

Demography and Family Planning

1. Intrauterine Devices (IUDs)-

- There are two basic types of IUD - non medicated and medicated. Both are usually made of polyethylene or other polymers; in addition, the medicated or bioactive IUDs release either metal ions (copper) or hormones (progestogens).
- Medicated IUDs were developed to reduce the incidence of side effects and to increase the contraceptive effectiveness.

Types of IUDs →

i) First Generation IUDs →

- The non-medicated or inert IUDs are often referred to as first generation IUDs.
- They are usually made of polyethylene or other polymers.
- They appeared in different shapes and sizes - loops, spirals, coils, rings, and bows.
- Of all the models, the Lippes loop is the best known and commonly used device in the developing countries.

ii) Second Generation IUDs →

- Copper-bearing IUDs.
- A new approach was tried in the 1970s by adding copper to the IUD.
- It was found that metallic copper had a strong anti-fertility

effect.

- The addition of copper made it possible to develop smaller devices which are easier to fit, even in nulliparous women.
- A no. of copper bearing devices are now commercially available:
Copper 7, Copper-T200, Cu-T220C, Cu-T380A or Ag, NovaT, multiload devices ..etc.

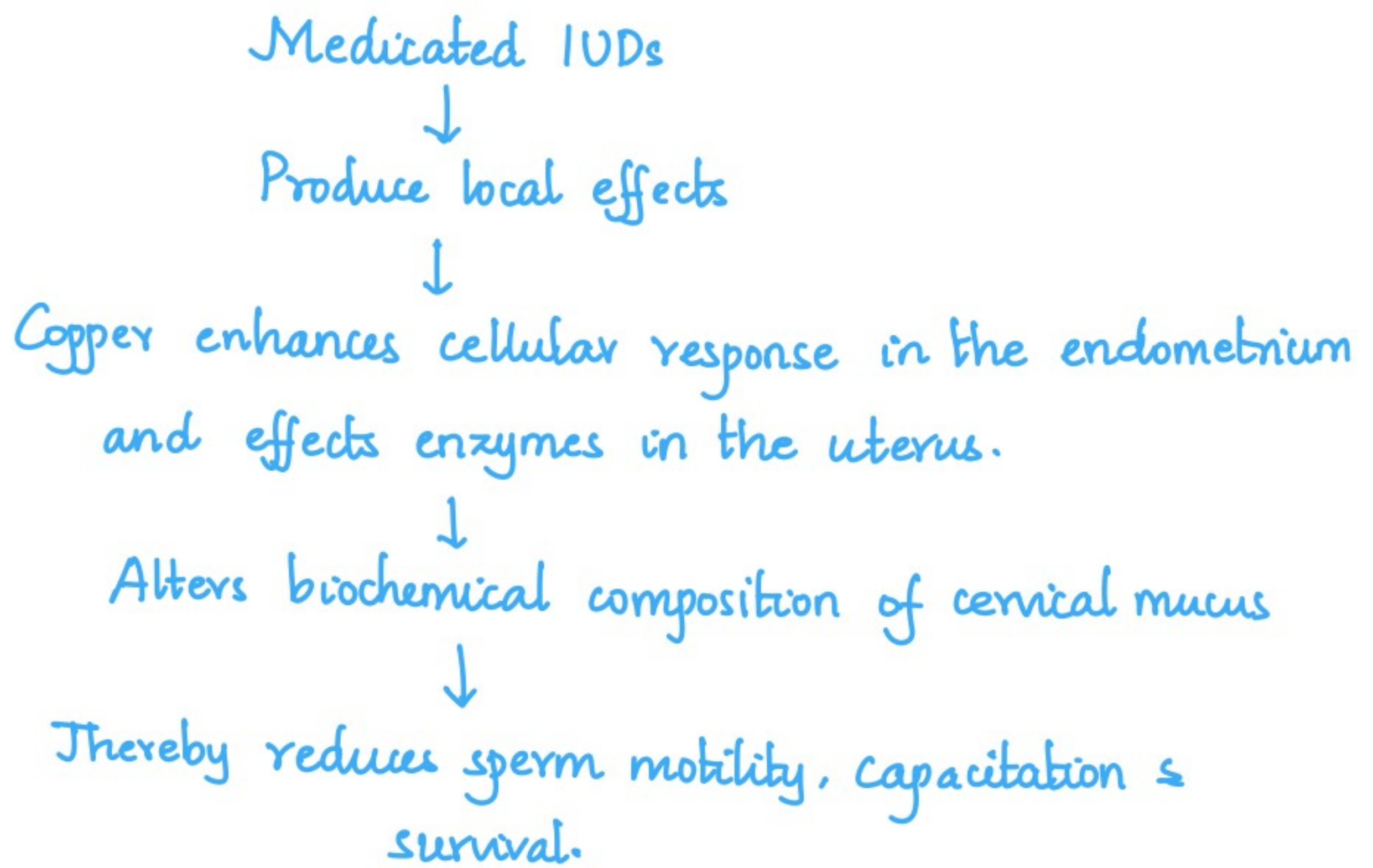
iii) Third Generation IUDs →

- Hormone releasing IUDs.
- The third generation of IUDs is based on still another principle i.e. release of a hormone have become available on a limited scale.
- The most widely used hormonal device is progestasert, which is a T-shaped device filled with 38 mg of progesterone, the natural hormone. The hormone is released slowly in the uterus at the rate of 65 mcg daily.
- Another hormonal device LNG-20 (Mirena) is a T-shaped IUD releasing 20 mcg of Levonorgestrel. LNG-20 has an effective life of 10 years.

