

DEMOGRAPHY

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1. DEFINITION OF DEMOGRAPHY

Demography is the scientific study of human populations.

It is mainly concerned with

- Changes in the population size - increase or decrease in the size of the given population due to fertility, mortality and migration.
- Composition of the given population with respect to age and sex.
- Distribution of entire population with respect to the geographical areas at a given point of time.

Demographic processes

It deals with five demographic processes namely

- Fertility
- Mortality
- Marriage
- Migration
- Social mobility

These processes are continuously at work within population determining size, composition and distribution.

Sources of Demographic Data

The following are the sources of demographic data:

- 1) Census
- 2) Vital Events Registers
- 3) Surveys
- 4) Sample Registration System

Role of Demography in Public Health Administration

The knowledge in demography is helpful to public health administrators for various purposes:

- i) Mortality data is helpful
 - a. In locating and identifying diseases of public health importance with respect to age-sex-location.
 - b. For planning remedial measures to control these diseases.
 - c. In future planning for prevention of these diseases.
 - d. For determining leading causes of mortality.
 - e. For planning requirements pertaining to drugs/medicines/equipment/manpower/other medical facilities etc.
- ii) Age-sex distribution of population by location are helpful
 - a. In understanding health and health care needs.
 - b. For planning, designing, evaluation and effective implementation of various public health programmes.

For example: Vaccination and immunization programme for children under 5 years of age, Mother and Child Health programme for mother and new born, Family planning programme, old age programme, nutritional programme etc.
- iii) To determine the success or failure of health programmes.
- iv) To describe the level of community health.
- v) To determine the leading causes of mortality and morbidity.
- vi) To determine the relative importance of different fatal diseases with respect to age and sex.
- vii) To discover solution to health problems and find clues for public health administration.

2. DEMOGRAPHY CYCLE

- Demography is defined as the scientific study of human population.
- Through the study of the world population, five stages have been recognized in the demographic cycle of a nation.
- Five stages of Demography cycle:
 - High stationary
 - Early expanding
 - Late expanding
 - Low stationary
 - Declining

They occur sequentially and each stage last for several decades. Thus it requires several centuries to undergo each cycle.

Stage	Characteristics			Growth Rate	Example
	Birth Rate	Death Rate	Population		
First stage (high stationary)	High birth rate	High death rate	Population remains stationary and at high level	<1%	India before 1920
Second stage (early expanding)	Birth rate (BR) remains high. No change in BR	Death rate began to decline	Population grows slowly	1-2%	India in 1921-1930 Africa and South America
Third stage (late expanding)	Birth rate starts declining	Death rate declines further	Population grows rapidly	2%	Presently India in this phase China, Singapore
Fourth stage (low stationary)	Low birth rate	Low death rate	Population remain stationary at low level because birth rate and death rate cancel each other	0%	Austria, UK, Belgium, Denmark and Sweden were in this phase in 1980
Fifth stage (stage of decline)	Birth rate lower than death rate	Death rate is higher than birth rate	Population goes on declining	Less than zero	Germany and Hungary

Stages of Demographic Cycle

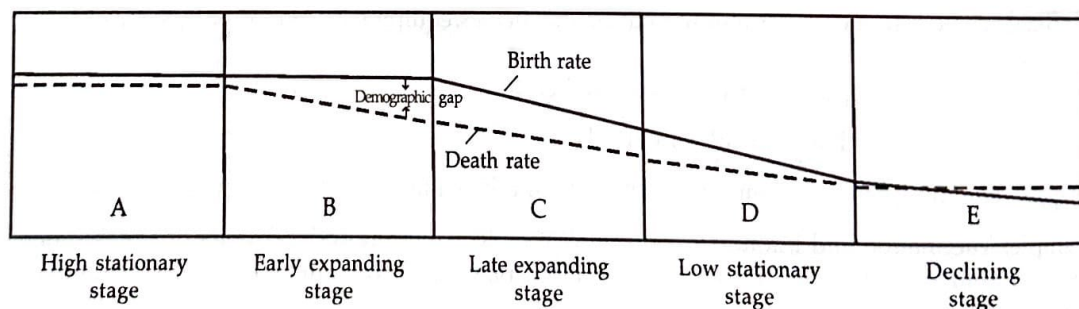


Fig. 9.1 : Demography Cycle

3. DEMOGRAPHIC INDICATORS

Demographic indicators are divided into two parts

1) Vital statistics

It is the statistics related to or derived from important events in life of a human being such as birth, death, illness, marriage etc. and includes indicators like birth rate, death rate, natural growth rate, life expectancy at birth, mortality rates and fertility rates.

2) Population statistics

It includes indicators that measure population size, sex ratio, density & dependency ratio.

Health statistics includes in addition to vital statistics, health and population statistics as well as statistical methods.

Uses

- 1) The rates serve as health indices of the population.
- 2) They are also important for planning and administration of health services.
- 3) They are used for assessing the impact of national health programme.

List of Demographic Statistics

Vital Statistics	Population Statistics
Fertility Statistics • Crude Birth Rate • General Fertility Rate • Age Specific Fertility Rate • Total Fertility Rate • General Marital Fertility Rate • Age Specific Marital Fertility Rate • Total Marital Fertility Rate • Gross Reproduction Rate • Net Reproduction Rate • Child Women Ratio • Pregnancy Rate • Abortion Rate • Crude Marriage Rate • General Marriage Rate Mortality Statistics • Crude Death Rate • Still Birth Rate • Perinatal Mortality Rate • Neonatal Mortality Rate - Early Neonatal Mortality Rate - Late Neonatal Mortality Rate • Post Neonatal Mortality Rate • Infant Mortality Rate • Under Five Mortality Rate	• Total Dependency Ratio • Child Dependency Ratio • Old Age Dependency Ratio • Sex Ratio • Growth Rate • Crude Literacy Rate • Effective Literacy Rate • Density of Population • Life Expectancy

1) FERTILITY STATISTICS

Refer to short note 8.

2) MORTALITY STATISTICS RELATED TO VITAL STATISTICS

Refer to chapter 4, short note 4.

3) POPULATION STATISTICS

$$\text{Total Dependency ratio} = \frac{\text{Number of people aged 0-14 years and those aged 65 years and above}}{\text{Number of people aged 15-64 years}} \times 100$$

$$\text{Child Dependency ratio} = \frac{\text{Number of people aged 0-14 years}}{\text{Number of people aged 15-64 years}} \times 100$$

$$\text{Old age Dependency ratio} = \frac{\text{Number of people aged 65 years and above}}{\text{Number of people aged 15-64 years}} \times 100$$

$$\text{Sex Ratio} = \frac{\text{No. of females}}{\text{No. of males}} \times 1000$$

$$\text{Growth Rate} = (\text{Crude Birth Rate} - \text{Crude Death Rates}) \times 100$$

$$\text{Crude Literacy Rate} = \frac{\text{Literate population}}{\text{Mid year population}} \times 100$$

$$\text{Effective Literacy Rate} = \frac{\text{Literate population aged 7 years and above}}{\text{Population aged 7 years and above in a given area}} \times 100$$

$$\text{Density of population (per sq. km.)} = \frac{\text{Population}}{\text{Area in sq. km.}}$$

Life Expectancy: Average number of year likely to be lived by a person, who is subject to the mortality risk of the whole population at any given time.

4. POPULATION PYRAMID

Definition

When the breakdown of the population is represented either as number or percentages, according to different ages and sex, in the form of a horizontal bar diagram, horizontal axis referring to sex (men on right side and women on left side) and vertical axis to age, it takes the shape of a 'pyramid' which is called as 'Population Pyramid' or 'Age-Sex pyramid'.

Difference between population pyramid of developing and developed countries

Developing countries	Developed countries
Broad base (indicating high birth rate)	Narrow base (indicating low birth rate)
Concave border (concavity facing outward)	Convex border (facing outward)
Acute apex (indicating less no of elderly people)	Obtuse apex (indicating more number of elderly people)

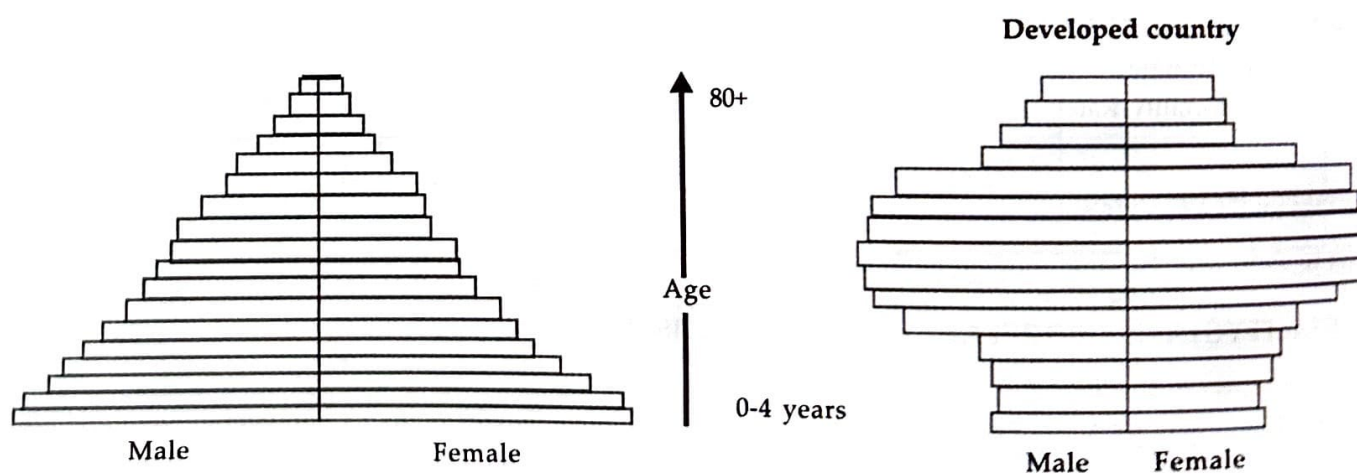


Fig. 9.2 : Population Pyramid

Importance

- Population pyramid tells the age sex distribution of the population.
- Tells which services are required; whether services for the younger or older population.
- Tells whether any specific age group or sex has higher mortality rate.

