fully known.

Many studies pointed out that women living in urban slums suffer from reproductive tract infections due to improper housing, lack of water, inadequate toilet facilities and unhygienic surroundings. It was reported in Calcutta slums that the wastage in pregnancy is high.

Certain occupations of women, such as waste picking and nursing may be exposed to various health hazards such as dog bites, rabies, cuts from sharp material, blood infections and TB. Thus urban women, especially poor, are exposed to various health hazards from a degraded environment.

12.5. MODEL EXAMINATION QUESTIONS:

I. Answer the following in 30 lines each.

1. What are the various problems that urban people face which affect their health ?
2. How the water pollution affects the health of urban women ?
3. Explain the role of solid waste on the health of women ?

II. Answer the following in 15 lines each.

1. Write the findings of the studies conducted in Bhopal after the gas tragedy ?
2. How does the vehicular pollution (Co gas) affects the foetal development among women ?
3. Mention different types of solid wastes and mention the diseases that are caused by them ?
4. Mention the diseases that affect the women living in slums and why?
5. Noise pollution
6. What are the diseases that affect rag pickers or street waste pickers ?

12.6. GLOSSARY:

a. **Schistosomiasis** — infection in the vescical and pelvic venous plexuses, involving the urinary tract and csusing cystitis

b. **Lecorrhoea** — white discharge from the vagina

c. **Pathogens** — any disease-producing agent or microorganism

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UNIT-13 : MAJOR HEALTH CARE SYSTEMS IN INDIA

13.0. OBJECTIVE

After going through this unit you will be able to discuss.

- About the traditional and modern health care systems and
- How women's head the needs are taken care by the systems.

13.1. INTRODUCTION

India has a variety of health care systems and practices, ranging from the modern Allopathy and Homeopathy to the traditional Siddha, Ayurveda, Unani, Nature cure system, Herbal and local practices varying across regions / castes/ class and tribes the last largely practised by women. Many smaller systems are localized and as they are not textual they have not been documented. Infact, most of the third world countries have a plurality of health care systems that take care of their people's needs. In the case of India and many other parts of the third world which are characterised by a class / caste / tribe / cultural / rural / urban diversity it becomes necessary to have a choice of health care systems, instead of one single system. While there is no doubt about the dominance of the allopathic system all over the world, the plurality of systems have survived due to diversity and disparity. It is heartening to find that traditional systems of medicine are now being patronised increasingly as disenchantment with allopathy has set in.

When we talk of health care systems the dichotomy between modern/traditional systems is a major problem. Since the colonial period in India, when allopathy was introduced,

there has been a marked patronage of this system at the cost of the other systems. Traditional systems of health care were naturally not understood by the colonisers. They were easily branded as unscientific and ignored. This was inspite of health planning in India, having an impressive historical background both at the theoretical level, with the Charak and Sushruta Samhita among other texts, and at the planning level. As for back as the Indus valley civilisation we have evidence of meticulous planning of sanitation and water supply schemes. Besides these formal health care systems, numerous examples are also found of various health traditions built up by communities, depending on their epidemiology, ecology and culture. In many pockets of tribal India spread over the country such indigenous solutions to health problems can still be found. In the pre-colonial period while Ayurveda texts formed the basis for a formal system of medical knowledge, the more informal folk medicine also flourished along with Unani. All these systems were practiced side by side and there was no attempt by one to consider itself superior over the others. Each traditional system borrowed from the other and also influenced it in turn. Apart from these systems, households also addressed health needs through food intake and nutrition. All this knowledge got ignored with the coming of allopathy.

The aim of this unit is to give a brief overview of some of the different health care systems, traditional and modern, and discuss how women's health needs are taken care of in both the systems.

13.2. INDIAN SYSTEMS OF MEDICINE

13.2.1. Ayurveda

One of the oldest medical systems (around 6th century BC) in the subcontinent is Ayurveda and the Siddha system. Ayurveda is practiced throughout India, but the Siddha system is practiced in the Tamil-speaking areas of South India. These systems differ very little both in theory and practice. Ayurveda by definition implies the 'Science of Life.' The system is both preventive and curative. Ayurveda recognises quite distinctly the preventive and curative aspects of medicine. Its origin is traced back to the Vedic times, about 5000 B.C. and it witnessed tremendous growth and development during the Buddhist times. As with other traditional systems, practitioners usually have an excellent knowledge of pharmacopea. The core area of Ayurvedic medicine remains in north India. Today there are Ayurveda colleges all over the country sponsored by the Government.

13.2.2. Unani

The unani system of medicine came in its original form from Persia (Iran) and was brought into the country by the muslims. The present form of Unani medicine found in the country has been influenced by Ayurveda and in turn influenced by it. Today practice of Unani is confined to the muslim dominated areas of the Deccan, U.P., Maharashtra and Bihar. Like Ayurveda, there is a strong ethical element in Unani, and factors other than the purely medical aspects of health and diseases are considered.

13.3.3.Homeopathy

This system was propounded by Samuel Hahnemann (1775-1843) of Germany and gained foot-hold in India during 1810 and 1839. It is a system of pharmacodynamics based on the 'Natural Law of Cure.' Homeopathy is practiced in several countries, but India claims to have the largest number of practitioners of this system in the world. Though Homeopathy is a modern medicine system yet it has more similarities with traditional medicine in its approach to the understanding of disease, illness and health care. As a result it is clubbed in India under traditional systems of medicine. The Homeopathic system of medicine is very popular specially for the treatment of chronic diseases. It claims to tackle health problems by raising the natural immunity of the sick person.

Among the traditional systems Ayurveda and Siddha were accessible to the upper castes and class and less knowledge was shared by the providers of these systems. As against this, herbal folk medicine was provided and used by all castes / classes, specially women.

13.3. TRADITIONAL MEDICINE TODAY:

Before the advent of the western system of medicine, some indigenous systems were prevalent in every country which provided medical care to the people. These systems developed based on the empirical knowledge and were very often independent of one another. Each system/ practice followed its own rationale of treatment. Though modern medicine has been accepted all over the world as a reliable system to provide health care to the people, yet traditional systems still enjoy a favourable position on account of a number of reasons:

a. They all have centuries old origins and have been practiced by and for very large groups of people throughout history. The basic problem in the developing world is to provide medical care to all the people within their meagre resources. The knowledge about the indigenous system of medicines is very often freely available and does not require costly and sophisticated diagnostic equipment. They are effective for a large number of health problems. They also address the nutritional questions when dealing with chronic ailments. Most often they are less harmful and with very few side effects. However Ayurvedic medicines are now commercially marketed and the questions of quality control have not been addressed as far as the commercial preparations are concerned. They have also become costly and out of the reach of poor people.

b. It has also been found that the indigenous system of medicine can provide relief in the case of a large number of diseases, which are considered chronic by the allopathic system, such as joint pains, skin problems, asthma, jaundice, stress related problems etc.

c. Herbal medicines are based on local raw materials which requires simple processing and medicines are dispensed by a vaidya or a healer or very often by the women of the household who share common socio-cultural assumptions with the sick. The herbal or mineral based medicines are of low cost and many people have prior knowledge of the working of these medications.

d. The practitioners of traditional systems of medicine are readily available, devote more time to their patients and develop a good patient relationship.

e. Ayurvedic system emphasised the preventive measures and related it to the local cultures and environments.

Though Indian systems of medicine have many advantages in relation to Allopathy not much attention is being paid for its development and popularisation. Unlike China, little attempt has been made in India to integrate Western and traditional forms of medicine. Firstly, at the State level the Administrative structure is designed more in favour of Allopathy than the Indigenous medicine. Secondly, the regional office of Allopathy reflects a status that is denied to the Indigenous medicine, where a single officer has to shoulder all the responsibilities. Thirdly, at the district level while there is no office for the indigenous medicine for Allopathy a fairly large administrative structure is evolved and this makes it difficult for the Regional Deputy Director to pay visits to the field units as well as to cover the whole region single handedly. Finally, the budgetary allocation to Indigenous medicine is paltry when compared to the allocation made to Allopathy. This lack of support at the policy level has resulted in traditional medicine forms continuing to stagnate inspite of their immense potential to take care of the health needs of India.

13.4. MODERN ALLOPATHIC MEDICINE:

Since the colonial period when Allopathy was introduced in India, it has become the dominant model of medical practice in the country. The colonial state apparatus firmly established and encouraged the growth of this system as being scientific and modern. As a result, the existing traditional health care systems were all marginalised and perceived as unscientific and therefore inferior. Some of the reasons for the decline of the traditional systems of medicine appear to be

1. Most of them are not codified or documented .
2. The knowledge basis is restricted to certain caste groups .
3. Secrecy and knowledge not shared even in the same caste group and is confined only to family members.
4. Limited knowledge based on local herbs - so could not be universalized or commercialized on large scale .
5. Mass production of medicine not done till recently .

6. May be riddled by hierarchy / secrecy etc. about composition of drugs and treatment.
7. Did not update information and claimed a divine status.

Modern allopathic medicine did not attempt to recognize or exist along with the existing systems, instead it established its hegemony over the others. With the allopathic system began the technological transformation and the process of commodification of health care.

The structure of the present day health care system in India has not changed very much from the colonial days in that the urban-curative bias continues. Further, allocations for Allopathy corner maximum share of the small health budget with allocations for all the other systems clubbed together under a single head of Indian systems of medicine.

13.5. HEALTH CARE SERVICES IN INDIA AND A.P.:

In India, health care services are provided by public, private and voluntary bodies but in the rural areas it is largely the government public sector that provides some skeletal services along with the registered medical practitioners (RMP's). While there have been numerous attempts since independence to improve provision of health services in rural areas, it has been only a partial success. The core institution of rural health services in the country is the Primary Health Centre (PHC) which serves a population of 30,000. In the 6th plan upgraded PHC having a 30 bed rural hospital known as Community Health Centre (CHC), covering a population of one lakh was set up to provide certain specialized services like Gynaecology, Pediatrics, Surgery and Medicine. Each PHC has a network of sub-centres each serving a population of 5000. Initially the PHC had to take care of the needs of one lakh people. The PHC was supposed to have a male and female doctors and some support staff, while a sub-centre is looked after by an auxiliary nurse midwife (ANM) and a male multi-purpose health worker. Besides, these government services, rural areas are also served by private doctors and some voluntary bodies. In urban areas the main foci of health care services is the hospital. Health care services provided by either the public/private/voluntary sector all have a strong urban bias. Table 1 gives an overview of the growth of health infrastructure in India since independence (Table 1).