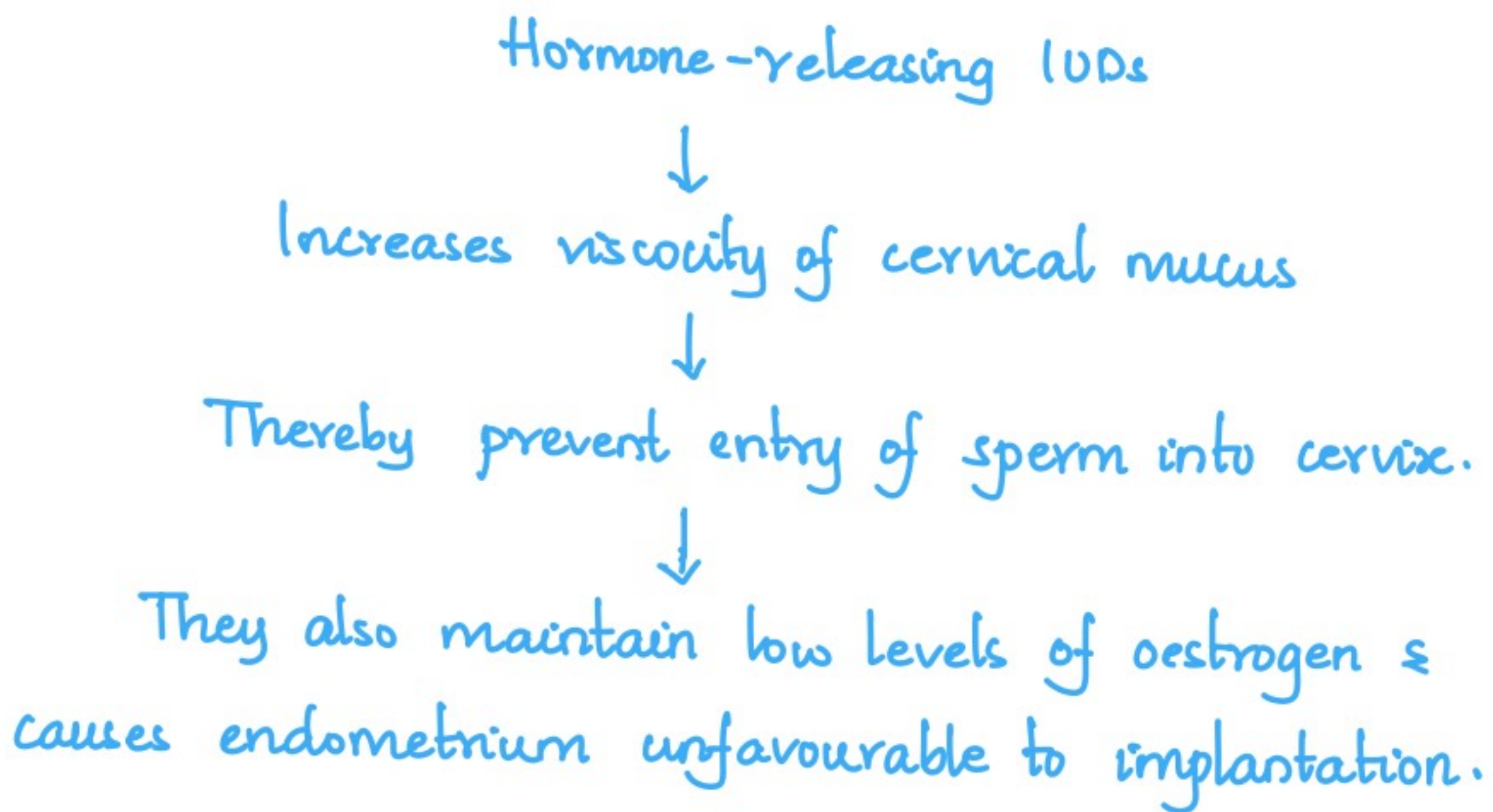
Mechanism of Action of IUDs →

- a) At present, the most widely accepted view is that the IUDs acts as a foreign body reaction in the uterus causing cellular and biochemical changes in the endometrium & uterine fluids, and it is believed that these changes impair gamete viability & reduce chances of fertilization.

b)



c)



Effectiveness →

- IUD is one of the most effective reversible contraceptive methods.
- The theoretical effectiveness of IUD is less than that of oral and injectable hormonal contraceptives.
- But since IUDs have longer continuation rates than the hormonal pills or injections, the overall effectiveness of IUDs and oral contraceptives are about same in family planning programmes.