5. SEX RATIO

Definition

- Sex Ratio is defined as the number of females for every 1000 males.

Factors affecting sex ratio

- 1) Mortality rates of males and females
- 2) Sex selective migration
- 3) Sex ratio at birth
- 4) Gender discrimination

Sex ratio in India

- In 1901 it was 972:1000.
- In 2001 it became 933:1000.
- In 2011 it was 940:1000.
- Haryana has the lowest sex ratio of 877 females per 1000 males.
- Kerala (1084:1000) and Puducherry (1038:1000) are only two places in India where total female population is more than the male population.
- So sex ratio of India varies from region to region. Other states like Andhra Pradesh, Maharashtra and Karnataka are also showing an increase in their sex ratio.

Reasons for low sex ratio

Low sex ratio is due to preference of male child and gender discrimination resulting in female infanticides, female foeticide, and neglect of girl child. Neglect of girl child in turn leads to poor nutritional status and high maternal mortality rate.

Measures to improve sex ratio

- Lack of education and poverty in rural areas leads to gender bias, therefore educating the population to stop gender discrimination.
- Stringent implementation of PCPNDT (Preconception Prenatal Diagnostic Techniques) act should be done.

6. DEPENDENCY RATIO

Definition

- It is the ratio of combined age group of 0-14 years and 65 years and above to the age group 15-64 years.
- Also referred as societal dependency ratio.

$$\text{Total Dependency ratio} = \frac{\text{Number of people aged 0-14 years and those aged 65 years and above}}{\text{Number of people aged 15-64 years}} \times 100$$

Why are they called as dependent?

Person aged 65 years and above and those below 15 years are considered to be economically dependent on productive age group (15-64 years). As they are financially dependent on the productive age group to fulfill their basic needs, they are called as dependents.

Categorization

Young age dependency ratio: Ratio of children 0-14 years to 15-64 years age group.

Old age dependency ratio: Ratio of old aged 65 years and above to 15-64 years age group.

Effect on national economic development

In early stage of development there is rapid decline in fertility due to various control programmes (e.g. small family norms), so child population decreases at higher rate than older population, so dependency ratio decreases. More is the rapid decline in dependency ratio more is the rate of development.

Advantage of this stage has to be taken by investing in health care and education for skill development to achieve the maximum benefit. This period from decline in dependency ratio until it starts to rise again is called as **demographic bonus**. In later stage as life expectancy increases due to improved quality of life and living, the older population increases more rapidly. This period is called as **demographic burden**.

This is an inevitable consequences and country has to face this problem sooner or later.

Importance

- Dependency ratio can be used to estimate the financial resources the society will need to maintain the upbringing and pensions of the economically dependent.

Limitations

It does not take into consideration

- Elderly and young persons who are employed
- Working age persons who are unemployed

7. DEMOGRAPHIC PROFILE OF INDIA

Introduction

- Population size - 1.38 billion
- Yearly change 0.99%
- Global share - 17%
- Population density - 464 (census 2011)
- TFR - 2.2 live birth per women (NFHS 4)
- Life expectancy - 70.4 years combined (NFHS 4)
- IMR - 41/1000 live birth (NFHS 4)
- Under five mortality rate - 50/1000 live birth (NFHS 4)
- NMR - 23 (SRS 2017)
- Sex ratio - 991 per 1000 males (NFHS 4)
- Sex ratio at birth 919 per 1000 males (NFHS 4)
- Dependency ratio - population below 15 years - 26.2% and above 65 years - 6.6% (State of world population 2020)
- Crude Birth rate - 20.2 (SRS 2017)
- Death rate - 6.3 (SRS 2017)
- Urban rural distribution - 34.5% urban
- Literacy rate - 77.05% (NFHS 4)

Impact of high fertility and rapid growth on health

- *Pressure on public services and infrastructure*

Middle-income countries have limited public services (e.g. health care system, education) and a weak infrastructure (e.g. water and electricity supply, roads).

Rapid population growth further adds to these problems through the rapidly growing number of people needing to be served.

- *Potential food shortages*

As the number of people needing to be fed rises, either agricultural output or the amount of food imported needs to rise. Otherwise the population will face famine or increased and continuing reliance on food aid.

- *Environmental degradation*

Increased demand for food will lead to increased stress on the environment, including water shortages, soil depletion, deforestation and loss of biodiversity.

- *Reduced economic growth*

Rapid population growth increases the number of young children to the working age population, thus reducing income per head.

This can result in high unemployment and its associated problems.

Maternal mortality and morbidity

Multiple childbearing is a cause of maternal mortality and morbidity. This means that areas with high TFRs also have high maternal mortality rates.

All this affects the health of community directly or indirectly.

8. INDICATORS OF FERTILITY

Fertility means actual bearing of children.

Measures of fertility are

i) Crude Birth Rate (CBR)

$$\text{CBR} = \frac{\text{Number of live births in an area during one year}}{\text{Estimated mid year population}} \times 1000$$

Advantage:

Ease of compilation

Drawback:

Denominator in CBR is total population while the real contribution to the births in a population comes from the reproductive age group (15 to 44 years age).

ii) General Fertility Rate (GFR)

$$\text{GFR} = \frac{\text{Number of live births in a given area during a year}}{\text{Mid year female population (15-49 years)}} \times 1000$$

Drawback:

Not all the women in reproductive age group are exposed to risk of child birth.

iii) General Marital Fertility Rate (GMFR)

$$\text{GMFR} = \frac{\text{Number of live births in a given area during a year}}{\text{Mid year married female population (15-49 years)}} \times 1000$$

It is directly proportional to capacity of women to bear the child and number of marriages performed.

Drawback:

- Comparisons between two populations based on GMFR may not be accurate because the population's structure of women within the category of 15 to 49 years age may be quite different between the two populations for example, one population may have much higher proportion of females aged 15 to 30 years, while the other population may have higher proportion of females aged 30 to 45 years
- GMFR does not allow for identifying the 'high risk' age group of females, as far as conception is concerned, so that family planning activities can be directed towards such high risk groups

iv) Age Specific Fertility Rate (ASFR)

$$\text{ASFR} = \frac{\text{Number of live births in a specific age group}}{\text{Mid year female population of same age group}} \times 1000$$

Practically the 30 years of reproductive age is divided into 7 groups with 5 years interval as 15-19, 20-24, 25-29, 30-34, 35-39, 40-44, 45-49.

Importance:

- Can be used to identify the high risk age group where fertility is more common so family planning services can be concentrated.
- Used to evaluate family planning services.

v) **Age Specific Marital Fertility Rate**

$$\text{ASMFR} = \frac{\text{Number of live births in a specific age group}}{\text{Mid year married female population of same age group}} \times 1000$$

vi) **Total Fertility Rate (TFR)**

This measure is calculated by summing up the ASFRs for the different age groups and multiplying such sum by the class interval on which the age groups have been formed.
e.g. if the age groups are 15-19, 20-24 years and so on (the class interval is 5 years), the ASFRs would be summed up and multiplied by 5 to get the TFR.

$$\text{TFR} = 5 \times \sum \text{ASFR}_a \text{ (for 5-year age groups)}$$

Where : ASFR_a = age-specific fertility rate for women in age group a (expressed as number of livebirths in a particular age group amongst the mid year female population of the same age group per 1000).

Importance:

- It indicates number of children which a group of 1000 women would bear, if they were to start their reproductive life at a common point of life and were to pass through their entire reproductive span, subject to the current age-specific fertility rates.
- It is accurate and valid measure of fertility.

vii) **Total Marital Fertility Rate (TMFR)**

$$\text{TMFR} = 5 \times \sum \text{ASMFR}_a \text{ (for 5-year age groups)}$$

Where: ASMFR_a = age-specific fertility rate for women in age group a (expressed as number of livebirths in a particular age group amongst the mid year married female population of the same age group per 1000).

viii) **Gross Reproductive Rate (GRR)**

$$\frac{5 \times \sum \text{ASFR}_a \text{ for females live births (for 5 years age groups)}}{1000}$$

This is a measure of the average number of female live births that would occur to a female new born, growing up and passing her entire reproductive age, if the current fertility rate were to apply.

GRR is thus equivalent to TFR for female children only.

Drawback:

It assumes that the women will not die before completing her reproductive age group, which is hypothetical situation. This is overcome by NRR.

ix) **Net Reproductive Rate (NRR)**

The NRR is a measure of the average number of female live births that will occur to a newborn female as she grows up and passes through her entire reproductive age group, provided she was subjected to the current rates of fertility as well as mortality.

Thus, the NRR is similar to GRR, but, in addition, also caters to the fact that some women will die before completing the child bearing age, while making the calculations.

Importance:

NRR is a sensitive indicator of population growth. If the NRR is one it indicates that each generation of mothers is being replaced by an exactly equal number of daughters; in other words, the female population is 'maintaining itself'.

Target of family welfare programmes is to achieve NRR equal to one.

$$\text{x) Child Women Ratio (Fertility ratio)} = \frac{\text{No. of children in age group of 0-4 years}}{\text{No. of females in the age group of 15-49 years}} \times 1000$$

$$\text{xi) Pregnancy Rate} = \frac{\text{No. of pregnancies (live births, still births, abortions, ANC)}}{\text{No. of married females in the age group of 15-49 years}} \times 100$$

$$\text{xii) Abortion Rate} = \frac{\text{No. of abortion}}{\text{No. of women in reproductive age group 15-49 years}} \times 1000$$

$$\text{xiii) Abortion Ratio} = \frac{\text{No. of abortion during a period}}{\text{No. of live births in same period}}$$

$$\text{xiv) Crude Marriage Rate} = \frac{\text{No. of marriages in the year}}{\text{Mid year population}} \times 1000$$

$$\text{xv) General Marriage Rate} = \frac{\text{No. of marriages within one year}}{\text{No. of unmarried persons aged 15-49 years}} \times 1000$$

9. TOTAL FERTILITY RATE

Definition

Total Fertility Rate (TFR) is the number of children who would be born per woman (or per 1,000 women) if she/they were to pass through the childbearing period, bearing children according to the current age-specific fertility rates (ASFR).