Table 1 : Growth of health infrastructure in India

	1941	1951	1961	1971	1981	1988
1. Hospitals						
Total	2,150	2,694	3,334	3,862	6,805	9,831
Rural	-	-	1,131	-	1,82	3,099
2. PHC's	-	-	2,565	5,112	5,740	14,609

3. Doctors (Allopaths)	47,524	61,440	83,756	151,129	268,712	342,740
4.Nurses	7,000	16,550	35,584	80,620	154,230	229,850

Source : Public interest Research group, "Unhealthy Trends", 1994. p.6

There are also several vertical health programmes that are meant to take care of specific priority health needs of people. Some important programmes are maternal and child health services, national malaria #eradication# programme, national programme for control of Leprosy, T.B. Filaria, Blindness and goitre. Among these the #programmes #focused primarily #on # women are the maternal and child health services, the integrated child development services (ICDS) and most recently the reproductive and child health services (RCH). The main objective of both these programmes is to improve the nutrition and health of children and mothers through a package of services.

A brief profile of the structure of health care delivery in A.P. is now provided. The public health system in A.P. consists of three tiers. At the lowest level is the PHC where basic health services are provided, the middle level comprises of the referral district hospital which offers inpatient and outpatient care, at the top level is the tertiary hospital which include teaching also. But in A.P., it is the private health sector that is larger and growing fast. Out of 33,983 doctors registered with the medical council in A.P., only 5148 doctors are in the Government sector. Also, majority of the people in the state use private health facilities and this is specially true in urban areas where most of the private doctors are concentrated. Public expenditure on health is low in A.P, only 5% of the total public expenditure of the state.

This brief outline of the different health care system and services only gives information about the nature of health services that exist in the country. It would be pertinent to now draw attention to the disparities in the availability of these services over different parts of the country, urban/rural areas and across class/caste/gender. Wide differences are found in the availability and accessibility of various health services and studies have shown how the health needs of the poor, rural areas and women have received the lowest priority. Our concern in this paper being women's health we shall focus attention on their problems.

13.6. WOMEN AND HEALTH CARE SYSTEMS:

Most of the traditional systems of medicine earlier were home based and were easily accessible to women. Traditional medicine was based on the codified traditional texts and was rooted in certain local cultures that most women were also familiar with. Senior women in the family had some elementary knowledge about local medicines and certain traditional systems. Most of these indigeneous practices were not an alien science like

allopathy which had developed in the western society. Also, they were not a very formal system and people were not mystified by then and women particularly, found it easier to relate to as these practices were part of their lives, tradition and local environments.

Moreover, traditional systems of medicine and Homeopathy treated any ailment as related to a dysfucnction of the whole body and not just the affected part/organ. In that sense, these systems were holistic in nature. Allopathy was encouraged in the country at the cost of the traditional systems, but it was done without the necessary appropriate structures at a wide spread local level. The worst hit in such a situation were rural women who found that they could no longer avail the services of the traditional medicine, as that being neglected was slowly dying out in many regions, and they could neither depend on modern health services as they were not available to them and were expensive and totally unintelligible to them. Nevertheless due to its easy access at times of crises like epidemics modern medicine was used and proved beneficial. Further with Allopathy becoming the dominant medical knowledge system all over the country, it made itself accepted as the superior system. As a result even in rural areas people felt that they should use only Allopathy medicine as it was supposed to be better than traditional medicine. Some studies have also shown that women use traditional medicine more than men as it is cheaper than Allopathic medicine and is locally available.

However modern allopathic medicine in India was not very successful in understanding the problems women faced in terms of their own and their family's health. There was no special effort to reach out to women though women and children fall ill more often. Women use the modern health care services for themselves much less than men do. When women do go in for treatment (usually for delivery) the doctors try to push them to adopt family planning. In addition, available studies show that households tend to ignore the health problems of girls in terms of visits to a health centre. Girls and women are generally taken to less qualified doctors and more money is spent on the treatment of boys and men. Boys are immunised more regularly in their childhood and have access to more timely care than girls. This is even more discernible in the case of in-patients with records showing that there are more male admissions than female.

Women's access to health care is constrained by several factors. If we examine the grassroots level situation of women in the village, we find that very little curative and preventive health services are available to them. For any such services she has to depend on the sub-centre and the PHC which need not be located in her village. Services that are expected to be provided at the PHC are rarely available and for women the effort to reach a PHC and then find the non-availability of services particularly of a lady doctor, forces them to turn to a private doctor or neglect their health needs. The single government programme that continues to confront women in even remote villages is the family planning programme.

Instead of being served by improved curative and preventive health services like drinking water, sanitation, better nutrition, women find that they are forced into accepting family planning measures. India has a poor record in the provision of drinking water and sanitation facilities particularly in rural areas. Again it is women who bear the brunt of this as they have to travel greater distances to bring water and lack of sanitation also means women have to time their toilet needs and are often not able to wash themselves properly thus running the risk of infections. It is also true that women's health problems are marginalised by the family and the health care system. Often doctors tend to trivialise the symptoms women report, for eg. - back pain, headaches, weakness and heavy bleeding. Women are embarrassed to talk about their health problems particularly gynaecological ailments and most doctors are lacking in sensitivity in understanding this reluctance of women on questions concerning their health.

For women the time spent on child care, housework and in the occupational sphere leaves them with little time to think about their health, often resulting in them neglecting their illnesses in the early stages. The clinics offer women no privacy, most clinics are staffed by men, and women show a great reluctance to be treated by them. The expense and time incurred in travelling long distances and in meeting clinic and drugs fees are also constraining influences. Finally, women's awareness of available facilities - even if they were to use them- is lower than that of men and there is little attempt made to reach out to them, except for family planning and now to some extent for immunisation of their children

Despite the fact that women are seen primarily in the role of mothers, several studies have shown that few pregnant women are actually registered at health centres and in fact, the MCH programme has been able to reach out to less than half the pregnant women in India. For most women the timings at the PHC and clinics are not convenient as they function in the morning hours when women are tied down with housework. Moreover, information about health services and problems, treatment etc. are not shared by the doctors with women. As a result women who take care of the health needs of their family are ignorant about most issues regarding health. This is true of not only rural but a large section of urban women also.

It is not only the women users of the health care system, but also the providers of health services who are at a disadvantage compared to men, particularly in rural areas. This is specially true of the lower level village health workers, the ANM. Although almost 75% of our modern health system workers are women they are employed at the lower end of the hierarchy as nurses. ANM's, multipurpose workers and mostly in the rural areas. They have no decisive powers and work in a system quite insensitive to their problems as is the case with the ANM's and nurses. The example of an ANM's life illustrates the constraints she faces. Attached to a sub-centre, looking after 3-5 villages, the ANM, often an unmarried girl is expected to visit each village on her own and take care of the health needs of the women and children which actually pertains to only contraceptives and immunisation. In our societies

specially in rural areas, an unmarried girl advising contraceptive use to married women is not accepted and often looked down upon, and the ANM is thus caught in the dilemma between meeting her "targets" and not offending the rural women. Further the sub-centre in many villages is located on the outskirts and the ANM is expected to stay there. It appears as if very little consideration has been given to the problems single women face in rural areas and the risks involved in staying in such remote surroundings on their own.

As far as their work is concerned, ANM's are under tremendous pressure to fulfil family planning targets and their allowances are very often linked to their performance on this front. As a result it often happens that ANM's are forced to cook up figures to meet targets. The burden of the family planning programme rests on them without being papers ensitive to their limitations. Similar is the case of dais who conduct 80% of the deliveries even today in India, but are regarded as untrained health assistants by the system. The modern health care system is dismissive not just of the traditional systems but also of women. There is no separate space created for women and their health problems with the exception of their family planning needs. It is unfortunate that women exist in the health care system not as individuals but as a "body" or more specifically a means to control population growth.

13.7. SUMMARY:

This unit presents an overview of the health care systems that one finds in India. India has a plurality of medical systems from the traditional Siddha, Ayurveda, Herbal Folk, and Unani systems to the more modern Homeopathy and Allopathy systems. India needs to take advantage of these diverse systems and integrate the traditional into the modern like China has done. Women stand to gain from this as they are users of multiple system for the family. Also the modern Allopathy health care system is not very sensitive to the needs of women.

13.8. MODEL EXAMINATION QUESTIONS:

I. Answer the following questions in 30 lines each

1. " India is a country of medical pluralism" discuss.
2. What are the reasons for the continued popularity of traditional medical systems?
3. Write an essay on women and the health care system.

II. Answer the following questions in 10 lines each.

1. What is Allopathy ?
2. Why is allopathy more used than older systems of medicine ?
3. Discuss the role of an ANM in providing health care.

4. What is Homeopathy ?
5. What is Ayurveda ?
6. What is Unani ?

13.9. GLOSSARY:

a. Medical Pluralism: Various types of medical systems present from traditional to modern.

b. Allopathy: Modern Western medicine which is now popular.

c. Pharmacopea: List of medicinal preparations and directions for their use.

d. ANM: Auxilary Nurse Midwife - the main health service provider at the sub-centre.

e. Dai: A traditional mid-wife who takes care of the deliveries in the home.

13.10. RECOMMENDED BOOKS:

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2. Shodhini - 1998 - Touch me, Touch me Not. Kali for women.
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UNIT -14: INNOVATIVE APPROACHES IN COMMUNITY HEALTH

14.0. OBJECTIVES:

After going through this unit you will be able to discuss

- Health care delivery systems in India.
- Approaches in community health.

14.1. INTRODUCTION:

Although the state accepted responsibility for health, it really needed an overall direction and a goal along with appropriate strategies for effective delivery of health services. The study group on health status of the people jointly set-up by the Indian Council of Medical Research (ICMR) and the Indian Council of Social Science Research (ICSSR) in 1975 reported that mortality rates among women and children were still very high and morbidity pattern had not changed. Infact, recognising the failure of health services to reach the poor, this group jointly also organised a seminar on alternative systems of health care, especially for rural areas. Diseases arising from poverty, and absence of infrastructure such as malnutrition, bad sanitation, lack of safe water supply and drainage, inadequate housing and low levels of community development were still among the most common. It had not been possible to intergrate health and development and effective control of several communicable diseases. Health continued to be looked at as a function of medical care alone, rather than one aspect of general development, closely linked with poverty, unemployment, education and women's status.

The aim of this unit is to acquaint you with some of the alternative health care programmes that have a people's orientation. They provide useful insights to the policy makers on how to have need based and sensitive health care services.