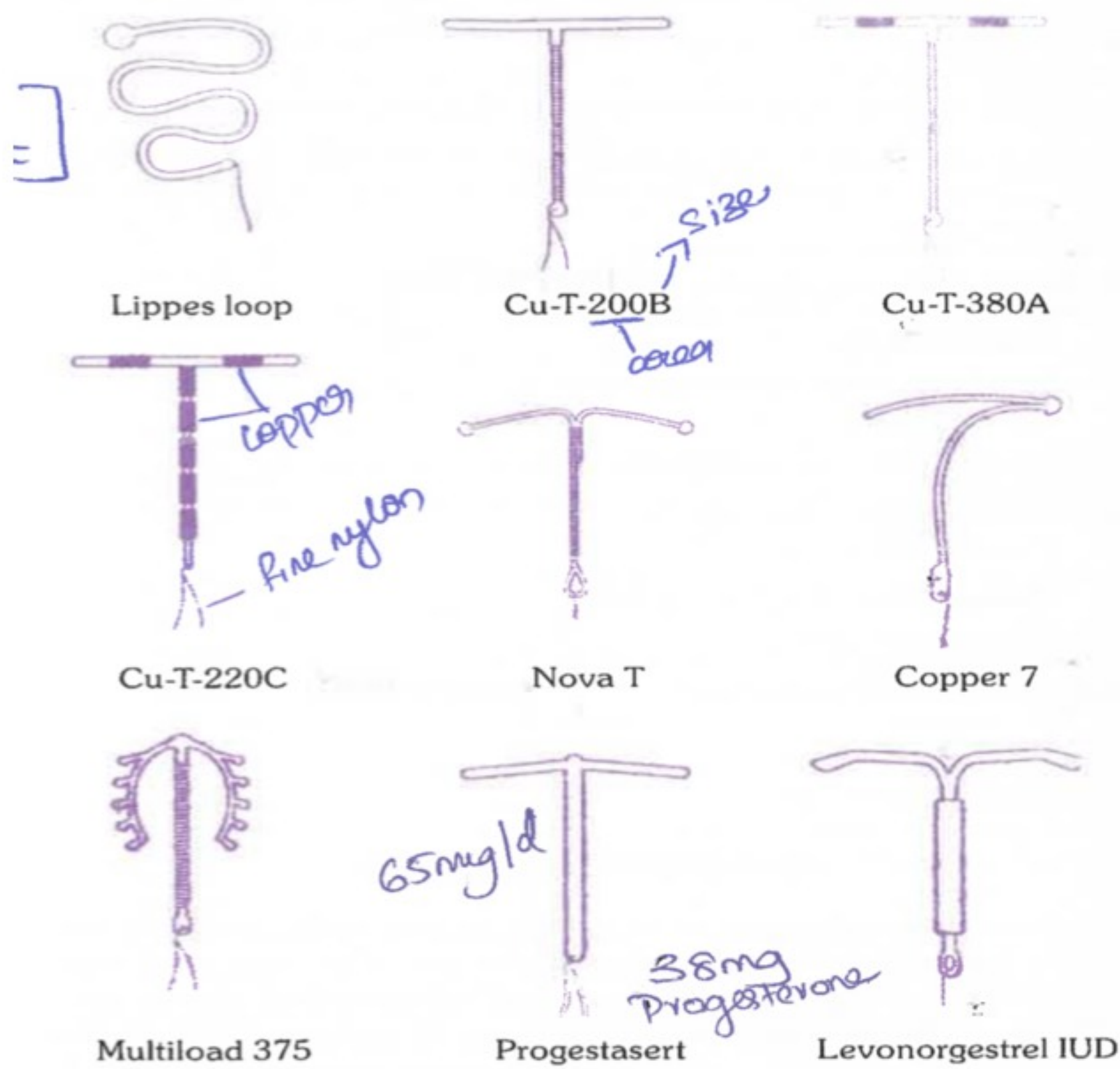


FIG. 6
Types of IUDs

Side effects & Complications →

- Increased vaginal bleeding
- Pain
- Pelvic Inflammatory Disease
- Uterine perforation
- Ectopic pregnancy
- Expulsion
- Fertility after removal
- Cancer and teratogenesis.

*** The Ideal IUD Candidate —

- The Planned Parenthood Federation of America (PPFA) has described the ideal IUD candidate as a woman:
 - Who has borne at least one child.
 - has no history of pelvic disease
 - has normal menstrual periods.
 - is willing to check the IUD tail.
 - has access to follow up & treatment of potential problems.
 - is in a monogamous relationship.
- An imp finding that has recently emerged is that the IUD is not a method of 1st choice for nulliparous women.
- They have more problems with IUDs such as expulsions, low abdominal pain and pelvic infection than other women.
- If they accept, Copper-T is preferred for nulliparous women.

2. Hormonal Contraceptives-

- Hormonal Contraceptives are the most effective spacing methods of contraception, when properly used.
- They act through synthetic oestrogens and progestogens. The main formulations in use or under study are classified as follows:

A. Oral Pills →

i. Combined Pill (COC) -

- The major spacing method worldwide.
- Earlier 'original pill' contained high doses : 100-200 µg synthetic oestrogen + 10 mg progestogen.
- Modern formulations : reduced to 30-35 µg oestrogen + 0.5-1.0 mg progestogen, lowering side effects.
- Dosage : taken for 21 consecutive days, starting from 5th day of cycle.
- Variants :
 - Monophasic - same dose of oestrogen and progestogen throughout
 - Biphasic / Triphasic - hormone levels vary across cycle, closer to natural physiology.

ii. Progestogen-only Pill (POP / Minipill) →

- Contains only low-dose progestogen (e.g. levonorgestrel, norethisterone).
- Taken daily without break.
- Suitable for women who cannot take oestrogen (e.g. lactating mothers, women with cardiovascular risk).