Total Fertility Rate gives the approximate magnitude of completed family size.

Formula

The TFR is calculated as:

$$\text{TFR} = \sum \text{ASFR}_a \text{ (for single year age groups)}$$

or

$$\text{TFR} = 5 \times \sum \text{ASFR}_a \text{ (for 5-year interval age groups)}$$

Where:

ASFR_a = age-specific fertility rate for women in age group a (expressed as number of livebirths in a particular age group amongst the mid year female population of the same age group per 1000).

A current schedule of age-specific fertility rates (ASFRs), for one- or five-year age groups is required. The data may be obtained from vital statistics (numerator only), population census or population-based surveys.

Purpose

TFR is the most widely used fertility measure, in programme impact evaluations for two main reasons:

- 1) It is unaffected by differences or changes in age-sex composition.
- 2) It provides an easily understandable measure of hypothetical completed fertility.

Confounding effect of marital status

As is the case for the ASFR, the TFR may be computed for women who were continuously married or in union during the reference period of the measure in order to decrease the potentially confounding effects of differences in exposure to the risk of pregnancy. This measure is known as the Total Marital Fertility Rate (TMFR).

Calculated as

$$\text{TMFR} = \sum \text{ASMFR}_a \text{ (for single year age groups)}$$

or

$$\text{TMFR} = 5 \sum \text{ASMFR}_a \text{ (for 5-year age groups)}$$

Where:

$ASMFR_a$ = age-specific marital fertility rate for women in age group a (expressed as number of livebirths in a particular age group amongst the mid year married female population of the same age group per 1000).

Truncation effect of later age group

There may be the effect of truncation in later age group if standard age group 15-49 is considered. Therefore, to reduce this effect, TFR for age ranges of 15-34 is only considered.

Current TFR

As per census 2011 TFR of India is 2.4 (Rural - 2.7 and Urban - 1.9)

Replacement level fertility

- TFR is widely associated with replacement level fertility.
- A TFR of 2.1 is replacement fertility since an average of two births is needed to "replace" a mother and father assuming that the births survive to reproductive age.
- An extra 0.1 birth is added to offset the effects of premature death.

10. FACTORS RESPONSIBLE FOR HIGH FERTILITY IN INDIA

Introduction

- Fertility means actual bearing of children and fecundity means capacity to bear children. Fertility encompasses fecundity.
- Total fertility rate i.e. number of children borne per women in India is 2.8 per women.

Factors responsible for high fertility in India

- 1) *Age at marriage:*
Earlier the marriage, more will be the number of children. Therefore, there are legislations governing the age of marriage, such as Child Marriage Restraint Act, 1978, Hindu Marriage Act, 1955. The minimum age prescribed for marriage in India is 18 years for girls and 21 years for boys. If the marriages were post-poned by 4 to 5 years, number of births would decrease by about 25 percent.
- 2) *Duration of married life:*
Longer the duration of married life, more will be the fertility.
- 3) *Universality of Marriage:*
Marriage is almost universal in India as it is a religious and social necessity of the country. Parents feel that it is their social obligation to arrange marriage for the daughters. So almost 75% women in reproductive age group are married and this leads to high fertility.
- 4) *Birth interval:*
Longer the birth interval between the pregnancies, lesser will be the fertility rate.
- 5) *Literacy level:*
Higher the literacy level among the parents, lower will be the fertility and vice versa.
- 6) *Preference for male child:*
Male child is a religious necessity among the Hindus. Son is eligible to perform certain religious rites e.g. funeral rituals. A couple without son is looked down upon in the society. Therefore, people take chances to be blessed with son. This increases birth rate.
- 7) *Economic status:*
There is an inverse association between the economic status and the fertility. Higher the economic status, poorer is the fertility and vice versa. In poor families children supplement the family income by engaging themselves in some unorganised sector jobs at an early age.
- 8) *Religion:*
Fertility is more among Muslims, medium among Hindus and lower among Christians. Again, it is observed that in these religions, fertility is higher among lower castes than higher castes.

- 9) *Nutritional status:*
Better the nutritional status, lower is the fertility and vice versa.
- 10) *Ignorance and Lack of Conscious Family Planning:*
People of India are very much ignorant about the biology of reproduction, need for birth control and devices of birth control, more particularly in the rural areas.
- 11) *Joint Family System:*
The social structure is dominated by the joint family system. An additional child born causes no immediate hardships to the parents.
- 12) *Inadequacy of Family Welfare Services:*
There is inadequacy of family welfare services e.g. availability of contraceptives; facilities providing family welfare services etc. Poverty and ignorance deter people from using contraceptives to practise small family norms. It adds to high birth rate.
- 13) *Other factors:*
Industrialization, urbanization, place of women in the society, customs, beliefs, child rearing practices, socioeconomic development of the country, etc.

11. POPULATION EXPLOSION

Introduction

- Population explosion is one of the serious problems India is facing today.
- On 11th May 2000, India had 1 billion people (i.e. 16% of the world's population) on 2.4% of the globe's land area.
- India may overtake China by 2045, to become the most populous country, if current trends continue.
- Global population - increased 3 folds during this century (from 2 to 6 billion).
- China ranks number one in terms of population.
- Global population will increase by 1 billion people in the next decade.

Reason for population explosion

- Decreasing death rates
- Improvement in public health
- High birth rate
- Lack of education
- Migration
- Medical technology, along with gains in education and standards of living
- Early marriage and universal marriage

Problem due to population explosion

- Overuse of natural resources e.g. water, land, soil, natural forests
- Increase in food demand
- Increase in waste generation
- Increase demand of medical facilities
- Shortage of education facilities
- Other effect like - unemployment increase in crime rate, poverty, energy crisis, over crowding of cities, child abuse etc.

Measure of population control

- 1) *Social measure*
 - Minimum age of marriage
 - Raising the status of women
 - Spread of education
 - Adoption
 - Social security

2) *Economic measure*

- More employment opportunities
- Development of agriculture and industry
- Standard of living
- Urbanization

3) *Other measures*

- Late marriage
- Self control
- Self planning
- Recreational facilities
- Publicity

12. NATIONAL POPULATION POLICY

- National Population Policy (NPP) refers to the policies intended to decrease the birth rate or growth rate.
- In 1976 - first NPP was formulated. It called for increase in legal minimum age for marriage from 15 to 18 years for females and from 18 to 21 years for males.
- Modified in 1977 - Importance of small family norm without compulsion was emphasised and changed the programme title to 'National Family Welfare Programme'.

Background

- 1983 : National health policy was evolved with long term demographic goal of Net Reproduction Rate of one by year 2000.
- 1993 : Expert committee formed for drafting of NPP.
- 1994 : NPP not approved due to political reasons.
- 1997 : RCH programme launched.
- 1998 : Draft of NPP formulated.
- 2000 : New NPP was approved.
- The NPP affirms the commitment of government towards voluntary and informed choice and consent of citizens while availing reproductive healthcare services, and continuation of the target free approach in administering family planning services.

Objectives

Immediate objective:

- To address the unmet needs for contraception.
- Strengthen health care infrastructure, and health personnel.
- Provide integrated service delivery for basic reproductive and child health care.

Medium-term objective:

- To bring the Total Fertility Rate to replacement levels by 2010.
- Vigorous implementation of inter-sectoral operational strategies.

Long-term objective:

- To achieve a stable population by 2045, at a level consistent with the requirements of sustainable economic growth, social development, and environmental protection.

Targets

Goals set by NPP are targets to be achieved by 2010 called as National Socio-Demographic Goals.

1) Address the unmet needs for

- a. Basic reproductive and child health services.
- b. Supplies and infrastructure.

- 2) Make school education up to age 14 free and compulsory.
 - 3) Reduce drop outs at primary and secondary school levels to below 20 percent for both boys and girls.
 - 4) Reduce infant mortality rate to below 30 per 1000 live births.
 - 5) Reduce maternal mortality ratio to below 100 per 100,000 live births.
 - 6) Achieve 80 percent institutional deliveries and 100 percent deliveries by trained persons.
 - 7) Achieve universal immunization of children against all vaccine preventable diseases.
 - 8) Promote delayed marriage for girls, not earlier than age 18 and preferably after 20 years of age.
 - 9) Promote vigorously the small family norm to achieve replacement level of Total Fertility Rate (TFR).
 - 10) Achieve universal access to information/counselling, and services for fertility regulation and contraception with a wide basket of choices.
 - 11) Achieve 100 percent registration of births, deaths, marriages and pregnancies.
 - 12) Prevent and control communicable diseases.
 - 13) Contain the spread of Acquired Immuno Deficiency Syndrome (AIDS), and promote greater integration between the management of RTI and STI.
 - 14) Integrate Indian System of Medicine in the provision of RCH services, and in reaching out to households.
- Bring about convergence in implementation of related social sector programmes so that family welfare becomes a people centered programme.

FAMILY PLANNING

1. Conventional Contraceptives
2. Combined Oral Contraceptive Pills
3. Centchroman
4. Injectable Contraceptive Medroxy Progesterone Acetate
5. Intrauterine Contraceptive Device
6. Emergency Contraception
7. Male Sterilisation - Vasectomy
8. Female Sterilisation
9. Medical Termination of Pregnancy (MTP) Act
10. Post Conceptional Contraceptive Methods
11. Evaluation of Contraceptive Methods
12. Couple Protection Rate
13. Unmet Need for Family Planning
14. Educational Approach in Family Planning
15. Community Needs Assessment Approach in Context of Family Planning
16. National Family Welfare Programme
17. Evaluation of Family Planning Programme

1. CONVENTIONAL CONTRACEPTIVES

Definition

Conventional Contraceptives are those that require the action at the time of sexual intercourse.