14.2. HEALTH CARE DELIVERY SYSTEM - AN APPRAISAL:

One of the areas where the Government health system has failed is to reach out to the villages, the poor, and the women and of course the old periphery in its reach to villages and the poor. Whatever the top manager of health delivery system may decide is good for the people for example, promoting iodised salt, does not get translated into action at the periphery. Generally there is no accountability of the system to the local people. There is also a lack of commitment of the top and middle managers on their objectives and their systematic achievements. The first area is using of existing resources and understanding what is wanted from the system. This means identifing the quantitative indicators of the health programme and getting more from these services. Secondly effecting additionalties to the system if required. We also need to promote innovations and improvements which will involve people for effective implementation. Policy makers need to take note of innovative approaches and let their policy reflect them. For example, making the health system women friendly should not be mere rhetoric, instead health policies should reflect this sensitivity. Another area in the information systems is the quantitative indicators are generally taken as ends in themselves and remain mere statistics. One needs to generate more qualitative data that reveals the true situations of peoples lives. Another area where a lot needs to be done is our medical education. Medical education has never trained physicians for primary health care, though there were commissions and committees. The emphasis is on in the rural areas it is the curative health rather than preventive health with a strong urban bias. Family planning programme, very often promoted at the expense of major national programmes. Also the Government has not utilisd the enormous source of experiences in the field. They could do this by study visits to organisations, sharing of experiences through newsletter etc. There is no serious monitoring of the quality of service at primary health care centre, sub centre. Health education has not made much strides and does not reflect peoples health needs.

The felt need of the people for maternity and other basic and emergency care remained unmet and the only programme which is visible and is pushed is the family planning programme. This is reflected in the substantial difference between health sector allocation and that of family planning. The PHC, the core health unit at the rural level, generally lacks drugs and it is for this reason the population prefers to pay for private services rather than utilising the facilities of PHC. Somehow the village health guide scheme has not been successful. One of the reasons may be with the paltry honorarium of Rs.50/- per month. which was paid irregularly. Secondly 90% of the village health guides initially were males and 90% of the

health problems were those of women and children. Another important reason is that the absence of referral service which is not available at primary health centres. The distant urban hospitals are physically not accessible to the disadvantaged people in rural India. So far we have not been able to control the communicable diseases for which cheap and highly effective medicines and technology is available. We are not able to motivate and ensure that our large members of doctors and nursing personnel required for the needs of our 70% who live in rural India work in the PHC's and rural health centres. The potential of improving health status of our society has been demonstrated in Kerala state where basic health services spread to rural areas and subsequently led to the improved health status of people in the state. This emphasises the predominant role of the political will in health as in all other developmental activities. Water supply, sanitation and clean environment has probably played a greater role in bettering the health status of the urban elite rather than the extensive curative medical services used by them. The urban poor and rural areas lack these minimum needs and suffer fromn gastroentiritis and acute respiratory infections, higher maternal mortality and high infant mortality. There is an urgent need therefore to make these basic amenities available to the poor. This together with the provision of effective health services at the local/ village/slum level will go a long way in improving the health status of India's population.

14.3. THE NGO SECTOR:

Though the government was and remains the pre-eminent actor in the health and development field, it has always been complemented by the non-governmental sector. NGO's whose role is growing with the Governments inability to take care of the health needs of people. In contrast to the Government, the NGOs were able to demonstrate significant reductions in mortality and fertility among the communities. They evolved approaches to community health by trial and error and conscious innovation over a period of time. They combined basic commitment and close involvement with the community at the grass roots with a specific targeting of the poor and disadvantaged, and organisational innovations. NGO's recognized that medical care in isolation did not assure health of population. Since they were small organization and not constrained by bureacracy they could extend the meaning of health to include agriculture, housing, childcare, food security assured incomes and attention to many many other important fields. These experiences of NGOs provide both corrective and future direction to government and non-governmental programmes.

In this section, we discuss some of the innovative approaches and strategies adopted by NGOs in the health sector and identify common elements of their successes and failures and lessons from such initiatives that can then be applied elsewhere.

Before we look at innovative health approaches within India, it would be useful to briefly touch upon such successful examples from around the world. Improvements in health status of people have been very significant in China, Cuba and even Sri Lanka, where community

oriented health services were given priority. In china paticularly, the importance given to Chinese traditional medicine, self reliance and the barefoot doctor helped provide basic health services to the rural areas. The Chinese health care system is one of the few serious attempts to integrate modern and traditional systems. The barefoot doctors of China are the paramedical personnel trained (three months to 2 years) to do routine tasks and serve their home villages. These barefoot doctors who number about one million, also work at regular, jobs on farms or in factories. From the village level upto the national level there is a system for refering a medical problem that cannot be treated by the barefoot doctor. The chinese health model that is holistic and need based offers an alternative to many third world countries that are burdened with a top heavy (doctors) and urban biased health system. Cuba followed the chinese model and did a creditable job with unsophisticated personnel. Closer home, Bangladesh's Swosthya kendras also train village people to take care of the basic health needs of rural areas. All these models show that the barefoot doctors were accountable to the people they served and trace improved health status.

The Non-Governmental organisations vary widely in terms of size, objectives, the activities undertaken, methods of operation, sources of funds and relationship with government and non-government agencies. Some operate only in few villages and are small in size, others have branches in several states in India and have lot more activities. Some concentrate on one activity like health or agriculture development or income generating activities etc, while others are multifunctional, undertaking various developmental activities simultaneously. Though the NGO sector is not a single cohesive entity yet it has some common elements such as motivation, closeness and a high degree of commitment to the people. They are generally flexible in their approach and responsive to the needs of the people specially the poor.

By the 70's it was noted that the Government health care centres were unable to address the problems of people in the remote corners of the country. The Government programmes had become too centralized and planning with a top down approach, made it impossible to address the unique needs of the diverse population groups across the length and breadth of this vast country. For example treatment of malaria in the cities with chloroquine would cure the fevers, but this would be inadequate in most villages where mosquito breeding due to paddy cultivation, water logging and inability of the poor people to protect themselves would result in recurrence of malaria and even resistance to chloroquine. In addition the doctors in these programmes had been trained to treat complicated diseases like heart diseases, cancers and congenital problems, etc.. and they do not find malaria, diarrhoea and cholera or even TB challenging enough. The NGO's based their new alternative strategy on the following information.

1. 70-80% of the health problems of the poor are simple and affect women and children. These problems are largely preventable or amenable to treatment with simple medicines. In addition most require good nutrition and rest as part of the care. They do not need the services of a highly qualified doctor.

2. Middle aged women who belonged to the rural areas and were acceptable to the community even though non-literate, could be trained to recognize these "simple" problems and further trained to refer the more serious "cases" to a referral centre or hospital.
3. A good reliable transport system and a referrel hospital within a short distance would be necessary to help treat "serious cases".
4. The women health workers also called voluntary health workers or community health workers would be sympathetic to the problems of the people and help mediate between the doctors and the sick people and help in better coverage of National health programmes such as MCH, FP etc.,
5. The health workers successfully learnt the use of 10-15 medicins for fever, diarrhoea, skin, ear and eye problems, anaemia etc. It is now felt that health workers can also handle white discharge and other RTI's.

14.4. INNOVATIVE APPROACHES IN COMMUNITY HEALTH

We shall now discuss a few innovative approaches in community health from the NGO sector in India, which have successfully demonstrated the impact on the community. These include :

1. People's Clinic - Nellore
2. Child In Need Institute (CINI) - Calcutta
3. King Edward Memorial Hospital (KEM) - Rural Health Project
4. Rural Unit for Health and Social Affairs (RUHSA)
5. Comprehensive Health and Development Project (CHDP) - Pachod
6. Strihitkarini - Bombay
7. Jamkhed - Maharashtra
8. Streewadi Arogya Kendra - Pune

14.4.1. People's Clinic: (Praja Vaidya Shala - Nellore- Andhra Pradesh):

This was one of the earliest attempts to de-mystify scientific medicine. It was started in the mid-forties by a doctor called Dr.Ramachandra Reddy who was part of the communist movement in the pre-independance days. He set up a central well equipped hospital facility at Nellore with a team of dedicated doctors and facilities for surgery and simultaneously trained village workers in health care. These workers learnt to recognize illnesses like fevers, malaria, cholera and other dangerous epidemics, they were also trained to give injections and even prepare intravenous fluids in the villages for infusions in the cases of cholera and dehydration. These workers handled most of the health problems. Those who were referred to the Nellore hospital were treated by the team of doctors. Infact people flocked to the hospital during a crisis as they felt that the hospital belonged to them. The distinction between the doctors and the health workers was erased. This unique hospital made it possible

for people to truely believe that health care was an universal right and was not dependent on the sick persons ability to pay. Even now the hospital provides essential and referral services to the poor sections of society in Nellore district.

14.4.2. Child in Need Institute (CINI):

The CINI is a private voluntary organisation started in 1974 catering primarily to the health needs of the disadvantaged semi urban population living around southern outskirts of Calcutta. Initially the main purpose was to provide maternal and child health services in their area. Though started initially with health activities, in due course they have expanded the programme into developmental activities for better results. Presently, CINI's role is that of a catalyst in promoting socio-economic development for the poor through action programmes with the involvement of the community.

14.4.3. King Edward Memorial Hospital (KEM) for Rural Health Project (PUNE):

The Rural Health Project under KEM is an example of cooperation between the government and the voluntary agency with the aim of delivering rural health services. The KEM hospital attempted an innovative approach to develop a comprehensive primary health care programme with community participation. It also has a socio-economic programme as an entry point for generating change that works towards developmental activities of the community. This project started in 1977 in 22 villages of Vadur block near Pune. The KEM is a teaching hospital in Pune. The Government of Maharashtra formed a partnership with KEM giving the responsibility of managing the health care of Vadur block. This particular project was funded by a private charitable trust. The main purpose of the project is to improve the service within the health system and work closely with government policies and directions.

Activities:

Women and children are the prime target groups because they represent about 75% of the total population. Maternal and child health services therefore receive the highest priority in the project. The identification of women and children who are in poor health is an important feature of the programme. Separate records are maintained by Multi Purpose Health Workers (MPHW) and Community Health Guides (CHGs). They are trained to identify pregnant women at risk that is women who have a low weight, are anaemic have lost their babies earlier or have other problems and also children who have major risk factors like low birth weight, cough, malnutrition etc. Maternal and child health services are provided by clinics held in villages once in two months. Specialists in a team (Gynaecologists, paediatricians, social workers and the local ANMs and CHGs) participate in these clinics. The project provides ante-natal and post-natal services during the last trimester. The pregnant women

are provided with an inexpensive sterilised delivery pack that may be used for home deliveries. They identify malnourished children through community health guides and MCH clinics and advice parents on improving nutrition and preparation of appropriate local foods through demostrations. Severely malnourished children are admitted with their mothers to the Vadu rural hospital for treatment and nutritional rehabilitation. Mahila mandals are also utilised to impart nutrition education. The project also emphasises temporary birth control measures like oral contraceptives, intra-uterine devices (like copper-T), condoms etc. KEM also has a rehabilitation progamme for handicapped children in 10 villages which was initiated after a diagnostic survey.