- Main drawbacks : menstrual irregularities, higher failure rate compared to combined pill.

iii. Post-coital pill →

- Emergency hormonal contraception.
- High dose of oestrogen + progestogen or progestogen alone.
- Ex: Levonorgestrel 1.5mg (single dose or 0.75mg x 2 doses 12 hours apart).
- Effective if taken within 72 hours of unprotected intercourse.
- Used as emergency contraception.

iv. Once a month pill →

- Long acting oral pill.
- Contains high dose progestogen + oestrogen, designed for monthly intake.
- Still under research/evaluation, not widely used in India.

v. Male Pill →

- The search for male contraceptive began in 1950.
- Research is following 4 main lines of approach:
 - a) Preventing spermatogenesis
 - b) Interfering with sperm storage and maturation.
 - c) Preventing sperm transport in the vas.
 - d) affecting constituents of seminal fluid.
- An ideal male contraceptive would decrease sperm count while leaving testosterone at normal levels. But hormones that suppress

sperm production tend to lower testosterone and effect potency & libido.

*** A male pill made of gossypol - is effective in producing azoospermia or severe oligospermia.

B. Depot (Slow Release) Formulations →

i) Injectable contraceptives →

- Contain long acting progestogens, e.g: Depot Medroxyprogesterone Acetate (DMPA), Norethisterone Enanthate.
- Given every 2-3 months intramuscularly.
- Adv: highly effective, convenient, independent of coitus.
- Disadv: menstrual disturbances, delay in return of fertility.

ii) Subcutaneous Implants →

- Small rods or capsules inserted under the skin, releasing progestogen slowly.
- Ex: Norplant (levonorgestrel capsules effective for 5 years).
- Adv: long term contraception, high effectiveness.
- Limitations: need for minor surgical insertion/removal, irregular bleeding.

iii) Vaginal Rings →

- Soft, flexible rings impregnated with oestrogen and/or progestogen.
- Placed in the vagina, hormones absorbed through mucosa.
- Provides sustained release for several weeks.
- Adv: convenient, controlled release.

3. Barrier methods-

- Barrier or 'occlusive methods' are suitable for both men & women.
- The aim of these methods is to prevent sperm from meeting ovum, thereby preventing fertilization.
- No systemic side effects with barrier methods, since they are commonly associated with the pill & IUDs.
- Non-contraceptive advantages of barrier methods include protection from STDs, reduction in the incidence of PID, & protection from the risk of cervical cancer.

Physical methods →

a. Condom -

- The condom is the most widely known and used barrier method by males all over the world.
- In India, it is better known by its trade name NIRODH.
- It is regarded today as an effective spacing method of contraception & has the added advantage of protection against STDs including HIV/AIDS.

Adv :

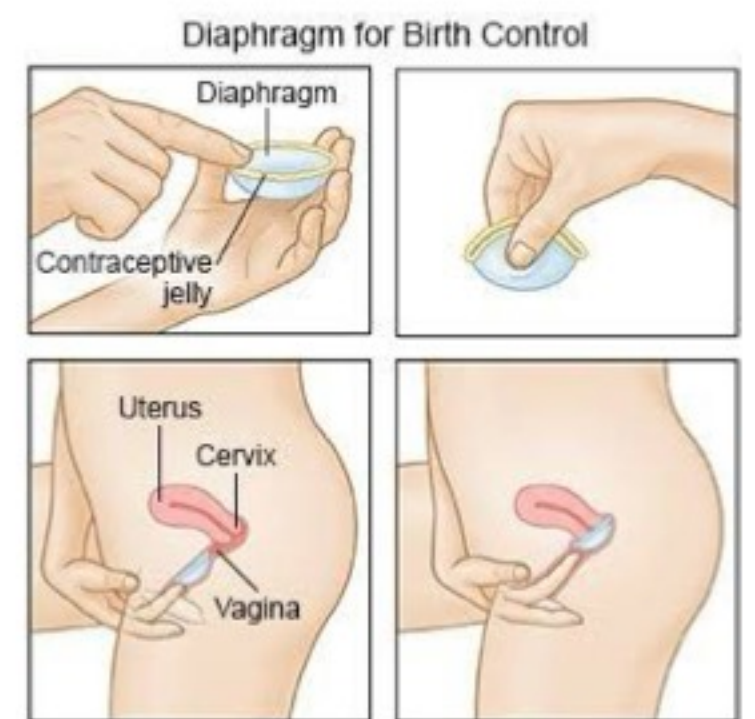
- Safe, inexpensive, easily available, requires no medical supervision
- no side effects, light, compact & disposable.

Disadv :

- May slip or tear during use due to incorrect handling.
- Interferes with sexual sensation.
- The main limitation is irregular & inconsistent use, especially when the risk of unwanted pregnancy or STD is high.

Female Condom —

- A pouch made of polyurethane which lines the vagina.
- The inner ring covers the cervix while the external ring remains outside the vagina.
- Provides effective barrier protection agnst 'STDs.



b. Diaphragm —

- Diaphragm is a vaginal barrier invented in Germany in 1882.
- It is a shallow cup made of rubber or plastic material, ranging in diameter from 5-10 cm.
- It has flexible rim and must be fitted by a trained person.
- For successful use, the vaginal tone must be reasonable.
- It should be inserted before sexual intercourse and remain in place for not less than 6 hours afterwards.
- Used in combination with spermicidal jelly.