Types of Conventional Contraceptives

- 1) **Physical methods:** These are the barrier methods
 - Condom - male and female
 - Diaphragm
 - Vaginal sponge
- 2) **Chemical methods:** These are spermicidal agents available in the form of
 - Foams-foam tablets and foam aerosols
 - Creams, jellies and paste
 - Suppositories
 - Soluble films

Male Condom

- **Mechanism of action:** Prevents the sperm from being deposited in the vagina
- **Failure Rate:** 2-3/HWY to 14/HWY
- **Advantages**
 - Easily available
 - Safe and inexpensive
 - Easy to use, No medical supervision required
 - No side-effects
 - Light compact disposable
 - Provides protection against STI, HIV
- **Disadvantages**
 - May slip off or tear during coitus due to incorrect use
 - Interferes with sex sensation

Female Condom

- **Mechanism of action:** Prevents the sperm from entering the uterine cavity
- **Failure Rate:** 5-21/HWY
- **Advantages**
 - Decision to use lies with the women
 - Provides protection against STI, HIV
 - Safe
 - No side-effects
- **Disadvantages**
 - Difficult to use
 - Requires training on how to insert
 - Expensive

Diaphragm

- **Mechanism of Action:** It does not allow sperms to enter the uterus and also the spermicidal jelly used along with the diaphragm inactivates the sperms.
- **Failure Rate:** 6-12/HWY

- **Advantages:**
 - Safe
 - No side-effects
- **Disadvantages:**
 - A women requires to be trained on how to insert
 - Privacy for insertion is required
 - Facilities for washing and storing the diaphragm is required
 - High failure rate
 - Possibility of toxic shock syndrome if left inside the body for a long time or forgets to remove
 - Cannot be used by a recently delivered women, can be used only after the involution of the uterus

Vaginal Sponge - Today

- **Mechanism of Action:** Spermicides are surface active agents that attach themselves to spermatozoa and inhibit oxygen uptake and kill sperms.
- It contains spermicide Nonoxynol-9
- **Failure Rate:** 20-40/HWY in parous women
9-20/HWY in nulliparous women
- **Advantages:**
 - Safe
 - Easily available
 - No side-effects
- **Disadvantages:**
 - Has to be inserted deep into the vagina
 - High degree of motivation required
 - Does not protect against STIs, HIV
 - High failure rate

2. COMBINED ORAL CONTRACEPTIVE PILLS

Introduction

Combined Oral Contraceptive Pills (OCP) are temporary, hormonal methods of contraception containing oestrogen and progestogen.

Content of Combined Oral Contraceptive Pills

- Contains 30-35 mcg of synthetic oestrogen (ethinyl oestradiol) and 0.5 to 1 mg of Progestogen.
- Mala N contain 0.15 mg levonorgestrel and 0.03 mg ethinyl oestradiol.

Mechanism of Action

It prevents ovulation.

Instructions for patients

- A pack of OCP contains 21 hormonal pills and 7 iron pills.
- On the reverse side of the strip, the starting point and arrows are marked to indicate the order in which the pill has to be consumed.
- First pill is started within 5 days of starting menses and continued daily for 21 days. The next 7 days is a break period when iron pills are taken.
- If started more than 5 days after menstrual bleeding starts, then use additional contraceptive measures for 7 days.
- Pill has to be taken daily at a fixed time, preferably at bed time.
- If one hormonal pill is missed, then take the pill as soon as you remember and take the pill for that day at the regular time.

- If 2-4 hormonal pills are missed, in the first 7 pills, then use additional contraceptive measures and continue using the OCP as scheduled till the cycle is completed.
- If more than 5 hormonal pills are missed in a row, then use additional methods of contraception and continue taking the hormonal pills as scheduled till all 21 hormonal pills have been taken. Skip iron tablets and start a new pack.
- If 2-4 pills are missed in the last 7 days of hormonal pills (i.e. 15-21 days), then continue using the hormonal pills as scheduled till the 21 pills are over. Skip the iron tablets and start a new pack.
- Patients should regularly undergo an annual check-up.

Failure Rate

Less than 1%

Advantages of Oral Contraceptive Pills

- 100% effective if taken properly
- Benefits of using OCP - Protection against six diseases
 - Benign breast disorders - fibrocystic diseases and fibroadenoma
 - Ovarian cysts
 - Iron deficiency anaemia due to lesser bleeding
 - Pelvic inflammatory disease
 - Ectopic pregnancy
 - Ovarian cancer, endometrial cancer

Disadvantages of Oral Contraceptive Pills

- Has to take pill daily
- Delay in return of fertility

Side-effects of Oral Contraceptive Pills

- Common side-effects
 - Breast tenderness, fullness and discomfort
 - Weight gain
 - Headache and Migraine
 - Bleeding disturbances - breakthrough bleeding/spotting, oligomenorrhea, amenorrhoea
- Cardiovascular effects - increased risk of myocardial infections, cerebral thrombosis and venous thrombosis
- Increase in blood pressure
- Accelerates atherosclerosis
- Acne and oily skin

Contraindications of Oral Contraceptive Pills

- Breast feeding women within 6 weeks of delivery
- Absolute contraindications
 - Cancer of the breasts and genitals
 - Liver disease
 - Previous/present history of thromboembolism, Deep Vein Thrombosis, Pulmonary Thrombosis
 - Cardiac abnormalities, Ischaemic Heart Disease, Hypertension, Vascular Disease
 - Congenital hyperlipidaemia
 - Undiagnosed abnormal uterine bleeding
- Relative contraindications
 - Age > 40 years
 - Smoking (> 15 cigarettes/day) and age > 35 years
 - Mild hypertension

- Chronic renal disease
- Epilepsy
- Migraine
- Nursing mothers in the first six months
- Diabetes mellitus
- Gall bladder disease
- H/o infrequent bleeding
- Amenorrhoea

3. CENTCHROMAN

Introduction

Centchroman, known as Chhaya is a temporary method of non-hormonal, non-steroidal, once a week contraceptive pill.

Mechanism of action

It prevents implantation of fertilized eggs in the uterus.

Instructions for use

- Take one pill twice a week for the first 3 months.
- From 4th month, take a pill once a week on the first pill day.
- The first pill can be taken on the first day of the menstrual cycle or any other day provided pregnancy has been ruled out.
- After finishing one pack, take the first pill from the next pack on the scheduled day.

Advantages

- It is an effective reversible method of contraception.
- It is safe for women of all age groups.
- It is safe for breastfeeding women, even immediately after childbirth.
- Return to fertility on stopping the pills is prompt.

Disadvantages

- Causes delayed periods in some women.
- Periods can get scanty over time in women.
- Menstrual cycles may get longer.

4. INJECTABLE CONTRACEPTIVE MEDROXY PROGESTERONE ACETATE

Introduction

Injectable contraceptive Medroxy Progesterone Acetate (MPA) is a temporary hormonal contraceptive method of contraception for women that prevents pregnancy for three months. It is known as Antara under the National Family Welfare Programme.

Mechanism of Action

- It suppresses ovulation.
- It makes cervical mucus thick and scanty thus blocking sperms from meeting ovum.
- It inhibits oestrogen induced proliferation of the endometrium, making it unfavourable for implantation of fertilized egg difficult by altering the endometrium.
- It inhibits tubal motility and thereby delays the transport of ovum to the uterine cavity.

Instructions for use

- Get an intramuscular injection every 3 months (150 mg of MPA).

- It can easily be administered in the arms, thighs or buttocks.
- The date of subsequent dose may be remembered from the MPA card provided.

When should first dose be taken?

- 1) For women with regular menstruation
 - Within 7 days after the start of her menstrual bleeding.
 - At any other time, if it is reasonably certain that she is not pregnant.
 - If it has been more than 7 days since menstrual bleeding started, she will need to abstain from sex or use additional contraceptive protection for the next 7 days.
- 2) After 6 weeks of delivery
- 3) Immediately after abortion

When is next dose given?

It can be given upto 2 weeks prior to the assigned date of dose; or upto 4 weeks post the assigned date. If the due date exceeds by 4 weeks, a dose can be given immediately (after ruling out pregnancy), along with a backup method (condom) to be used for the next 7 days.

Advantages

- Long-term effective, reversible method of contraception.
- An effective and safe option for breast-feeding women (after 6 weeks of delivery) - does not affect quantity or quality of breast milk.
- Does not require daily attention.
- Reduces menstrual cramps.
- Reduces menstrual blood loss and thereby improves anaemia.
- Safe method for most women, including those with HIV/AIDS.
- Good option for women who want to delay childbearing for the first and subsequent birth.
- Ensures user privacy.
- No oestrogen side-effects - Does not increase the risk of estrogen-related complications, such as heart attack.

Disadvantages

- Increase in weight.
- Irregular menstrual bleeding, spotting, amenorrhoea.
- Delay in return of fertility after discontinuation (About 5.5 months).
- May cause headaches, breast tenderness, moodiness, nausea, hair loss, less sex drive, and/or acne in some women.
- If pregnancy occurs it is more likely to be ectopic pregnancy.

Contraindications

Injectable contraceptive should not be given to a woman with:

- Unexplained vaginal bleeding
- Stroke or severe diabetes
- Breast cancer (past/present)
- Active hepatitis or liver tumor
- Desire for rapid return to fertility

5. INTRAUTERINE CONTRACEPTIVE DEVICE (IUCD)

- **Type of contraceptive** : Second generation IUD
- **Mechanism of Action**:
 - Foreign body reaction causing cellular and biochemical changes in the endometrium and uterine fluids, which impairs the viability of the gamete.