One of the most important rules of the project is to involve the community through the formation of local action groups such as mahila mandals and youth clubs. They have also promoted saving schemes, and cooperative societies etc., towards improving the economic conditions of the villagers. KEM is a voluntary agency and is working closely with government in implementing some of its policies and programmes and thus provides some useful lessons. The project has demonstrated a health programme that conforms to government guidelines and policies, and has produced significant results in terms of raising the health status of people. Important elements like training, management and supervision, changes in attitude and work habits have contributed to the success of the project.

14.4.4. Rural Unit for Health and Social Affairs (RUHSA), Vellore:

This project reflects a holistic approach to health. It aims at reaching integrated health and development services to the people living in the K.Kuppam Block in Tamil Nadu. The RUHSA project has been undertaken by the Christian Medical College and Hospital, Vellore, Tamil Nadu. The main approach of the project has been to educate and enable people to help themselves. The project runs in association with the local community and the government as well as other voluntary organisations. It was set up in 1977 as an integrated programme of health care and socio-economic development.

Right from the beginning RUHSA has been working with the Government. Since the Christian Medical College, Vellore is a recognised institution by the Government it was able to secure cooperation with the Government in areas like health care delivery, adult education, rural and community development, employment generation, agriculture and banking. RUHSA has developed centres for consultancy and research and organises seminars and training programmes disseminating the philosophy of RUHSA. The project tries to arrange economic assistance through banks and the rural income generation programmes of the Government. Some of the mahila mandal members have assisted in tackling a variety of needs and problems ranking from access to existing health and socio-economic services to bettering their quality of life. The women's education organisers have also developed an active street theatre to support the project activities. The topics that were dealt by street

theatre are women's rights, the evils of alcoholism, dowry, disparity of wages among women, female illiteracy and the use of oral rehydration therapy in treating diarrohea. RUHSA initiated both income generation activities, and at the same time provided the requisite productive skills of women through training. A women's bank has been set up with RUHSA's assistance in order to enhance the sense of self-reliance.

Almost every NGO dealing with development activities like incomes, land, water, women's problems is forced to address the question of women's health through the following ways:

- Either health services are provided or
- Local women are trained or
- Health education
- Nutrition of women and children
- Alternative herbal medicine

14.4.5. Comprehensive Health and Development Project - PACHOD:

It was established in 1977 with a purpose of providing effective primary health care to the low income women and children in the rural areas through the use of local people. Village women were trained to assist as health animators. This project is located near Pachod in Aurangabad town of Maharashtra in collaboration with government, in one block consisting of about one lakh population. The project office is located at the headquarters which has a 35 bedded hospital with three doctors, a public health nurse and two ANMs and various other support staff. Field workers are the community health workers mainly women who were trained as Health Guides. The project emphasises maternal and child health immunisation and prevention of mal-nutrition.

The project has established an effective follow up and referral system from the periphery or villages to the base hospital at the headquarters. The field work done by the dais and community health workers is supervised by ANMs and other professionals such as social workers. Fortnightly health clinics are being organised in villages and serious cases identified are admitted to the hospital.

14.4.6. Streehitkarini :

Streehitkarini an organisation for the welfare and development of slum women was established in 1964 with the purpose of providing maternal and child health and family planning services to the slum dwellers in Bombay.

Activities:

In about 20 years the organisation has expanded its target population from ten thousand to one lakh. Most of their staff were drawn from the slum community. The key workers for the

project had been community health workers who were selected from the slum community and gradually trained to become multi purpose workers.

Streehitkarini gradually developed a total welfare package which included health nutrition education specially of women and also included income generation activities. It has evolved a strategy of taking care of individual patients for a wide range of medical problems, while also addressing the preventive health and social needs of the families. To achieve this,it developed close contacts with government and social agencies. It also has links with outside medical agencies to provide specialist services in leprosy, TB, under-five care and disabled children etc.

14.4.7. Comprehensive Rural Health Project (CRHP)-Jamkhed, Maharashtra:

The Comprehensive Rural Health project was started in Jamkhed in the most backward region of Maharashtra in 1971. Though initiated with a health focus, to-day it encompasses not only the curative aspects of health care but also the overall socio-economic development of the area. The project started with a clinic in Jamkhed since people requested for a good curative centre and gradually the clinic was developed into a hospital. It is through this hospital that they were able to establish rapport with the local residents. Gradually the local leaders requested the medical team to introduce the project staff to nearby villages. The efforts of the project staff were concentrated on women and the less privileged sections of the population in and around Jamkhed area.

The project initially provided health facilities, largely curative services. These curative services were used as a spring board for introducing preventive health activities. At the request of the villagers the ANMs were sent to the villages to help the people especially the women, children and other vulnerable groups. But the ANMs were unable to motivate the women to avail antenetal care etc. As a result the idea to involve local village women to perform health services was born. The Aroles, the founders of this project, also acknowledged the successful experiences of the barefoot doctors of China and sought to emulate this model in Jamkhed. The project gradually selected village health workers especially women. Most of them were illiterates or semi-illiterates. The village people were encouraged to select a woman who was outgoing, concerned for others and also social minded. The village health workers (VHW's) had a training though initially it was for a week. As part of their education the VHWs came to the Centre at Jamkhed for two days in a week. Gradually the VHWs were trained to conduct deliveries, were taught the use of simple medicines and also to keep records. They also were trained to impart health education to women and children. They encouraged other women and children to keep records, dig soak pits to make latrines etc. Most of the VHWs have learned to read and write only after joining the project and that was a big change for the women themselves. The health system of the project is a three tier

system. At the lowest level or the village, the village Health workers work as volunteers to provide basic health services like antenatal care and postnatal care for mothers, conducting deliveries, monitoring growth and immunisation of infants, family planning coverage and treatment of minor ailments and keeping of records. In addition, they also promote soak pits and advice on maintaining cleanliness etc. The second tier consists of a mobile health team which visits each village regularly. This team includes social workers, two paramedical workers and a trained nurse. Since the community health workers were found more useful in reaching out to the village health workers, the doctors were kept away from the second tier system. The health team's job is to train and follow up the work of the VHWs. The mobile team provide support to the VHWs and coordinates the activities of different villages through the VHW. The third tier consists of OPD and hospital service at the Centre in Jamkhed. It is a thirty bedded hospital with X-ray, laboratory and an operating theatre. At this level curative services are offered for illnesses like TB, Asthma, Peptic ulcer, Amoebiasis, Typhoid, Pneumonia etc. Surgical problems like appendicitis, bladder stone,fractures etc, are handled at the hospital. Only very few patients who need highly specialised care are referred to the district hospital.

14.4.8. Streewadi Arogya Kendra :

This is a feminist health centre on the outskirts of Pune in Maharashtra. Established in 1994 by NASUM (an organisation for Integrated Advancement of Women), the centre aims to promote women's sexual health in the widest sense. A nurse and a village health worker attend to the health needs of women and a gynaecologist and a counsellor come in thrice a week. The centre provides a whole range of allopathic medicines and herbal treatment for common ailments free of cost. Besides, the centre also educates women about their bodies and health and has discussions with groups of women and young girls on these issues.

14.5. SUMMARY :

Most of the strategies and common features displayed by the NGOs could be summarised in the following paragraphs :

Health is considered as part of general development and is therefore looked at holistically by the NGOs. For example Streehikarini went from curative medical aid to maternal and family planning and then to education and income generation. The Child in Need Institute (CINI) moved from curative and preventive health care to income generation for women to eliminate poverty and unemployment. The NGOs have consciously emphasised community participation by creating institutional structures like mahila mandals, youth clubs and other committees. For example RUHSA had developed concepts to create Village Advisory Committee (VAC), Mahila Mandals etc. Most NGOs use local people as community health workers or volunteers to act as the most basic link between the project and the community.

In these projects the NGOs tried to progressively make the rural people share the responsibility for managing many of the small activities by themselves. In some of these projects the community pays small fees for services. In the CHDP, Pachod project they charge for the services they provide. Most of the NGOs have directed women as their targets for health care. Women have also been involved in the implementation of the programme as CHWS and ANMs. Another important component of NGO strategy has been to give full recognition to the cultural aspects and local specificities, and understand their cultural practices and traditional health remedies. The NGOs have developed a three tiered health system that is intergrated with each level. At each level the unit caters to a small area and the specific needs of the population. Training has been considered as an important element in most of the NGOs. The leadership of the NGOs and the commitment and motivation of their staff has been one of the factors for innovation and the success of these projects.

14.6. MODEL EXAMINATION QUESTIONS:

I. Answer the following questions in 30 lines each:

a. What are the problems with the Government health care system ?

b. What role can the NGO sector play in providing health care to people ?

c. Discuss three alternative models of health care

II. Answer the following in 15 lines each:

a. Write a note on the chinese health system.

b. What were the strategies the NGO sector employed to provide health care ?

c. What are the main features of the Jamkhed health project ?

d RUHSA, Vellore

e. Barefoot doctor

f. People's clinic, Nellore

14.7. GLOSSARY:

a. **Health Care Delivery System** - The centres providing health care services, usually by Government, but can include private sector also.

b. **NGO's** - Non-Governmental Organisations are groups working in rural and urban areas to improve lives of people, specially the poor.

c. **Barefoot Doctor** - Village level trained medical workers in China who can take care of the basic health needs of people.

d. **Referral System** - A hierarchy of health care services that are linked and where the PHC can refer serious cases to the district hospital. Usually a referral system implies a large hospital.

14.8. RECOMMENDED BOOKS:

1. *Voluntary Health Association of India* - State of India's Health
2. Illich, Ivan - 1979 - *Limits to Medicine*, Penguin
3. ICSSR and ICMR - 1981 - *Health for All* : An Alternate Strategy, Indian Institute of Education, Pune.

UNIT - 15: HEALTH POLICY AND WOMEN

15.0. OBJECTIVES:

After going through this unit you will be able to discuss about

- Health Policy in India
- How sensitive they are to Women's health problems.

15.1. INTRODUCTION:

When we think of health for majority of us it means illness and conjures up an image of injections/tablets/hospitals. The World Health Organisation (WHO) defines health as not just the absence of disease but "a state of complete physical, mental and social well being". WHO estimates that 80% of illnesses are preventable. Most arise out of a lack of basic necessities such as clean drinking water and proper sanitaiton. Health therefore has three important dimensions - curative, preventive and promotive - of which the first one has received maximum attention in modern allopathic medicine. Simply put curative health deals with curing illness, preventive health refers to measures to prevent any illness from occuring and promotive health is concerned with all those areas which go into improving the health of population such as better food and nutrition, health education and even facilities for recreation etc..