Adv :-

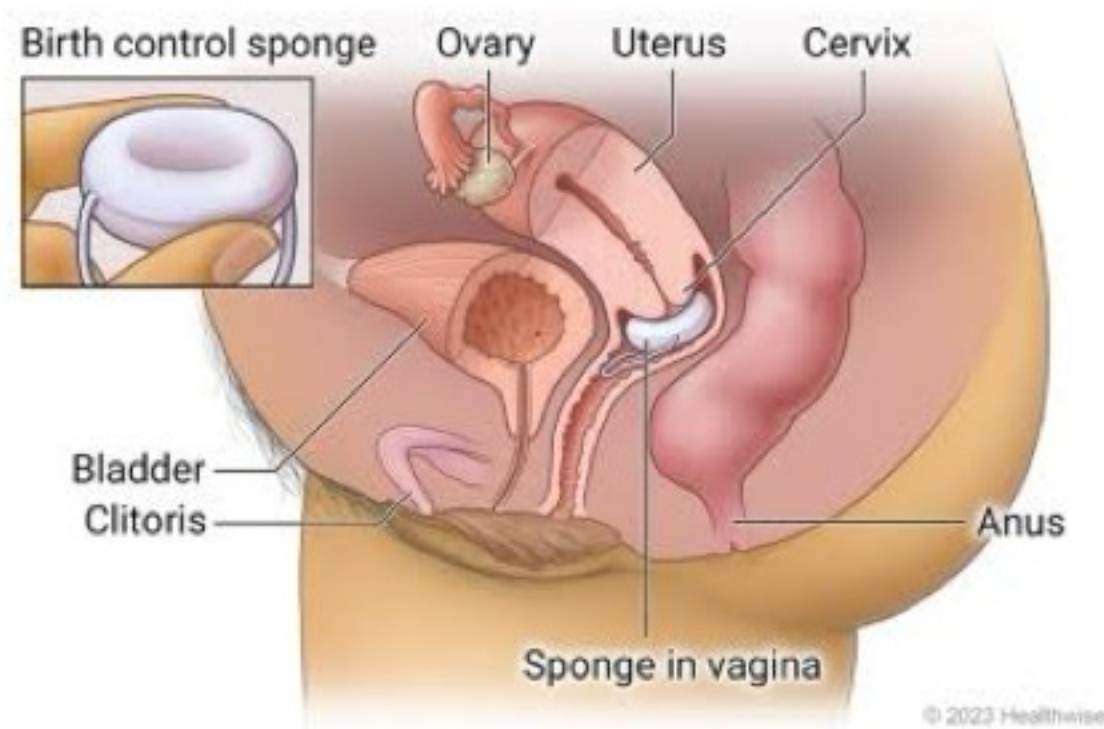
- Almost total absence of risks & medical contraindications.
- Can be used safely by most women.

Disadv :-

- Needs to be fitted properly & requires training.
- Inconvenience in insertion & privacy issues.
- If left in the vagina for long time, there is risk of toxic shock syndrome.

c) Vaginal Sponge –

- The vaginal sponge has been used for centuries in crude forms.
- Recently, a small polyurethane foam sponge, measuring about 5×2.5 cm saturated with spermicide (nonoxynol-9) has been marketed.
- It is inserted into the vagina before intercourse.
- It is less effective than the diaphragm and failure rate is about 20-40 per 100 women-years.
- Disadv: does not provide protection agnst STDs.



Chemical methods –

- Before the advent of IUDs & oral contraceptives, vaginal chemical contraceptives (spermicides) were widely used.
- They include foams, jellies, pastes, suppositories & soluble films.
- These spermicides contain surface-active agents which immobilize & kill sperms.
- They must be used immediately before intercourse & repeated before each sexual act.
- They are best used in conjunction with barrier methods like condoms or diaphragms.

Adv:

- Safe and Convenient
- Can reduce the incidence of pelvic inflammatory disease.
- May provide some protection against cervical cancer.

Disadv:

- High failure rate if used alone.
- May cause burning, irritation or local allergy.
- Must be inserted every time before intercourse.

4. Emergency Contraception-

- Emergency Contraception refers to contraceptive methods that can be used by a woman within a few days after unprotected or inadequately protected sexual intercourse, to prevent an unwanted pregnancy.
- It is meant only for occasional use & not as a regular method of contraception.

Indications →

- i. Following rape or sexual assault.
- ii. Unprotected sexual intercourse.
- iii. Contraceptive failure
- iv. Wrong use of contraceptives.

Methods of Emergency Contraception →

- Emergency Contraceptive Pills -

a) Levonorgestrel:

- 1.5mg single dose, or 0.75 mg two doses taken 12 hrs apart.
- Must be taken within 72 hrs of unprotected intercourse.

b) Ulipristal acetate:

- 30 mg single dose, effective upto 120 hrs after intercourse.

c) Combined pills (Yuzpe regimen):

- High dose estrogen + progestin (Ethinyl estradiol 100 µg + Lexo-

norgestrel 0.5mg, two doses 12 hours apart).

- Less effective, more side effects (nausea, vomiting)
- Rarely used now.