- Affects sperm motility, capacitation and survival by altering the biochemical composition of the cervical mucus.
- Increases viscosity of cervical mucus and thereby prevents sperm from entering the cervix.
- Prevent implantation by making the endometrium unfavourable due to high levels of progesterone and relatively low levels of oestrogen.
- Inserted by a medical professional in women within 10 days of beginning of menstrual cycle or 6-8 weeks after delivery.
- **Instructions to user of IUCD**
 - Check the thread daily.
 - Follow up after her first menstrual period, then after three months, six months and then one year.
- **Failure Rate of Copper T: 0.5 to 3/HWY**
- **Advantages**
 - Single motivation
 - Long lasting
 - Very effective
 - Immediately reversible
 - Can be used immediately after child birth
 - Simplicity of procedure
 - Inexpensive
 - Highest continuation rate
 - Copper T in comparison to first generation IUCD has
 - o Low expulsion rate
 - o Lower incidence of side-effects
 - No hormonal side effects
 - Effective as post coital contraceptive if inserted within 3-5 days of unprotected intercourse
- **Disadvantages**
 - Common side effects - menstrual changes - excessive bleeding
 - Uncommon side effects - perforation, ectopic pregnancy, expulsion
 - No protection against - STIs, HIV, PID
 - Medical procedure requiring trained personnel
 - Expulsion
 - Ectopic pregnancy
- **Complications:**
 - Bleeding - increased volume of blood loss, longer duration of menstrual periods or mid cycle bleeding
 - Lower abdominal pain
 - Pelvic inflammatory diseases
 - Uterine perforations
 - Ectopic pregnancy
- **Contraindications**

Absolute contraindications

 - Pelvic inflammatory disease (PID)
 - Suspected pregnancy
 - Puerperal sepsis or post abortal sepsis
 - Vaginal bleeding of undiagnosed aetiology
 - Cancer of cervix, uterus or adnexa and other pelvic tumors
 - Previous ectopic pregnancy
 - History of pelvic tuberculosis
 - Congenital malformation of uterus

Relative contraindications

- Anaemia
- Menorrhagia
- History of PID
- Purulent cervical discharge
- Distortion of uterine cavity due to malformation, fibroids
- Wilson's disease

Ideal candidate for IUD insertion

- More than 20 years of age
- Has given birth to atleast one child
- No history of pelvic disease
- Has normal menstrual period
- Is willing to check IUD tail
- Access to follow up and treatment
- Is in a monogamous relationship

Variants : Cu T 200 B, Cu T 380 A, Copper 7, Multiload Cu 250, Nova T.

IUCD 380 A and 375 available free under National Family Welfare Programme.

6. EMERGENCY CONTRACEPTION

Emergency or postcoital contraception is also called as 'morning after' contraception.

It is used to prevent pregnancy if women is not already pregnant.

Circumstances in which it is used

- Unprotected intercourse
- Rape, sexual assault, incest
- Failure of contraceptive methods such as rupture of condom, displacement of IUD, missing two or more oral pills
- Premature ejaculation among couples practicing coitus interruptus

It is also referred to as 'casualty in family planning'.

Timing of use

It is recommended to use the pills within 48 to 72 hours of unprotected intercourse.

Mechanism of action

Depending on where you are in the menstrual cycle

- It stops ovulation.
- If ovum has been released it prevents the sperm from fertilizing it.
- If the ovum is already fertilized it prevents implantation of the fertilized ovum.

Methods

- i) Hormonal method
- ii) Mechanical method

i) Hormonal method:

- Two oral contraceptive pills containing 50 mcgs of ethinyl oestradiol within 72 hours after intercourse and same dose after 12 hours
- Four oral contraceptive pills containing 30-35 mcgs of ethinyl oestradiol within 72 hours after intercourse and same dose after 12 hours

- Levonorgestrel 0.75 mg within 72 hours after intercourse and same dose after 12 hours
- Mifepristone 10 mg once within 72 hours
- Failure rate - 1%
- Women should not use the hormonal methods unless she intends to have the abortion if the method fails.

ii) Mechanical method:

- This consists of insertion of copper IUD within 3-5 days of unprotected intercourse. It prevents the implantation due to endometrial changes or embryotoxic effect of copper ions.
- Merits:
 - Provide additional protection for few more years
 - More effective than hormonal
 - Can be used where hormonal pills are contraindicated
- Contraindicated: Women who are at risk of STI because of rape.

Advice to patient

- After taking emergency contraceptive pill, if onset of next menstrual cycle is delayed by more than one week of expected date, a pregnancy test should be done.
- A woman should report to the physician if the period starts on time but the flow is scanty or is unusually foul smelling.
- Emergency contraceptive pills should not be used as a regular contraceptive method.

Advantages and Disadvantages of Emergency Oral Contraceptive Pills

- **Advantages**
 - Safe and easy way to prevent unintended pregnancy after unprotected sex or contraceptive failure
 - No serious side-effects
- **Disadvantages**
 - Does not protect against STIs, HIV
 - Not effective if taken after 72 hours

7. MALE STERILISATION - VASECTOMY

- **Type of FP Method** - Permanent male method
- **Mechanism of action** - The sperms fail to reach the seminal vesicle and therefore the semen does not contain the sperms.
- **Technique used** - A small incision is made on the scrotum, either on both the sides or just in the middle raphe. The vas deferens on both the sides is cut and ligated at both the ends. The incisions are closed with a suture in case of the traditional vasectomy.
In non-scalpel vasectomy, instead of incision a small puncture is made through which the vas deferens is picked up. The puncture is closed with a small dressing.
- **Instructions for patient**
 - The patient is not immediately sterile after the operation and has to use barrier contraceptive or other family planning methods for 45 days or till 30 ejaculations are over.
 - Avoid cycling, lifting heavy weights for 15 days.
 - To follow up after 5 days for removal of stitch.
 - Avoid taking bath for at least 24 hours after operation.
 - Wear T bandage or scrotal support for 15 days.
- **Failure Rate** - Very low failure rate - 0.15/100 persons year
- **Advantages**
 - Simple procedure
 - Less expensive
 - One time motivation
 - Risk of complication is small

- Permanent method
- Very effective
- Ideal for those desiring to limit family size.
- **Disadvantage**
 - Irreversible
 - No protection against STI/HIV
 - Not immediately effective, has to use additional contraceptive methods till aspermia is established
 - Non-reversible
- **Complications**
 - Post-operative complications like pain, scrotal haematoma and local infection – 3% of patients
 - Sperm granules
 - Spontaneous recanalisation - zero to 6%
 - Autoimmune response seen in 54% cases
 - Psychological - Diminution of sexual vigour, impotence, headache, fatigue

8. FEMALE STERILISATION

Introduction

There are two methods commonly employed for female sterilization:

- 1) Laparoscopic Sterilisation
- 2) Minilaparotomy

Both these are permanent methods of sterilization.

Prerequisite for Female Sterilisation

- Age of husband - Between 25 to 50 years
- Age of wife - Between 20 to 45 years
- Should have two living children

Technique of Laparoscopic Sterilisation

Under general or regional anesthesia, a small incision, about half an inch long, in or below the navel. Carbon dioxide, nitrous oxide or air is injected into the abdomen. This raises the abdominal wall off the pelvic organs and allows the surgeon to get an unobstructed view as well as room to operate. A laparoscope is then inserted through the incision. The surgeon clamps the fallopian tubes by using rings, clamps, clips, or by sealing them shut with electrocauterisation. The laparoscope is withdrawn, and then an incision is sutured.

Technique of Minilaparotomy

Under general or regional anesthesia, the surgeon makes a small incision at or above the pubic hairline. Pulls the fallopian tubes up into or out of the incision, ligates the fallopian tubes and cuts them and puts the tubes back into place, and sutures the incision. Alternatively mechanical devices i.e. clips or rings can be used for blocking the fallopian tube. If this procedure is done within 48 hours of delivery, the incision is made below the navel (instead of at the pubic bone) because the fallopian tubes are higher in the abdomen right after pregnancy.

Timing of Sterilisation

- **Laparoscopic Sterilisation**
 - Can be done immediately after abortion (within 48 hours)
 - Can be done 6 weeks after postpartum
- **Minilaparotomy**
 - Can be done immediately after delivery

Contraindications for sterilisation

- Hb < 8 gm%
- Heart disease

- Respiratory disease
- Hypertension
- Diabetes

Instruction for patient

- Patient is instructed to stay in the hospital for 48 hours after operation.
- After the surgery the patient is instructed to rest for 2-3 days and avoid heavy lifting for a week.
- Follow up within 7-10 days and then once between 12-18 months.
- In case of any of the following complaints, report immediately to health centre
 - High grade fever
 - Redness at site of incision
 - Pain, swelling, bleeding/pus from the site of incision
 - Abdominal pain, cramping or tenderness that becomes worse or does not stop
 - Diarrhoea
 - Fainting or extreme dizziness

Failure Rate

Extremely low in both methods

Advantages of sterilization

- Permanent
- One time motivation required
- No interference with sex sensation
- No repeated visits to the facility required
- No supplies required
- Does not interfere with sex
- No effect on breastfeeding
- No known side-effect or health risk
- Helps protect against ovarian cancer
- Minilaparotomy requires smaller incision, 2.5 to 3 cm only
- Minilaparotomy easier to perform compared to laparoscopic sterilisation

Disadvantages of sterilization

- Specialist in Obstetrics & Gynaecology required
- Hospitalisation required for 48 hours
- Complications can be serious
- Non-reversible
- No protection against STI/HIV
- Female sterilization is more risky than male sterilization
- Reversal of procedure is difficult, expensive and available at very few centres

9. MEDICAL TERMINATION OF PREGNANCY (MTP) ACT

Background

Before 1970 increased rate of maternal mortality and morbidity was due to illegal abortions as foeticide was considered as crime. Since induction of abortion can be considered as method of contraception to reduce the population explosion, termination of pregnancy needs to be legalised and so law was passed in parliament in year 1971 which came in force in April 1972, and modified in 1975 and again in 2020.

Scope - Applicable to all over India including Jammu and Kashmir since 1976.