In any talk on health policy there are certain questions that need to be asked — policy for whom ? who are the target groups at whom the policy is aimed at and who will benefit ; what should the emphasis of the policy be, what are its objectives and is the choice of technology in conflict with the desired objectives. It becomes necessary to therefore understand what goes into the making of a health policy. Many of us tend to look at any public policy as separate from the politico-socio-economic structures that exist in a country. Any health policy needs to be sensitive to these questions and the needs of society at large. Has this been the case with our health policy? The following section provides a background to health policy in India and critically examines the forces that have shaped the present policy and its implications for women.

The aim of this unit is to critically examine the priorities of our health policy since independence and more important, to discuss how sensitive these policies have been to women's health problems.

15.2. HISTORICAL BACKGROUND:

India has a record of fairly well developed public health services which had its roots in the colonial period. Prior to British rule, health services in India were based on traditional medicine, ranging from ayurveda, siddha, unani, nature cure to herbal practices. These services were individualised, personalised and locally available in each village - hakims, vaidyas, dais and older women being the better known providers of these services. Generally most castes had their own dai and "doctor" who took care of the community's health needs. Most basic health needs were taken care of at home by the family with the help of remedies passed down from elders. Women and children were treated at home with deliveries and even abortions all done at home. Such a system of health care was accessible to almost everyone and took a holistic view of health. Since the practitioners belonged to the village, caste group, they understood the problems of incomes, food, work, time etc, and did not prescribe unrealistic cure. However, medicine did not help to change the hierarchy in a village. It is possible that it further endorsed it and perhaps contributed to perpetuation of the caste system.

All this changed with colonialism. During colonial rule, Western Allopathy medicine was introduced and encouraged at the cost of traditional medicine. Health services became centralised, institutionalised and under the control of the state (in this case the British). It was during this period that the foundations of the Indian public health system were laid. The British health system had three aspects to it — the urban hospital (curative), the rural dispensary and public hygiene (preventive) — of the three the urban hospital and public hygiene in urban areas were given more importance. As a result piped water supply and sewerage works began in the large urban centres and cantonments, the areas of British residence. The dichotomy between urban and rural health care therefore has its roots in the colonial period and continues even today. Further, health services during the British rule were localised and focussed on those areas which served the interests of the British. As a result, there was also evident, a regional disparity in the level of healthcare services during colonial rule. Thus one finds that those regions that were patronised by the British had better health services than others - Bombay, Madras and Delhi region as compared to the Central Provinces. This disparity has continued to exist even after independence as the national health policies also showed an urban and regional bias in their implementation. However, since the allopathic system was not limited to a caste or village hierarchy, it raised the aspirations of all the people for better health care. Infact people from rural areas brought the sick to the cities in the hope for cure.

15.3. BHORE COMMITTEE REPORT:

In 1945, the Government of India appointed the Health Survey and Development Committee, popularly known as the Bhore Committee, whose report laid the foundations and norms of a very equitable and accessible health care system. The Bhore Committee found that India at independence had high death rates, the state of public health and environmental sanitation was unsatisfactory, with protected water supply and drainage reaching only a miniscule number. Epidemics continued to take a serious toll of life, particularly Malaria, Tuberculosis, Cholera and Typhoid. Nutritional levels were poor and the distribution of medical personnel was heavy, with one doctor serving a population of 6300 as against one nurse for 43,000, one health visitor for 400,000 and one mid-wife for 60,000 persons. Further, the committee observed that most of these health professionals (particularly doctors) served only the urban areas and there was also a shortage of women doctors. It was found that in the entire country there were only 70-80 women doctors engaged in essentially maternity and child care services. As a result the general health needs of women were largely neglected. While women's health needs were never of prime importance, yet with the introduction of modern medicine women got further marginalised as health services moved away from the home to the dispensary and hospital and became very formalised. Physical and social access to health care facilities thus became more difficult for women when health care moved from the home to the clinic. Women with small children had to travel long distances for health care, they had to often depend on some male member to be free to escort them, they needed money for the visit if it involved bus/rickshaw travel, a visit to the clinic meant loss of wages for those women who were daily wage earners and the time the clinics would be open clashed with the women's work hours at home.

Against this fairly dismal health picture, particularly for women, the Bhore Committee recommendations were radical and provded a blueprint for health policy planning. Commenting that the British focussed greater attention on curative health, the Committee called for provision of health services to rural areas and an emphasis on preventive health care. It needs to be mentioned that the Bhore Committee had recommended the establishment of a Primary Health Centre (PHC) with two to three sub-centres serving rural populations of 80,000-100,000 as far back as 1948. This was last recommended at the World Health Conference at the Alma Ata declaration in U.S.S.R, in 1978. Thus, one finds that as far back as 1945, the Bhore Committee provided the Government of India with an almost revolutionary alternative to the then existing health care system of colonial India. One of the guiding principles of this report was - every individual should have access to adequate medical care irrespective of their paying capacity. Though the Government of independent India readily accepted the recommendations of the Bhore Committee, yet, some of the major areas of emphasis got considerably diluted and delayed due to political reasons. Rural health care, control of epidemics of communicable diseases and greater spatial distribution of health facilities were

some of the benefits of the Bhore committee. On the other hand, the curative hospital bias of the health services when compared to the preventive and promotive care and the weightage given to doctors at the cost of other health personnel continued without much change. Thus, while health facilities became more spread out over the country, yet it was the large urban centres which saw a concentration of better facilities both of curative and preventive health. Further, in both urban and rural areas it was usually the upper castes, the rich and men who had greater access to these facilities because of the power they wielded in society. Thus, the colonial pattern of an urban, curative and class bias in health care continued even after independence.

15.4. COMMUNITY DEVELOPMENT PROGRAMME:

In 1952, as part of the community development programme, it was proposed that each development block have a PHC which would be the central agency for providing health care to the remote corners of the country at the grassroot level. Each PHC would serve a population of 60,000-80,000, have 4-6 beds and have three sub-centres. These PHCs were grossly inadequate and under-staffed and were a far cry from what was suggested earlier by the Bhore Committee (details about the PHC and sub-centres have been given in unit 13). Though there have been other committees that followed the Bhore Committee framework in recommending strengthening of the PHCs and rural health services, yet, these changes has not happened and about 70% of the people have no access or minimal access to basic health care. Of the 4215 Government hospitals in India, 81% serve the urban population which is only 25% and only 19% serve the 75% rural population.

While a holistic treatment of health care was missing, Indian health services had a number of vertical programmes sponsored by the central Government and some International agencies. These vertical programmes were aimed at the control of specific communicable diseases such as small pox, tuberculosis, cholera, malaria, filaria and leprosy along with the control of population through family planning. The government budget on health over the different plan periods reveals the low priority accorded to health. India spends only around 2.1% of her total budget expenditure on health which is much lower than that spent by other Third World Countries. (see Table 1).

Table 1: Percentage of Government Health Expenditure on Health to Total Expenditure

	1983	1985
World	9.68	10.38
Germany	18.60	18.70
U.K	13.22	12.55

USA	10.65	11.29
Kenya	6.96	6.43
Bangladesh	4.09	6.24
Srilanka	5.22	3.77
Pakistan	1.04	1.00
India	2.42	2.16

15.5. NATIONAL HEALTH POLICY:

It was against this background that the 1978 International Conference on Primary Health Care held at Alma Ata in Kazabastan, USSR, gained meaning. It was at Alma Ata that India along with a number of other nations endorsed a policy of Health for all by 2000 A.D. What made this declaration significant was that it advocated the importance of primary health care and made it the cornerstone for determining future health policies. The Indian government undertook an ambitious programme to expand rural health services and a comprehensive and integrated national health policy (NHP) was formulated in 1983. This policy reaffirmed India's committment to "Health for All" within a context of social justice and democratisation. The overall goal of the policy is the universal provision of comprehensive primary health care services which are relevant, affordable by most people and are participatory. The gains of the National Health Policy became visible as the following data shows. While, in 1980 there were 5484 PHCs and 47,112 health sub-centres, by 1990s this number had grown to 23,097 PHCs and 1,38,692 sub-centres. Further, to involve the community in primary health care, a centrally sponsored programme to train a village health guide (VHG) for each village of 1000 persons was set up. By 1990, a total of 5,85,780 dais, mid-wives and 4,08,642 VHGs were trained. Thus, the health services expanded considerably and the results of this were seen in the improvements in the health profile of the Indian population (see Table 2).

TABLE 2 : India: Health indicators, 1970 & 1990

	Health indicators	1970	1990
1.	Life Expectancy - Male	50	60
2.	Birth Rate	41	30
3.	Death Rate	18	10
4.	Infant mortality Rate	137	90
5.	Population per doctor	4890	2460
6.	Population per nurse	3710	NA
7.	Number of hospitals	3862	11245
8.	No. of beds per 100,100 population	64	94

By the 1990's while the NHP has achieved some degree of success in the control of certain epidemics such as small pox and the management of others such as cholera, malaria etc., and decentralising and making health services more accessible, yet there is one glaring omission in that it has little to offer on women's health, besides a maternal and child health programme. Identifying women only in their maternal roles speaks of patriarchal attitudes and its influence on the planning of health policy. Inspite of its rhetoric the reality is that the national health policy is not sensitive to the health needs of women. Women are seen as reproduction agents and the fact that they have other health needs such as diabetes, blood pressure, heart problem or even malaria, fever etc, is generally trivialised. Health policy, health system and the medical doctors all tend to treat the complaints of woman in a dissmissive manner. Currently, there is evidence to prove that women avail of the allopathic health services far less than men, and poor women even less for every 5 men 1 women uses a health facility.

Reproductive health is just one dimension of a women's health. It has been found that pregnancy and child birth related problems contributes only about 2% to women's mortality rates, the rest of the deaths are due to T.B., malaria, anaemia, malnutrition, etc. There is an urgent need therefore to bring women's health problems into the centre of any discussion on health policy rather than marginalising them. Despite the success of the PHC, in a short span of time. The concept of primary health care as outlined in the Alma Ata Charter has been largely ignored by Indian health planners, as also the basic health needs of women --- who comprise about 50% of our population.

15.6. THE FAMILY PLANNING PROGRAMME:

If there is one vertical health programme that affected women's health the most, it is family planning, accepted by the government of India in 1952. In fact, India was the first Third World Country to implement such a programme and its aim was to improve the health of mothers and their children. This programme began as a family welfare programme in a non-coercive manner in keeping with the larger socio-economic objectives of post independent India. This programme was supported by the United States and the International Planned Parenthood Federation (IPPF) a U.S. based funding agency. To begin with, the Indian Governments approach, although influenced by the West, did have a welfare orientation and was directed towards both men and women, since welfare of the family was its major aim. In the first five year plan (1951-56), Rs.65 lakh was sanctioned for family planning but only Rs.31 lakh was spent. Similarly, though the second five year plan saw a sharp rise in family planning allocation a large part of this again remained unspent. It is from the Third five year plan that one notices a clear shift in the Government policy, from family planning to population control.