Copper IUCD (Cu-T 380 A)

- Can be inserted within 5 days of unprotected intercourse.
- Most effective method of emergency contraception (failure rate $<1\%$)
- Acts by preventing fertilization & implantation.
- Also provides long term contraception if woman desires.

Mechanism of Action →

- Inhibition or delay of ovulation.
- Prevention of fertilization & implantation.
- Copper IUCDs acts mainly by toxic effect on sperms and ova & prevents fertilization.

Advantages →

- Provides a second chance to prevent unwanted pregnancy.
- Easily available, especially pills (levonorgestrel is available OTC in India).
- Simple to use.

Limitations →

- Only for emergency use, not a substitute for regular contraception.
- Effectiveness depends on how soon it taken after intercourse.
- May cause side effects (nausea, vomiting, menstrual irregularities)
- Does not protect agnst STDs/HIV.

5. Advantages and Disadvantages of Conventional Contraceptives-

a) Condoms →

Adv ÷

- Safe, inexpensive, easily available, requires no medical supervision
- no side effects, light, compact & disposable.

Disadv ÷

- May slip or tear during use due to incorrect handling.
- Interferes with sexual sensation.
- The main limitation is irregular & inconsistent use, especially when the risk of unwanted pregnancy or STD is high.

b) Diaphragm →

Adv ÷

- Almost total absence of risks & medical contraindications.
- Can be used safely by most women.

Disadv ÷

- Needs to be fitted properly & requires training.
- Inconvenience in insertion & privacy issues.
- If left in the vagina for long time, there is risk of toxic shock syndrome.

c) Vaginal Sponge →

Adv ÷

- The sponge is better than nothing.

Disadv ÷

- The sponge is far less effective than the diaphragm.

- The failure rate in parous women is b/w 20 to 40 per 100 women years and in nulliparous women about 9 to 20 per 100 women-years.

d) Spermicides →

Adv:

- Safe and Convenient
- Can reduce the incidence of pelvic inflammatory disease.
- May provide some protection agnst cervical cancer.

Disadv:

- High failure rate if used alone.
- May cause burning, irritation or local allergy.
- Must be inserted every time before intercourse.

6. *Classification of Contraceptive methods-*

A) Spacing methods –

- Barrier methods – Physical, Chemical & Combined methods.
- Intrauterine devices.
- Hormonal contraceptive methods
- Post-conceptional methods.
- Miscellaneous.

B) Terminal methods –

- Male sterilization – Vasectomy
- Female sterilization – Tubectomy

7. *Post Conceptional method of family planning-*

a) Menstrual Regulation →

- It is a simple method of birth control.
- It consists of aspiration of the uterine contents 6-14 days of a missed period, but before most pregnancy tests can accurately determine whether or not a woman is pregnant.
- Immediate complications are uterine perforation & trauma.
Late complications include a tendency to abortion or premature labour, infertility, menstrual disorders, increase in ectopic pregnancies or Rh-immunization.
- Menstrual regulation differs from abortion in 3 respects
 - a) the lack of certainty if pregnancy is being terminated.
Microscopic examination of the aspirated material can confirm pregnancy post facto, but it is not obligatory.
 - b) the lack of legal restrictions.
 - c) the increased safety of the early procedure.

Menstrual Induction →

- It is based on disturbing the normal progesterone-prostaglandin balance by intrauterine application of 1-5 mg solution of prostaglandin F₂.
- It is performed under sedation.
- It causes sustained contraction of uterus lasting about 7 minutes, followed by cyclic contractions continuing for 3-4 hrs.
- The bleeding starts and continues for 7-8 days.

Oral abortifacient →

- Mifepristone (RU 486) in combination with misoprostol is 95% successful in terminating pregnancies of upto 9 weeks duration with minimum complications.
- Commonly used regimen is mifepristone 200mg orally on day 1, followed by misoprostol 800mcg vaginally either immediately or within 6-8 hours.
- Other regimen is mifepristone 600mg on day 1, followed by 400 mcg orally of misoprostol on day 3.

Surgical methods of Abortion →

- Indicated when medical abortion not possible, contraindicated or after certain gestational age.

Methods :

- . Suction evacuation (upto 12 weeks).
- . Dilatation & evacuation (12-20 weeks).
- . Hysterotomy or Hysterectomy (rare).

8. MTP Act-

- Before 1970, illegal abortion was one of the causes of increased maternal morbidity and mortality and it was also considered as a crime because of foeticide.
- To clear this issue, the Indian Parliament passed "Medical Termination of Pregnancy" Act in 1971, which came into force from April 1st, 1972, modified in 1975.

- Now MTP is **Scanned by Camera Scanner** measure to reduce

MMR resulting from abortion.

– The MTP Act lays down the following considerations:

a) Conditions under which a pregnancy can be terminated –

i) Medical – where continuation of pregnancy endangers the life of a woman physically or psychologically. So, it is done as a part of treatment as in mitral stenosis, severe anemia, viral hepatitis, etc.

ii) Eugenic – where there is a risk of child being born with serious physical or mental handicap.

iii) Humanitarian – where the pregnancy is the result of rape.

iv) Socioeconomic – where extreme poverty can injure mother's health.

v) Failure of contraceptive method.

A written consent of the guardian is necessary before performing abortion in women under 18 years of age & in lunatics, even if they are older than 18 years.

b) The person or persons who can perform abortion –

– Under MTP act, only RMP having the following criteria is authorized to perform the abortion.