MTP act lays down following consideration

- 1) The condition under which pregnancy can be terminated
- 2) The person or persons who can perform such termination
- 3) The place where pregnancy can be terminated

1) The condition under which pregnancy can be terminated

- a. *Therapeutic*: The continuation of the pregnancy would involve a risk to the life of the pregnant woman or grave injury to physical or mental health.
 - b. *Eugenic*: There is a substantial risk that if the child were born, it would suffer from severe physical or mental abnormalities.
 - c. *Social*: When the economic and social environment is not suitable for continuation of pregnancy.
 - d. *Humanitarian*: It involves pregnancy due to rape.
 - e. *Lunatic*: When pregnant women is mentally not sound or is lunatic.
 - f. *Failure of contraception*: Under the Act a pregnancy may be terminated up to 24 weeks.
- **Note** : No pregnancy shall be terminated except with the written consent of the pregnant woman if above 18 years; and of guardian if below 18 years of age.

Time since conception	Requirement for terminating pregnancy	
	MTP Act, 1971	MTP (Amendment) Bill, 2020
Up to 12 weeks	Advice of one doctor	Advice of one doctor
12 to 20 weeks	Advice of two doctors	Advice of one doctor
20 to 24 weeks	Not allowed	Two doctors for some categories of pregnant women i. Continuance of the pregnancy would involve a risk to the life of the pregnant woman or of grave injury to her physical or mental health; OR ii. There is a substantial risk that if the child were born, it would suffer from any serious physical or mental abnormality.
More than 24 weeks	Not allowed	Medical Board in case of substantial foetal abnormality
Any time during the pregnancy	One doctor, if immediately necessary to save pregnant woman's life	

2) The person or persons who can perform such termination

A pregnancy may be terminated by a Registered Medical Practitioner (RMP) registered under the MCI Act, who has

- Done 6 months housemanship in obstetrics and gynaecology
- Post graduate training in obstetrics and gynaecology
- Conducted 25 cases of MTP in an approved institution

3) The place where pregnancy can be terminated

Termination of pregnancy shall be made in accordance with this Act at a

- A hospital established or maintained by government or
- A hospital/centre for the time being approved by the government for the purpose of this Act

Punishment

Termination of pregnancy not falling under the purview of MTP Act is an offence punishable with rigorous imprisonment for a term which shall not be less than 2 years and up to maximum of 7 years.

Additional Amendment in Act

Medical Boards: All state and union territory governments will constitute a Medical Board. The Board will decide if a pregnancy may be terminated after 24 weeks due to substantial foetal abnormalities. Each Board will have a gynaecologist, paediatrician, radiologist/sonologist, and other members notified by the state government.

Confidentiality: A registered medical practitioner may only reveal the details of a woman whose pregnancy has been terminated to a person authorised by law. Violation is punishable with imprisonment up to a year, a fine, or both.

10. POST CONCEPTIONAL CONTRACEPTIVE METHODS

Post conceptional contraceptive method i.e. methods used for termination of pregnancy after the fertilization or conception or after implantation of embryo in uterus has taken place.

There are three methods:

- A) Menstrual regulation
- B) Menstrual induction
- C) Induction of abortion

A) Menstrual Regulation

- Menstrual regulation (MR) is a method that refers to regularizing the menstrual cycle in a woman, whose menstrual cycles were previously regular, but has now missed her periods by 1-2 weeks. This method is adopted within 1-2 weeks of missed menstrual cycle, when it is not possible to confirm whether she is pregnant or not.
- The missed (or delayed) period could be due to the reasons other than pregnancy, such as psychological factors.

Procedure

The MR method consists of evacuation of the contents of the uterus.

- 1) This is done by using a small, flexible, plastic cannula of 5 to 6 mm diameter (Karman cannula) in association with a gynaecological syringe, (MR syringe) as a source of negative pressure.
- 2) Cervical dilatation is not necessary, except in nulliparous women and in those who are too apprehensive.
- 3) Interposed between the cannula and the syringe is a bottle to collect the aspirate.
- 4) Tip of cannula is shifted to various positions and aspirated.

Merits

- Anaesthesia not required
- OPD procedure
- Safer than medical abortion if done by an experienced person
- Simple procedure
- Does not require the confirmation of the pregnancy
- Does not attract the legal provisions for abortion

Demerits

- Immediate complications are trauma, sepsis and perforation of uterus.
- Late complications are tendency to abortion, premature labour, infertility, menstrual irregularities, and ectopic pregnancy.
- If the delay in the missed period is confirmed due to pregnancy, then this procedure is considered as an early abortion.

B) Menstrual Induction

Menstrual induction means inducing menstruation in a woman, who has missed the menstrual period before pregnancy could be confirmed.

Procedure

- 1) This is done by intrauterine application of 2.5 to 5 mg solution of prostaglandin F₂, under sedation.

- 2) Within few minutes, there will be sustained, spasmodic contractions of the uterus lasting for 3 to 4 hours, resulting in expulsion of product of conception, thus terminating the pregnancy.
- 3) Bleeding starts and lasts for about 7-8 days.

Merits

- Safer and less side effects than abortion
- More acceptable than menstrual regulation

Demerits

- If the termination of pregnancy is unsuccessful, and pregnancy is continued, the chance of the foetal malformation is extremely high
- Side effect of drugs

C. Induction of Abortion

Induction of abortion means terminating the pregnancy as a contraceptive method, deliberately in a pregnant woman before the foetus becomes viable (i.e. before 28th week of pregnancy).

Legal abortion is the one, which is done by a qualified doctor, in a recognized hospital, under specific reasons (indications) as given in MTP act 1971 amendment in 2020.

Optimal Timing of abortion

- 6th to 8th week of pregnancy is the optimal time for termination of pregnancy.
- Under the Medical Termination of Pregnancy Act, it is allowed up to 24 weeks.

Procedure

i) Medical abortion

Two drugs are available for use as oral abortifacients.

- a) **Mifepristone**: It blocks the hormone progesterone. Without progesterone, the uterine lining breaks down and ends the pregnancy.
- b) **Misoprostol**: It contracts the uterus causing cramping, bleeding and loss of pregnancy.

Mifepristone (RU486) and Misoprostol administered together are 95% successful in termination of pregnancies upto 9 weeks duration with very few complications.

Regime 1: Mifepristone, 200 mg orally followed by 800 mcg of Misoprostol given vaginally either immediately or after 6-8 hours.

Regime 2: Mifepristone, 600 mg orally followed by 400 mcg of Misoprostol given vaginally on day three.

14 days after the administration of Misoprostol, the woman is asked to follow up for confirming the complete termination of pregnancy. Confirmation is done by clinical examination or ultrasound examination.

ii) Surgical abortions

- a) **Manual vacuum aspiration or electric vacuum aspiration**
 - Done as day care procedure
 - Safe upto 15 weeks

Procedure

Pregnancy terminated by gentle suction under local anaesthesia or sedation.

b. Dilation and curettage :

- Not practiced now a days
- Only advised after 15 weeks - 24 weeks

Procedure

Done under general anaesthesia. Cervix is dilated and products of conception is removed with the help of forcep.

Complications

- Though abortion is low risk procedure, the risk is directly proportional to the duration of pregnancy.
- Immediate complications are haemorrhage, shock, perforation of uterus, thromboembolism.
- Late complications are infertility, ectopic pregnancy, risk of death.

11. EVALUATION OF CONTRACEPTIVE METHODS

The efficacy of family planning method is assessed by measuring the number of unplanned pregnancies that occur during a specified period of exposure while using a contraceptive method.

Methods of evaluation

- 1) Pearl Index
- 2) Life Table Analysis

Pearl Index

$$\text{Pearl index} = \frac{\text{No. of accidental pregnancies}}{\text{No. of months of exposure}} \times 1200$$

- No. of accidental pregnancies - Include each and every pregnancies irrespective of the outcome.
- No. of months of exposure - Deduct 10 months for full term pregnancies and 4 months for an abortion from the total months of review period.
- Minimum 600 months of exposure period is required for drawing any firm conclusion.

Interpretation - Failure rate of 10 HWY means 10 accidental pregnancies will occur in 100 women (using contraceptives) if followed for full one year.

Disadvantages - Failure rate is calculated for lengthy period of exposure that is one year and therefore fails to accurately compare methods of various duration of exposure.

Life Table analysis

- Calculates failure rate for each month of use
- Cumulative failure rate can compare the method for any specific length of exposure
- Gives reliable and consistent results

Other methods used for evaluation are

- 1) Method Failure - Percentage of women becoming pregnant in first year of use EXCLUDING the pregnancies that occur due to error in use.
- 2) User Failure - Percentage of women becoming pregnant in first year of use INCLUDING the pregnancies that occur due to error in use by the patient.

12. COUPLE PROTECTION RATE (CPR)

Definition

It is defined "as the percentage of eligible couples effectively protected against childbirth by one or the other approved methods of family planning viz sterilization, IUD, Condom, Oral Pills".

CPR indicates the prevalence of contraceptive practice in the community.

Importance of Couple Protection Rate

If CPR exceeds 60%, then it is possible to achieve the demographic goal of Net Reproduction Rate (NRR) of one. When $NRR = 1$, it means a newborn girl child will bear only one daughter during her life time assuming age specific fertility and mortality rates.

Assumption

50-60% of births in a year are of birth order 3 or more. By increasing contraceptive coverage, one would reduce third or higher order births leaving two or less number of surviving children per couple.

Current status of CPR

- Performance of states like Punjab, Gujarat, Maharashtra, Karnataka, Haryana and Tamil Nadu is good.
- Performance of states like Bihar, Uttar Pradesh, Assam, Rajasthan, West Bengal, Jammu and Kashmir are poor.

13. UNMET NEED FOR FAMILY PLANNING

Introduction

Unmet need for family planning means the gap observed between the use of contraceptive method and the women's intention or preference to avoid becoming pregnant.