There are some important reasons for this change in approach. In the late 50s and early 60s the government of India was faced by a major food and financial crisis. Added to this the census figures of 1961 in India gave figures of population that exceeded the estimates of all the demographers. This shook the "Neo-Malthusian" lobby (groups who believed in the predictions of Thomas Malthus that while population grew in geometric progression food supply increased only in arithmetic progression) in the U.S. who were worried about the growing numbers of Third World peoples. These demographers and International groups were able to motivate and pressurise the Indian government to review its population situation. These pressure groups in the U.S., placed conditions on the granting of aid as part of the food subsidy of PL 480 sanctioned to India in late 60's. Experts from the west, mainly U.S. — IPPF, Ford Foundation, Population Council, Rock Feller Foundation — all decided and monitored the Indian Population control programme, influencing the government officials in their decision making, training local personnel to work in the programme and promoting various methods of contraception.

As the family planning programme changed its objective to population control, the focus of attention became the birth rate. Demographers, played a major role in the functioning of the programme and "targets" and "achievements" to reduce the population became the priorities of the programme. Quality of health care lost out to quantity and women were made to bear the burden of guilt of the so called "population explosion". The contraceptive methods promoted were women oriented and invasive and depended on medical control where women were given very little information and the medical profession decided for women. The extent of coercion used to bring down the birth rate reached its first peak in 1975-76, during the emergency years, when men and women, (but largely men), were forcibly sterilised by the then Government. The protests against this forcible sterilisation resulted in the defeat of the ruling Congress Government. The post Emergency debacle saw a total gender shift in population control measures with women becoming the major targets of coercive contraceptive methods. Women bore the brunt of population control measures in terms of both temporary (oral pills, condoms, IUDS etc) and permanent (sterilisations both tubectomies and vasectomies) contraceptive methods. Presently, about 95% of the sterilisations done are tubectomies with the number of vasectomies having sharply declined over the years. Vasectomies formed 74.2% of all sterilisations in the country in 1969-70, while in 1993-94 it fell to a mere 3.4%. Also; while earlier in the 60s, barrier methods of contraception were encouraged (like diaphragms and condoms), the methods promoted after the 70s were largely methods which depended on external medical expertise and control. Methods like oral pills, IUDs, sterilisation and newer hormonal methods like NET-OEN, Depo Provera and Norplant are all being promoted and experimented on women's bodies under support and pressure from International agencies. Table 3 shows the differences in contraceptive use between the West and developing world, in the former it reflects individual choice, while inthe latter it is coercion (Table 3).

Table 3: Contraceptive use in Developed and Developing World, 1987

Method	Total World (million couples)	Developed World	Developing World
Tubectomy	113	15	98
Vasectomy	43	8	35
Oral Pills	64	27	37
IUD's	83	11	72
Condoms	45	28	17
Others	24	13	11

Source: Alka Dhall "Contraceptives: Choice for the Millions" ? Health for the millions, 2:3, June 1994 p.21.

Note: Contraceptive prevalence in India is 43%, in China 83%, in Pakistan 12%, Bangladesh 31%, Japan 64% and USA 74%.

These trends got further oppressive with the New Economic Policies being followed in our country since the 1980s. If we look at women's health, we find that the government policy with regard to women is mainly centred on their reproductive health to the exclusion of their basic health care needs. In 1983 the State set a target of a net reproduction rate (NRR) of 1 by the year 2001. NRR 1 means that each woman at the end of her life time would be replaced by just one daughter. The social implications of such a target are tremendous in our country where the son fixation is so strong. In practice this would mean justifying female infanticide. Reports from certain parts of the country where there is a rise in female infanticide cases point to this. Women are victimised by both the State and society — by the former for producing more children and by the latter for not proving her fertility at the earliest and not producing a male heir.

15.7. SUMMARY :

It is now generally accepted that sharp gender differentials in health exist but the health policy does not seem to reflect this enough whether it is the infant or adolescent girl or woman. Not much attention has been given to their health problems that require a more sensitive approach in framing any policy. Even in the family planning programme though the focus is on women, yet it is for the wrong reasons. It is therefore not surprising that both girls and women are poor users of the public health system, except for their reproductive health needs. For the health of the family to improve, the health policy needs to be more

comprehensive and work towards providing safe drinking water, better sanitation, improving nutritional levels and a cleaner environment. For most women it is these issues that are of greater concern in relation to their family's health.

15.8. MODEL EXAMINATION QUESTIONS :

I. Answer the following in 30 lines each:

a. Write an essay on the history of health policy in India ?

b. Discuss the trends and implications of the family planning policy ?

c. What are the main features of the Bhore Committee.

II. Answer the following in 15 lines each:

a. The Alma Ata Declaration

b. Hormonal Contraceptives

c. Traditional medicine

d. Depo - Provera

e. Net Reproduction Rate

f. National Health Policy

15.9. GLOSSARY :

a. **Village health guide** - Lowest level of health care provider at the village, involving training of a person from village in basic health needs.

b. **Alma Ata Declaration** - The declaration signed by India and many other nations in 1978 at the behest of WHO. The slogan of this conference was health for all by 2000 A.D.

c. **Neo-Malthusian** - Refers to a view that sees population growth of the poor as a problem and encourages control measures, named after Thomas Mathus.

d. **Net Oen, Depo Provera** - Both Net-Oen and Depo Provera are long acting hormonal contraceptives for women that are injectable and have a life span of three to six months. Both these contraceptives have side effects and are more pushed in the third world than the West.

e. **Norplant:** Norplant is a long acting hormonal contraceptive that is effective for 5 years. It is implanted under the skin and removed surgically after 5 years. Net Oen, Depo Provera and Norplant are not part of the official population policy in India but are available and trials to introduce them are on.

15.10. RECOMMENDED BOOKS :

1. Mass, Bonnie - 1976 - *Population Target* : The political Economy of population control in Latin America. Lang Ontario, Canada.
2. UNFPA - 1992 - *State of the World Population*
3. Doyal Lesley - 1995 - *What makes women sick* : Gender and the Political Economy of Health. Macmillan.
4. Dasgupta,M. Chen, L.C. and Krishnan, T.N. (eds) - 1995 - *Women's Health in India* : Risk and Vulnerability, OUP.
5. Foundation for Research in community Health (FRCH) - 1987- *Health status of the Indian People,* Bombay.
6. Hashyap, Subhsh.C (ed) - 1990 - *National Policy Studies.* Lok Sabha Secretariet, Tata Mcgrawhill, New Delhi.

UNIT - 16: NEW ECONOMIC POLICY, HEALTH AND WOMEN

16.0. AIMS AND OBJECTIVES

The aim of this section is to discuss the impact of the New Economic Policies being followed by the government since the 80's on the health sector and its implications for women.

After going through this unit you will discuss about

- New economic policy and it impact for women.

16.1. INTRODUCTION

The constitution of India in its Directive Principles for state policy requires the government to provide comprehensive health and nutrition services to the whole population of the country. India's early health policies were trained in this direction towards the realisation of this goal. But since the 1980s, and the official declaration of the New Economic Policy (NEP), increasingly these New Economic policies being followed by the government have had tremendous impact on the health sector. The last decade has seen large scale privatisation of health care, specially, corporisation of health care. Health care has become a commodity that is very saleable and profit maximising and the Government responsibility for the health of the masses has been gradually reduced.

16.2. PRIVATISATION OF HEALTH CARE

The private sector in health varies from the high profile 5-star hospitals, to a large number of nursing homes and an even greater number of private practitioners ranging from super specialists to unqualified registered medical practitioners. The private sector in health is now responsible for about three fourths of the medical manpower, 56% of the hospitals, 30% of

hospital beds and 61% to 86% of the total medical expenditure of the country. Further, 70% of the medical and paramedical personnel who serve the private sector are trained at public expense in the public sector institutions. While the public health sector continues to take nearly total care of the preventive and promotive aspects of health care, it is also responsible for providing basic and specialised curative health serviced free of cost or at minimum cost to a majority of the population. The funding for the Government sector has not kept pace with the needs of this sector.

Private health care, is not a recent phenomenon, as private nursing homes and clinics and voluntary associations have been providers of health care since long. According to the Central Bureau of Health Intelligence reports that of 1st January 1988, private organisations and voluntary agencies owned 56% of the 9831 hospitals in the country and 30% of the 5,86,000 hospital beds. In fact, despite widespread public infrastructure a higher proportion of health services is provided by the private sector than by government facilities. The distribution of private health care is not uniform across the States — while in Kerala and Maharashtra and AP the share of private and voluntary hospitals as a proportion of all hospitals is 70 and 92% respectively. In Orissa, Jammu & Kashmir, and M.P., it is less than 10%. Thus, one notes that the private sector though becoming a major constituent of the health care delivery system in India it is concentrated in specific areas, urban centres and rich rural pockets.

16.3. CORPORISATION OF HEALTH CARE:

What has become evident with liberalisation is the growing corporisation of health care or the rise of the "health industry". Corporisation of health care refers to the identification of health as an industry and the entry of a few big companies into this industry. Several big business groups, the Hindujas, Escorts, Goenkas, Birlas, Tatas, Modis etc., are floating hospital industries and going to the public to raise money for their projects. Many of these big corporate hospitals start as trusts to avail the tax benefits and then become a public limited company. It is interesting to note that the rise of corporate hospitals began in the South, in Madras and then later moved to Hyderabad. With corporisation, health care starts not with the patient but with the investor - in the share market in search of high returns. Most of these corporate hospitals have been patterned on the U.S. health model which has one of the highest costs of health care in the world.

The U.S spends 12% of its GDP or over $2700 per capita per annum, yet its health status does not justify this high spending. About 30% of the Blacks and other minority groups in the U.S, are not covered by any health insurance and hence have no access to health care. Further, among the developed countries, while the cost of health care in the U.S is the highest yet its health status is much lower than the other countries. The infant mortality rate in the U.S

is 10 while in Kerals which spends only $15 per capita per annum is 17. Health is the 3rd largest industry in the U.S. In India the cost of services provided by these corporate hospitals are high — far beyond the reach of an average Indian —— but these high costs are justified by the Indian health industry on the grounds that it is still cheaper than seeking healthcare in the U.S. !

With the NEP, external aid agencies, particularly the World Bank, dictate and structure our health policy. The World Bank recommended that Government should reduce expenditure in the social sector which includes health, the PHC should restrict itself to treating communicable diseases like TB, Malaria, Leprosy etc.. and family planning, and the curative health aspects should be left to the private sector and user fees should be introduced in all Government hospitals. With the implementation of the Structural Adjustment Programme (SAP) at the behest of western financial institutions an important sector that will bear its consequences is the health sector. Previous history has shown that in countries where SAP has been in operation, health budgets have been slashed even as illness have increased and this has meant increased suffering for the poor. The World Bank proposal on health care "Investing on Health" (1993), reduces the already minimal access of the poor to medical benefits. The central thrust of the World Bank recommendations is to restrict governmental involvement in health care and to increasingly privatise it.