- A postgraduate degree or diploma in OBG.
- Has undergone 6 months of residency in OBG.
- Has assisted atleast 25 MTPs in approved institutions.
- Registered

- Registered after the act, 1 year of experience in OBG.
 - Such an authorized RMP can perform MTP where the length of the pregnancy does not exceed 12 weeks. However if pregnancy exceeds 12 weeks but less than 20 weeks, requires the opinion of another RMP.
 - c) The place where MTP can be performed –
 - A Government hospital.
 - Any other health care institution approved for this purpose by Government.
- *** MTP should be performed in a right time, by a right person, in a right place by a right technique.

Methods of MTP →

a) Suction Evacuation –

- Where the pregnancy is < 12 weeks, evacuation of the contents of uterus is done by using a cannula and suction apparatus.
- The apparatus is started to run & the cannula is passed slowly over the entire lining of the uterus.
- The contents are evacuated under a pressure of 70 mmHg and aspirated.

b) Extraovular injection –

- This is done when pregnancy is b/w 12 and 14 weeks & the product of conception is so big that it cannot be sucked out.

- This consists of giving injection transcervically using a Folley's catheter, either prostaglandin F_{2a} 500g or Ethcridine acetate 150mL.

- Abortion occurs within 24 hrs.

c) Intra-amniotic injection -

- This is done when pregnancy is b/w 14 - 20 weeks duration.

- It consists of injection of 150 mL of saline or 80 mgm of urea or 50mgm of Prostaglandin F_{2a} into the amniotic cavity, under LA.

- Abortion takes place within 72 hours.

9. Post operative advice after Vasectomy-

- To ensure normal healing of the wound and to ensure the success of the operation, the patient should be given the following advice:

- a) The patient should be told that he is not sterile immediately after the operation; at least 30 ejaculations may be necessary before the seminal examination is negative.

- b) To use contraceptives until aspermia has been established.

- c) To avoid taking bath for atleast 24 hrs after the operation.

- d) To wear a T-bandage or scrotal support (langot) for 15 days; and to keep the site clean and dry.

- e) To avoid cycling or lifting heavy weights for 15 days

- f) To have the stitches removed on the 5th day after the operation.

10. Very short notes on Copper T, Pearl index, Mala-N and Mala-D

i) Copper-T →

- A type of intrauterine device (IUD).
- Made of polyethylene with copper wire wound around the stem/arms.
- Ex: Cu-T 200, Cu-T 380 A, Multiload 375.

MDA →

- Copper ions are spermicidal – inhibit motility and viability of sperm.
- Alters endometrium → prevents implantation.
- Increases phagocytosis of sperm.

Duration of action → Cu-T 380 A – effective for 10 years.

Advantages →

- Long acting, reversible, highly effective.
- Non-hormonal
- Can be used during lactation.

Disadvantages →

- Menstrual disturbances (menorrhagia, dysmenorrhea)
- Expulsion, uterine perforation, PID. etc.

Pearl Index →

- It is a measure of contraceptive effectiveness.
- Pearl Index is defined as the number of "failures per 100 women years of exposure (HWD). This rate is given by formula

$$\text{Pearl index} = \frac{\text{Total accidental pregnancies}}{\text{Total months of exposure}} \times 1200$$

- Expressed as pregnancies per 100 women-years of exposure.

Interpretation -

- Lower the Pearl index - more effective the method.

Ex: Copper-T : Pearl index is $\sim 0.6-0.8$.

Oral pills : " " " $\sim 1-3$.

Condoms : " " " ~ 14 .

Mala-N and Mala-D →

- These are combined oral contraceptive pills (COCs) supplied under the National Family Planning Programme.
- Each packet contains 28 pills (21 white + 7 colored iron/ferrous fumarate).
- Composition of white pill : Ethinyl estradiol - 30 μg
Norgestrel - 0.3 mg
- Mala-N is supplied through govt programme (free of cost)
Mala-D is available through social marketing (at subsidized cost).

Mechanism of action -

- Inhibits ovulation (suppresses LH surge).
- Alters cervical mucus → prevent sperm penetration.

- Alters endometrium → prevents implantation.

Advantages →

- Highly effective, reversible.
- Regulates menstrual cycle.
- Reduces risk of endometrial & ovarian cancer.

Disadvantages →

- Nausea, Vomiting, Weight gain, breakthrough bleeding.
- Contraindicated in smokers > 35yrs, HTN, thromboembolic disorders.

11. Demographic cycle-

- Demographic cycle is also called as Demographic transition.
- It refers to the historical process of change in population growth that occurs as societies progress socio-economically.
- It is based on the trends of birth rate and death rate over the time.
- It explains why countries move from high fertility & mortality to low fertility and mortality with modernization.

Stages -

i. First stage - High stationary -

- Both birth rate and death rate are high.
- Population remains stationary with little growth.
- High death rate due to epidemics, poor nutrition, unhygienic conditions.

Ex: Pre industrial societies.

ii. Second stage - Early expanding -

- Death rate declines sharply due to improved nutrition, sanitation, medical care.
- Birth rate remains high.
- Population begins to increase rapidly.
- Ex: India at the time of independence
Many African countries today.

iii. Third stage - Late expanding -

- Birth rate starts declining, while death rate remains low.
- Population continues to grow but at a slower rate.
- Decline in fertility due to urbanization, female education, family planning acceptance.