Unmet need is defined on the basis of women's response to survey questions.

The NFHS-5 data reveals that < 10% women have unmet need of family planning, except in Meghalaya & Mizoram.

Why there is unmet need?

- Services are inconvenient
- Unsatisfactory services
- Lack of adequate information
- Fear about side-effects
- Opposition from husband/relatives

Factors influencing unmet need

- Residence - urban/rural area - higher in rural area.
- Education - It ranges between 10-13% amongst illiterate to those having received education upto 12 years. So influence of educational status on unmet needs is not very varied.
- Religion - Muslims have higher unmet needs.
- Socio-economic status - Unmet need is higher in lower socio-economic group.
- Age - Till 24 years of age, need is more for spacing births and above 30 years of age, it is more for limiting births.

14. EDUCATIONAL APPROACH IN FAMILY PLANNING

The Educational approach in family planning is based on the idea that if the eligible couple are informed, motivated and given access to quality family planning services they are more likely to adopt family planning methods.

The basis of the educational approach is laid on the foundation of behavioural change communication process. A person moves through the following stages from being unaware to finally adopting the method.

- 1) **Unaware** - Population is not aware of need to regulate the fertility.
- 2) **Aware/informed** - Population is made aware of need for regulating fertility and side-effects of population explosion. They are informed of various family planning methods available. During the antenatal, post natal visits or immunization clinics eligible couples are motivated to adopt small family norms.
- 3) **Interested** - Eligible couples become interested and try to gather more information from health workers, doctors, friends, family members etc. Proper counselling by health care provider can assist the couple in reaching the decision quickly.
- 4) **Evaluates pros and cons** - After having gathered all the information, the eligible couple may debate in their mind the pros and cons of the decision. They would consider the impact of their decision on the social relationships and economic situation. They would think about the method that would be most appropriate for them, are there any side-effects, what are the advantages of the method, etc.
- 5) **Decision making** - The couples are now finally ready to accept the method after having carefully weighed the pros and cons of their decision.
- 6) **Trial change** - They will adopt the new method. At this time the eligible couple needs to be motivated regularly and should have access to counselling. Quality services needs to be maintained with adequate supply of contraceptives.
- 7) **Adoption of new behaviour** - If satisfied they will adopt the practices.

15. COMMUNITY NEEDS ASSESSMENT APPROACH IN CONTEXT OF FAMILY PLANNING

Definition

Community Needs Assessment is a systematic method of identifying the unmet health and health-care needs of a population and making changes to meet these unmet needs.

In the context of family welfare programme it means identify eligible couples who are not currently using any family planning method and motivating them to use appropriate contraceptive depending on their need.

It is also an approach where the targets for the family planning are set by the health workers themselves based on the community's need keeping in mind the larger goal of small sized family norm.

Why this approach was needed?

- Previously in family planning programme contraceptive targets were given to health providers in a top to bottom approach i.e by higher authority.
- Fixed targets were given to all irrespective of the population covered by them, number of eligible couples and number of non-contraceptive users in their area.
- User preference was not considered. No feedback from community regarding which type of contraceptive to be promoted or in which age group.
- Most of time targets were set too high to achieve.
- Quality was secondary to target - In attempting to fulfil the target of IUD insertion, the presence of RTI/STI was not taken into consideration leading to serious side effects and setback to programme.
- False reporting was high.

When was it started?

- From April 1996 since RCH inception the target free approach was started as bottom to top approach.
- NRHM 2005 advocated the decentralisation of decision making to Panchayat Raj institution.

How it is done?

- At the start of year, health workers/ANM consult the families and local community to assess their needs and preferences and work out the targets and workloads in coming year.
- These workloads of ANM/health workers become the workload of PHC and then the district action plan is prepared.
- Based on district action plan, state action plan is made at state headquarter with appropriate additions.

How is target fixed?

- Target is based on previous year achievements plus community needs assessed for the next year.

16. NATIONAL FAMILY WELFARE PROGRAMME

Goal

To reduce the Total Fertility Rate to 2.1 by 2025 and achieve a stable population by 2045.

Objectives

- 1) Address the unmet need for contraceptive methods
- 2) Achieve a small family norm (2 child norm)

Strategies

It promotes family planning on the basis of voluntary and informed acceptance with full community participation, emphasizing on 2 child family norm.

1) FREE CONTRACEPTIVES

A range of contraceptives are provided free of cost to the clients for spacing and limiting the pregnancies. The contraceptives that are available under the programme are:

Condom (Nirodh), Combined oral contraceptive pills (Mala N), Non-hormonal oral contraceptive (Chhaya), Emergency contraceptive pill (Ezy), Intrauterine Contraceptive Device (Cu-T 375), Injectable Medroxy Progesterone Acetate (Antara), Minilap, Laparoscopic sterilisation and Non-Scalpel Vasectomy.
Promotional scheme - "Nayi Pahal" - an FP kit for newly weds.

2) FIXED DAY STATIC SERVICES (FDS) APPROACH FOR STERILISATION

From Camp approach, the programme has now shifted its focus to providing fixed day static services at various levels. However in districts where the unmet need is high, the camp approach for sterilisation will continue till the FDS approach is implemented.

Level	Frequency
District hospital	Twice a week
Sub-District Hospital	Weekly
Community Health Centre/Block PHC	Fortnightly
24 x 7 PHC/PHC	Monthly

3) HOME DELIVERY OF CONTRACEPTIVES

ASHA delivers contraceptives at the door step of the beneficiary. A nominal amount is charged for delivery of services.

- Rs. 1 for a packet of 3 condoms
- Rs. 1 for a packet of Oral Contraceptive Pills
- Rs. 2 for a pack of one tablet of Emergency Contraceptive Pills

4) INCENTIVES FOR ASHA

ASHA is paid an incentive for motivating

- a newly wed to delay their first pregnancy to 2 years after marriage (Rs. 500)
- a couple to space their second pregnancy by 3 years after birth of first child (Rs. 500)
- a couple to accept permanent methods of family planning after 2 children (Rs. 1000)

5) POSTPARTUM IUCD

A new intrauterine contraceptive device that can be inserted immediately after delivery, within 10 minutes to upto 24 hours post-delivery has been introduced. Motivational levels to adopt a family planning measure is the highest during the postpartum period.

6) FAMILY PLANNING SERVICES

At district hospitals where the load of deliveries is high, dedicated family planning counsellors would be posted for motivating the women to adopt a family planning measure.

7) EARLY DIAGNOSIS AND DECISION MAKING REGARDING CONTINUATION OF PREGNANCY

Pregnancy Test Kits called as Nischay are provided to ASHA, so that they can facilitate early diagnosis of pregnancy and decision regarding whether to continue or not continue pregnancy.

8) INVOLVEMENT OF PRIVATE SECTOR

Financial support is provided to NGO and industrial organizations for running family welfare centres and postpartum centres.

9) SOCIAL MARKETING

Condoms and Oral Contraceptive Pills are socially marketed through a wide network of retail outlets. The contraceptive methods are sold at a subsidised rate by these outlets. A small amount of profit is made by these outlets.

10) INCENTIVES AND DISINCENTIVES TO CLIENTS

State government employees - receive two increments if sterilisation is done after two children; and one increment after 3 children. As a mark of recognition, green cards are issued to acceptors of permanent family planning methods.

Central government employees - receive one increment after sterilisation; Special leave of 14 days (women) and 7 days (men) for undergoing sterilisation.

Maternity leave is not granted after 3 children.

11) NATIONAL FAMILY PLANNING INDEMNITY SCHEME

Provision has been made to pay claims to acceptors of sterilisation in the event of complications, failure or death.

- In case of death at hospital or within 7 days of discharge following sterilisation, Rs. 2 lakhs is paid.
- In case of death within 8-30 days of discharge following sterilisation, Rs. 50,000 is paid.
- In case of complications following sterilisation, Rs. 25,000 is paid for treatment of complications.
- In case of failure of sterilisation, Rs. 30,000 is paid.

The doctor /facility is covered by the indemnity scheme. Doctors/Facilities are covered for litigation upto 4 cases per year @ Rs. 2 Lakh per case.

12) ENSURING COMMODITY SECURITY

A system has been set up to ensure that the stock of family planning methods is available at all times.

13) ENSURING QUALITY OF SERVICES

Quality Assurance Committees have been established to monitor and ensure the quality of services.

14) DEMAND GENERATION ACTIVITIES

Demand for family planning services is generated through display of posters, billboards, audio, videos, TV spots, radio chat shows, whatsapp messages etc.

- a) Saas bahu Sammelan - improve communication between mother in law and daughter in law.
- b) Saarthi - Awareness on wheels.
- c) Local radio spots with messages from local actors.

A dedicated helpline has been setup to answer any queries of the common people.

A dedicated website provides information about various contraceptive methods. (<https://humdo.nhp.gov.in>).

15. MISSION PARIWAR VIKAS

- For improved access to contraceptives and family planning services in high fertility districts spreading over seven high focus states, the Ministry of Health and Family Welfare launched "Mission Pariwar Vikas" in 2016.
- Aim is to ensure availability of contraceptive methods at all the levels of Health Systems.
- Mission parivar vikas campaign (4 per year, months - April, July, October, January 15- 24 of designated months).

16) CAPACITY BUILDING

Capacity building of all cadre of staff is done for fulfilling their role with respect to family planning programme. Capacity building of all institutions is also done.