Already India's investment in health is a dismal 2% of the total outlay as compared to 6% in Bangladesh and 4% in Srilanka. The 1992-93 budget saw a reduction of 20% in health investment in nominal terms. Such a policy would deprive the majority of our population who cannot pay for private health services — of the right to cheap health care at the tertiary level. Recent figures show, that as a result of the growing private sector and inadequate public sector, 70% of the health care is bought from the private sector. It just means that the role of the Government is minimal. The World Bank's proposals reduce the already low access of the poor to good quality health care The government withdrawal from the health sector has created a two-tier health system. The public sector — with its lack of funds - caters to the poor ; while the private sector - flush with private and public funds - attracts the rich and the middle class. It would be worthwhile to remember that twenty years ago we all depended on the public hospitals for quality, and free health care but today are forced to pay high amonts for the same to private hospitals.

16.4. DRUG POLICY:

Economic liberalisation has also shaped the new drug policy which has had to fall in line with the accepted industrial liberalisation. While different sections in the drug industry have succeeded in lobbying for concessions and greater profit margins, the voice of the consumers is silent. The government looks to pharmaceuticals as a profit making industry and most companies have registered a profit of over 50% in the last few years. The

pharmaceutical industry in India is large and well developed. Yet the production of some drug, their quality and price remain a major problems. Multinational companies (MNC's) account for 70% of the turnover in the industry. Half of the world's T.B. patients live in India, but we produce only one-third of our T.B. drugs requirement, inspite of there being a higher installed capacity for these drugs in the Indian drug industry. Like-wise, more than 40,000 children in India become blind each year for want of vitamin A, yet this vitamin is in short supply and we need to import this. The market however is flooded with many useless drugs. It has been estimated that barely 20% of the medicines available in the market today are necessary to treat over 80% of the diseases prevailing, and these 20% essential drugs treat major diseases like T.B., Leprosy, Malaria etc, are in short supply. Whereas 80% of the medicines are not essential and found in abundance. These are about 60,000 brands of drugs in the Indian market - most of them are competitive products of several drug companies and are priority drugs. Over 50% of these drugs are sold over the counter to people without medical prescriptions and are irrational drugs.

In 1975, in an effort to have a rational drug policy, the Hathi Committee envisaged a multipronged effort to reduce imports, develop technologies to produce bulk drugs and intermediates through coordinated research, boosting exports and fostering the development of a small and ethical indigenous small-scale drug sector. The main recommendations of the Hathi committee were - nationalisation of MNC's, abolition of brand names and introduction of generic names, elimination of irrational drug combinations and priority production of 116 drugs it considered essential for the needs of the people. While this report provided the inspiration for the formulation of Bangladesh's National Drug Policy which as a result is far more people oriented and need based than that of many other Third World Countries, in India, its recommendations failed to be implemented in totality. Bangladesh prepared a graded list of essential drugs which indicated 12 drugs for use at village level, an additional 33 drugs for use at the "thana" level and 105 drugs for restricted and specialised use.

When we talk of drugs we refer to terms like essential drugs and non-essential or irrational drugs. What do we mean by these terms? Essential drugs are those that satisfy the health care needs of the majority of the population and should therefore be available cheap and at all times in adequate amounts and in the appropriate dosage. The choice of such drugs depends on many factors, such as the pattern of prevalent diseases, the treatment facilities, the training and experience of the available personnel, the financial resources and genetic, demographic and environmental factors. Examples of essential drugs are those necessary for the treatment of T.B, Leprosy, Malaria, Typhoid, Blindness control, immunisation and other life saving drugs. Non-essential or irrational drugs refer to those medicines which are not really necessary, like tonics, cough syrups, cough lozenges and vitamins. Bangladesh had banned all cough syrups and tonics and these are also not included in the WHO essential drug list.

Besides this there are also some drugs which are hazardous for health and have been banned in many countries. Some examples are Clioquinols which are widely used for treatment of diarrhoea and amoebic dysentery and have serious toxic side effects. This drug (Mexaform) though banned in the west and many countries of the Third World was in use in India till recently. Another example of a hazardous drug combination with serious implications for women is E.P, drugs or high dose Estrogen Progesterone combination. These drugs are widely misused for pregnancy testing, including abortion and menstrual disorders. Most of these drugs are bought over the counter without warning for pregnancy testing and inducing abortions. These high dose hormonal drugs are banned in the west but continue to be sold in India. Women who use these drugs are never told about the side effects and the harm these drugs may do. A study in a Madras hospital showed that mother's of 31% of children born malformed had taken high dose EP drugs during their pregnancy.

The drug policy of 1978 which followed the Hathi commission report began to put some of these suggestions into action. The leading role of the public sector in the production and distribution of drugs, the nationalisation of multinational firms, concentration on the development of new drugs for tropical diseases and greater attention to the production of essential drugs were all an offshoot of the Hathi Committee recommendations. With the NEP since the 1980's, these developments were reversed. The New Drug Policy of 1986 emphasised growth and expansion of the private sector and toning down the role of the public sector. The supply of essential drugs is inadequate and non-essential drugs continue to proliferate as progress on these fronts slackened with liberalisation and it is now unilikely that most of the recommendations of the Hathi Commission will be implemented.

The proposal to abolish brand names and introduce generic names for all drugs as suggested by the Hathi Commission was ignored. With the use of brand names certain big companies have a market power and the customer pays more. Brand names also tend to confuse the buyers as there are many brand names for a single drug that sometimes can be very confusing to a lay person. In Sri Lanka, tetracycline an antibiotic is sold under 20 different brand names. There are instances when a patient who needs to change his medication unwittingly switches from one brand name to another of the same drug. Also, an even more serious problem arises with similar sounding brand names for very different drugs, many of them available over the counter. In a country like ours where the majority of people are not able to read, and more specifically read English, it is quite likely that they may take a different drug from the one prescribed. This situation would be even more compounded in the case of women who have much lower literacy levels and who would feel hesitant and shy to confirm the name of the drug from the doctor or shop-keeper. Generic equivalents are usually much cheaper than their brand counterparts — generic diazepan is 10 times cheaper than Valium in Canada.

The government is now bent upon increasing the present yearly sales of drugs from Rs.6000 crores to Rs.15,000 crores by the end of the century. Towards this end, licensing procedures were simplified and some delicensing occurred. Yet another Drug Policy was announced in early 1995 to satisfy the objectives of liberalisation. This new Drug Policy treats the pharmaceutical industry more liberally. Some of the main features of this policy are : the number of price controlled drugs were reduced to 73 from 142, greater profitability (up by 4%) is allowed for bulk drug manufacturing, and 51% foreign equity participation will be allowed. By offering such a liberal drug policy, the government has failed to recognise that the drug industry needs to be treated differently from other consumer industries. A profit oriented drug policy would certainy lead to growth in sales and profits of top drug companies. What it would also lead to is the rise in drug prices, and the sales of unnecessary and even irrational drugs.

In the New Drug Policy just five drugs are reserved for the public sector. It is important to bear in mind that it was the public sector production of vital drugs like antibiotics that led to a sharp fall in its price in India. The small scale sector has also made significant contributions in reducing the prices of essential bulk drugs. With the New Drug Policy both the public sector and the small sector will stand to lose and the MNCs, now given a free hand, will gain and profit at the cost of the consumer. Such a scenario will have serious implications on the health of the people and will place the poor and women, who take care of the health needs of the family, under great pressure and financial strain.

16.5. WOMEN AND THE DRUG POLICY :

As women generally take care of the health needs of the family, it is they who interact most with both the medical personnel and the medical shops. In this interaction women are handicapped by their low literacy levels and the fact that they are not expected to ask many questions. Further, runnning the household on shoe string budgets the woman has to face the brunt of rise in prices and somehow manage. This situation has particularly been aggravated since liberalisation when drug prices have steeply risen in the span of a few months. Women, specially poorer women, are struggling to find money for medicines for their family and often have to make very difficult choices regarding buying medicines. It usually happens that poor women buy medicines on a daily basis due to lack of money and often discontinue its use if they or their family feel better instead of completing the full course of treatment.

All labels on medicines are in english which is a language not known to majority of our population and for even those who understand it the message on the medicine is in a highly technical and mystifying jargon. Women find themselves at a loss to understand what the label says and the precautions they need to take or the side effects of the drug. In India, most drugs are available over the counter (OTC) without a doctor's prescription and buyers are at

the mercy of the limited knowledge of the medical shop-keeper who often prescribes drugs. This is even more true in the case of women who find the male shop-keeper often insensitive to their queries and needs. Women also feel that their needs are not a priority in the family and are very often embarassed to ask for medicines for their own problems, particularly those related to gynaecological problems. It is commonly noticed that very often women are given hormonal drugs or sleeping tablets as treatment for most of their health problems without being told about the likely side effects they may have, the chances are that women will receive irrational medicines. Once the prices go up or more womenwill opt for home remedies and herbal cure to make sure that the family's priority for health care is not compromised. Women's health status may further deteriorate.

16.6. NEW POPULATION POLICY AND WOMEN:

But the policy that will have direct bearing and far-reaching consequences for Indian women is the **New Population Policy** of 1994 which is yet another example of falling in line with the NEP. While one realises that there is a significant population growth and pressure on scarce resources yet coercive population control measures are not the answer. The New Popualtion policy (NPP) as outlined by the Swaminathan Committee in 1994 sought to place the population policy at the centre of national political economy. Some of the main features of this policy that claims to be pro-nature, pro-poor and pro-women are –

* Doing away with targets for family planning
* Discontinuation of incentives and disincentives to promote acceptance of contraceptives
* Decentralise population policy by involving panchayati raj and Nagarapalika institutions.
* To set up a new body called Population and Special Development Commission to coordinate social development.
* Integration of the various sub-departments of health and the PHC to be the main vehicle for delivery.

Some of the broad objectives of the NPP need to be appreciated as they are a break from past policy. It is critical of coercive methods and argues for decentralisation of policy making. Yet the NPP does not question the fundamental issue of inequities in resource use and consumption that exist. The NPP does see population growth as a problem and assumes that uncontrolled population growth is the chief obstacle to development and therefore, it feels there is a need for control measures. While the report refers to a holistic and comprehensive approach to health, in concrete terms this does not go beyond maternal and child health care. The report talks about the empowerment of women but does not outline any major steps towards this. There is an urgent need to set goals for education of women, especially girls, and also the reduction of infant, child and maternal mortality in the country on which the report has little to offer. The report is equally silent on the impact of the NEP on women's lives and health.

On the other hand, the NPP recommends that those with more than two children be barred from government jobs and contesting elections. The Governments of Haryana, Rajasthan and A.P, a one from this, amended their panchayat acts to include such a clause. Such a measure discriminates against women, particularly poor and younger women — if they have only daughters they face the family pressure to produce a son and then be debarred from contesting elections. In such a sitation they may not be in a position to make use of the 30% reservation in panchayat seats. An even more serious implication of such a policy is that it will lead to a rise in female infanticide as the son fixation in our country is so strong. Further, the document suggests that those who have married before the legally prescribed age should not be allowed to work in the public sector. Around the same time, taking "inspiration" from the NPP, another legislation denying maternity benefits to women who have more than two children was passed. The suggestion on the NPP that military and paramilitry forces be used in promoting population control speaks volumes about the "democratic" sentiments of the draft.

While the NPP claims to be pro-women, yet the draft does not discourage the use of new long acting hormonal contraceptives which are all targeted on women. Injectables like Depo-Provera and NET-Oen and implants like Norplant all have adverse side- effects and long term effects on a women's body. Studies have shown that these contraceptives are likely to cause widespread metabolic problems in the long run. Moreover, women who take these hormonal contraceptives need constant monitoring and require the provision of basic health services, both of which are found lacking in our health system. Studies have shown that of the total number of women who were experimented with in the Norplant trials, a large number are untraceable, and this is the position at a trials stage limited to only urban women. Is the NPP aware that many rural women are given pills or an IUD (Intra uterine device) at family planning camps or government hospitals or clinics and are never told about the complications that may arise ? In case of any such problems such as excessive bleeding, cramps, white discharge, perforation or infection women are confused, scared and have nowhere to turn to. For medical advice they have to plan to go to the nearest PHC or hospital or private doctor spending precious time and money. For all this trouble they may not have the support of their family if they have used a contraceptive without the knowledge of the elders in the family. If the concern of the NPP is women's health then it should have taken a strong stand against hormonal contraceptives and argued for improving basic health services for all on a "war footing" and popularising condoms.

It is therefore not surprising that women's groups have been protesting against these policies. There is no doubt that women need control over their own fertility. There is also a need for safe contraception which women can choose and themselves control. But women the world over find that this is not happening. Population control policies in the name of offering women "reproductive choice" are in effect taking over control of women's fertility. These policies take control out of the hands of women by the introduction of contraceptives which

have a large number of side effects and which are controlled by medical or para-medical intervention. While the extremely low use of contraceptives by men is recognised by the NPP, there are hardly any concrete suggestions to redress this gross imbalance. There should be very serious efforts to educate and convince men to use contraceptives in the interests of women's health, and make them share the burden of family planning. Further, in their overriding haste to control popoulation growth, these policies ignore the more pertinent issues like improvement of women's health, literacy, ensured minimum wages, housing, drinking water, survival of their children and improvement of women's status. Experience from the world has shown that if these issues get taken care of, the 'population problem' solves itself. In India the example of Kerala and now Tamil Nadu confirms this statement.

Since the 80's and more so the 90's certain shifts in focus are taking place in the health sector. These shifts are based on the agenda set by international Aid and Doner agencies such as the World Bank etc. One major shift is the focus on reproductive health. This emerged from the 1994 International Conference on Population and Development (IPCD) at Cairo. Women's protests against a family planning and sterilization approach to their health problems, resulted in the shift to "Reproductive Health" which of course also includes family planning. Reproductive health is defined as a state of complete physical, mental and social well-being in all matters relating to the reproductive system and to its functions and processes. Post 1994, India has also initiated a Reproductive and child Health (RCH) programme funded by the World Bank. The RCH programme is said to be a decentralised programme at the PHC level with the sub-centre as the basic mode and the ANM the main functionary. The programme involves training of community health workers at the village level who would then take care of the RCH needs but charging a user fee for her services. The RCH programme is being implemented in selected districts in some states in India.

The RCH programme is the latest one in a list of programmes targeting women and children. The first was the Family Welfare Programme, which was followed by the Maternal and Child Health Programme. In the 80's the UNICEF sponsored the Integrated Child Development Services and followed it by the Girl Child focus. In 1992, India initiated the Child Survival and Safe Motherhood programme again funded by the World Bank. The RCH programme includes features of all these earlier services - family planning; safe abortion ; safe motherhood; prevention and management of reproductive tract and sexually transmitted infection ; child survival ; health, sexuality and gender information, education and counselling and referral services. Some new features of the RCH programme are : involvement of the private sector; the emphasis on AIDS prevention and focus on "High Risk Groups" and a renewed focus on the adolescent girl. These programmes are a mix of the "medical framework" such as reproductive tract infections, AIDs etc.. and the social such as girl child, adolescent girl etc.

While the RCH programmes objectives are clear yet it again falls into the trap of being a single focus programme, concerned largely again with only the reproductive health needs of women, ignoring their larger health needs. Also, the agenda for the RCH programme is set by the World Bank, the main funding agency. This targeting of the girl child, the adolescent girl and only the reproductive health needs of women again reduces this to a vertical programme. Further, singling out the giri child and adolescent girl only appears to target them again. Instead a comprehensive health programme for youth that would help them deal with their own well-being, their bodies and sexual lives would be more meaningful.

It is unfortunate that most of the new programmes are funded by Aid or donor agencies which picks up one aspect of our ill health and need any highlights it, out of proportion to its actual importance and then the whole health care system, the PHC, the nurses, ANMS etc are drawn into it and end up working for this one programme, all other health needs are forgotten. So when Aid, Knits the needles funded then every health worker involved in the Aid. Other epidemics like malaria, diarrhoea, malnutrition etc are forgotten. We do feel that some of these high profile programmes are responsible for leaving the health care workers confused about health and its priorities. Every time this happens we realize that we are dependent on the "priorities of the aid giving agencies.

16.7. SUMMARY :

The future health scenario for India looks grim. Communicable diseases like Tuberculosis, Malaria. Japanese excephalitis, Kala-azar once controlled are on the rise. The urban bias of health infrastructure becomes more marked. Yet plan outlays on health are reduced and the share of central funding to the State health sector has failed after SAP. At the global level India fares badly on almost all indices of the World Human Development Index. The existing distortions in India's health sector will get more accentuated with the health agenda set by the World Bank. All this will have serious implications on women's health as the liberalised economy impinges directly on women's health, and control over their own bodies. Unless the real causes of poverty and women's ill-health are addressed seriously and with sensitivity, there will be very little improvement in the health of Indian women.

16.8. MODEL EXAMINATION QUESTIONS :

I. Answer the following in 30 lines each:

a. Discuss the trends in privatisation of health care in India

b. How has the drug policy changed after NEP .

c. What are the features of the new population policy and its impact on women's health ?

II. Answer the following in 15 lines each:

a. What is the RCH programme ?

b. What is the role of World Bank in India's health policy ?

c. How does the drug policy affect women ?

d. Corporate health care

e. Hathi Committee

f. Rational and Irrational drugs.

16.9. GLOSSARY :

a. **NEP** - New Economic Policies that India has had to introduce since after liberalisation

b. **Liberalisation** - Opening up Government controls on the economy and encouraging the private sector has been in operation since 80's.

c. **Corporisation** - The entry of the corporate sector in health care and making health care an industry.

d. **User Fees** - Payment charged to patients/users in Government hospitals.

e. **MNC's** - Multi national corporations that have a spread over the entire world economy.

f. **Human Development Index** - An index based on life expectancy, literacy and income brought out every year for each country by United Nations Development Programme (UNDP).

16.10. RECOMMENDED BOOKS :

1. World Bank, 1993 - *Investing in health*, OUP.

2. Rao, Mohan - 1999 - *Disinvesting in Health*, Sage.

3. Sen. G, Germain. A, Chen. L (eds) - 1994 - *Population Policies Reconsidered - Health Empowerment and Rights*, Harvard School of Public Health.

4. Mandani, M. 1972 - *The Myth of Population control*. Monthly review press, New York.

5. Pachauri, S. 1995 - *Defining a Reproductive Health Package for India* ; The population Council , Se Asia working papers, No. 4.

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Course - III Women's Health – Issues and Concepts
MODEL EXAMINATION QUESTIONS

Time: 3 hours

Section – A: 60 Marks (4x15 = 60)

Max Marks 100
Min Marks 35

I. Answer any four of the following questions in about 30 lines each.

1. What are the limitations of the demographic data? Discuss
2. Explain the special needs of Women during pregnancy ~~how~~ ?
3. Explain the problems of protein among nutrition in India?
4. Discuss the different Gynecological problems Women face?
5. Give details about any two barrier methods of birth control?
6. Discuss how deforestation effects Women and their health?
7. What are the various problems that urban people faced which effect their health?
8. Write an essay on the history of health policy in India.

Section - B 40 Marks (8X5 = 40)

II. Answer any five of the following in about 15 lines each.

1. Using demographic discussions discuss the status of Women in rural areas?
2. Explain what is the balance diet?
3. How can the media change eating habits?
4. What are the requirements of a adolescent girl?
5. Discuss the objectives of integrated child development programme?
6. What are symptoms and complications of Fibroids?
7. Describe toxmaenia of pregnancy?
8. Write ten lines the about the MTP act?
9. What is role of Women in fuel wood collection?
10. How does the drug policy effect Women?

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FACULTY OF SOCIAL SCIENCES

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P.G.Diploma in Women's Studies

SYLLABUS

Course III: Women's Health: Issues and Concepts

Block – I : Macro and Demographic View of Women's Health
Unit 1 : Vital Statistics and Demographic Parameters of Women's Health status . its Implications for Women

Block –II : Women and Nutrition
Unit 2 : Concepts of Nutrition and Balanced Diet
Unit 3 : Nutrients in Foods
Unit 4 : Dietary Requirements in Different Ages, Pregnancy, Lactation and Older women
Unit 5 : Common Nutritional problems
Unit 6 : Nutrition Programmes for Women and Children

Block -III : Women's Health Problems
Unit 7 : Anatomy and Physiology of the Reproduction and Common Gynecological Problems
Unit 8 : Pregnancy and Related Problems
Unit 9 : Birth Control Methods
Unit 10 : Other Common Health Problems of Women

Block -IV : Environment and Women's Health
Unit 11 : Rural Environment and Women's Health
Unit 12 : Urban Environment and Women's Health

Block – V : Health systems
Unit 13 : Major Health Care System's in India
Unit 14 : Innovative Approaches in Community Health.

Block – VI : Health Policy and Emerging Problems
Unit 15 : Health Policy and Women
Unit 16 : New Economic Policy, Health and Women