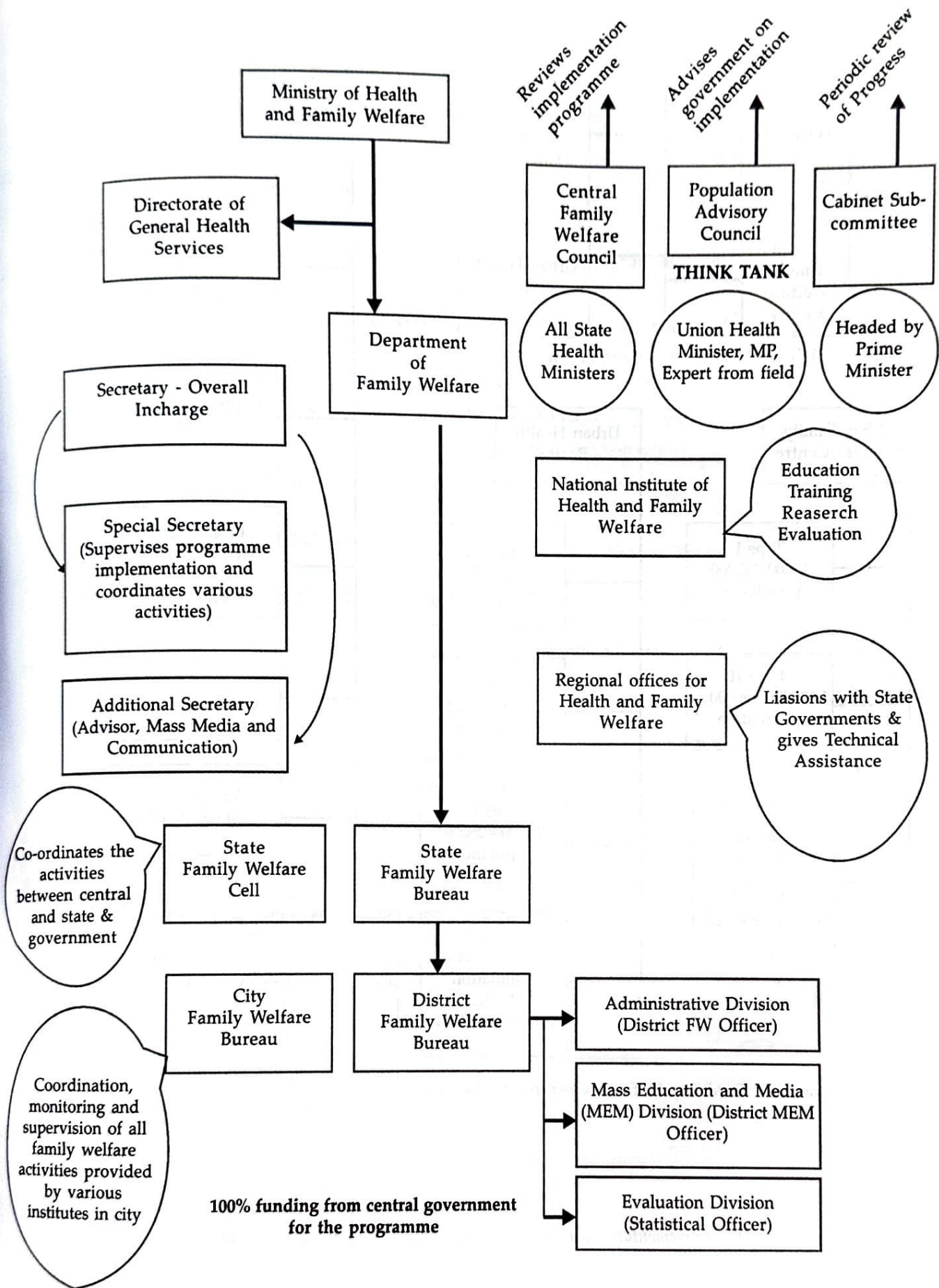
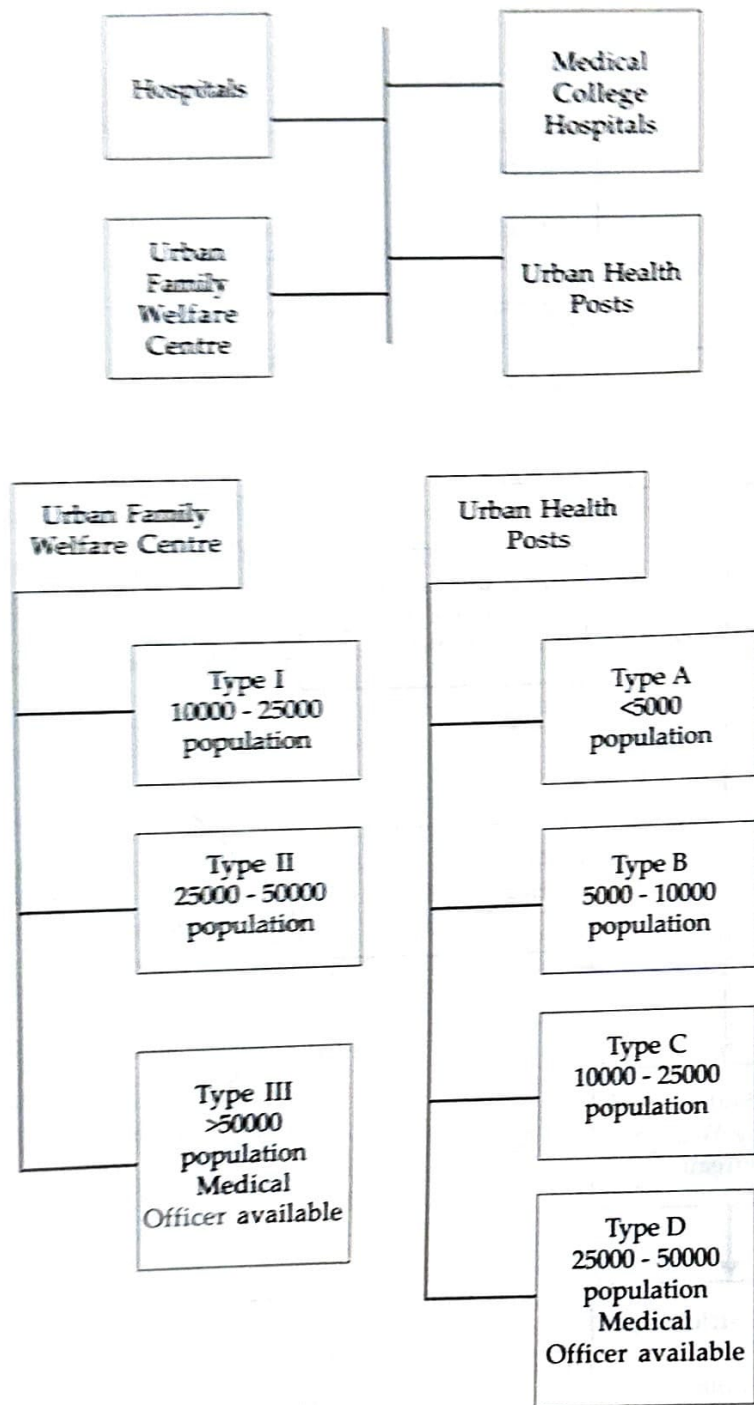


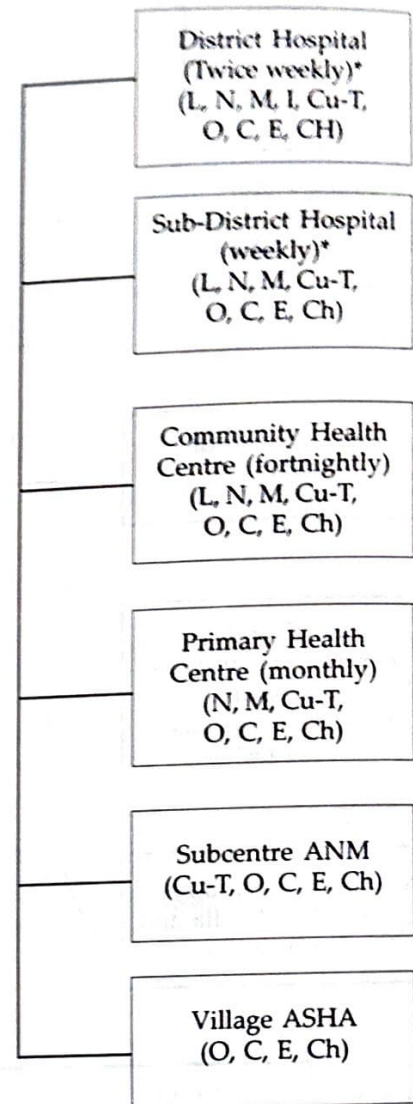
Fig. 10.1. Administrative Infrastructure of Family Welfare Programme

Urban Area



* Indicates Fixed Day Static Services for Sterilisation

Rural Area



O = Oral Contraceptive Pills (Mala N)
 C = Condom (Nirodh)
 E = Emergency Contraceptive Pills (Ezy)
 Ch = Centchroman (Chhayya)
 Cu-T = Copper T=375
 I = Injectable Contraceptive (Antara)
 N = Non Scalpel Vescotomy
 M = Minilap
 L = Laparoscopic Sterilisation

Fig. 10.2. Implementation of Family Welfare Services at District Level - Urban and Rural

17. EVALUATION OF FAMILY PLANNING PROGRAMME

Evaluation is the process of making judgments about selected objectives and events by comparing them with specified standards for the purpose of deciding alternating course of action.

Purpose is to improve the design and delivery of family planning services.

Five types of evaluation

- 1) Evaluation of needs - why family planning requires to be a priority e.g. maternal mortality, maternal morbidity, population size etc.
- 2) Evaluation of plans - assessment of the feasibility and adequacy of programme plans.
- 3) Evaluation of performance
 - a. Services - clinic services, mobile services, contraceptive distribution mechanism, follow up services, IEC etc.
 - b. Responses - number of new acceptors, profile of persons using family planning measures etc.
 - c. Cost analysis - cost-effective and cost benefit analysis
 - d. Other activities - administration, manpower, data systems etc.
- 4) Evaluation of effects - change in knowledge, attitude, motivation and behaviour
- 5) Evaluation of impact - some of the indices that can be measured
 - a. Family size
 - b. Desired number of additional children
 - c. Birth interval
 - d. Age of the mother at birth of first child and last child
 - e. Birth order
 - f. Number of abortions