Ex: India at present in this stage.

iv. Fourth stage - Low stationary -

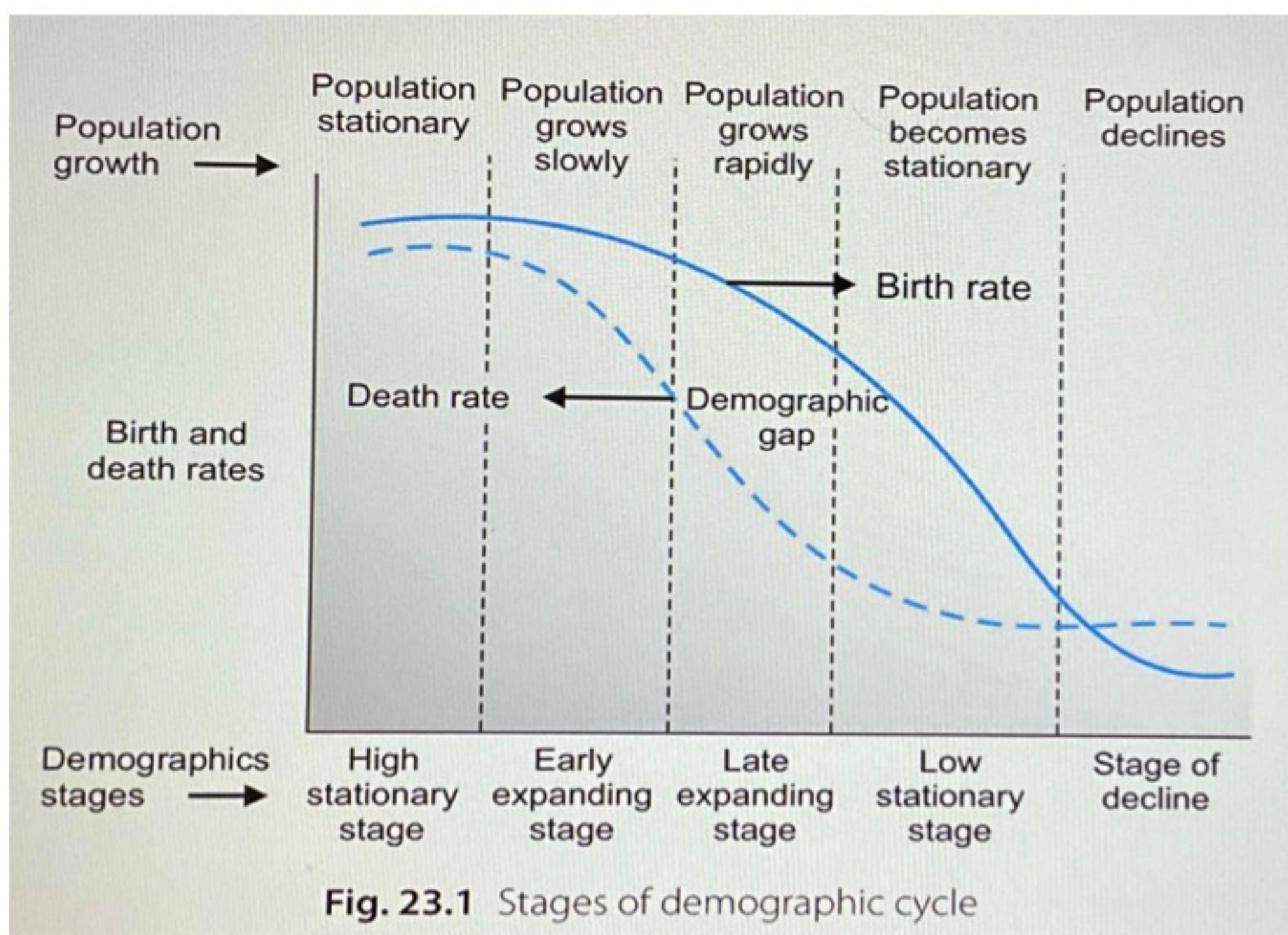
- Both birth rate and death rate are low.
- Population becomes stable.

Ex: Most developed countries like USA, UK.

v. Fifth stage - Declining -

- Birth rate falls below death rate.
- Population shows 'negative growth.' (Decline)

Ex: Japan, Germany



India's position →

- India is passing through the late expanding phase of the demographic cycle.
- Birth rate is declining (from 40 in 1951 to ~20 now)
- Death rate is low (~7)
- Population is still increasing, but the rate of growth is slowing.

Demographic cycle – Public health importance
↓

- Helps in population policy
- Explains growth trends
- Guides health planning.

12. Age-Sex pyramid (Population pyramid)-

- A population pyramid is a graphical representation of the age and sex composition of a population.
- It is constructed with age groups on the vertical axis and the population of males (left) and females (right) on the horizontal

axis.

Types of Population Pyramids →

i. Expansive Pyramid –

- Broad base, narrow top.
- Indicates high birth rate and high death rate.
- Common in developing countries with young populations.

Ex: India in the past, African countries now.

ii. Constructive Pyramid –

- Narrow base, wider middle.
- Indicates low birth rate and low death rate with ageing population.
- Seen in developed countries

Ex: Japan, Germany.

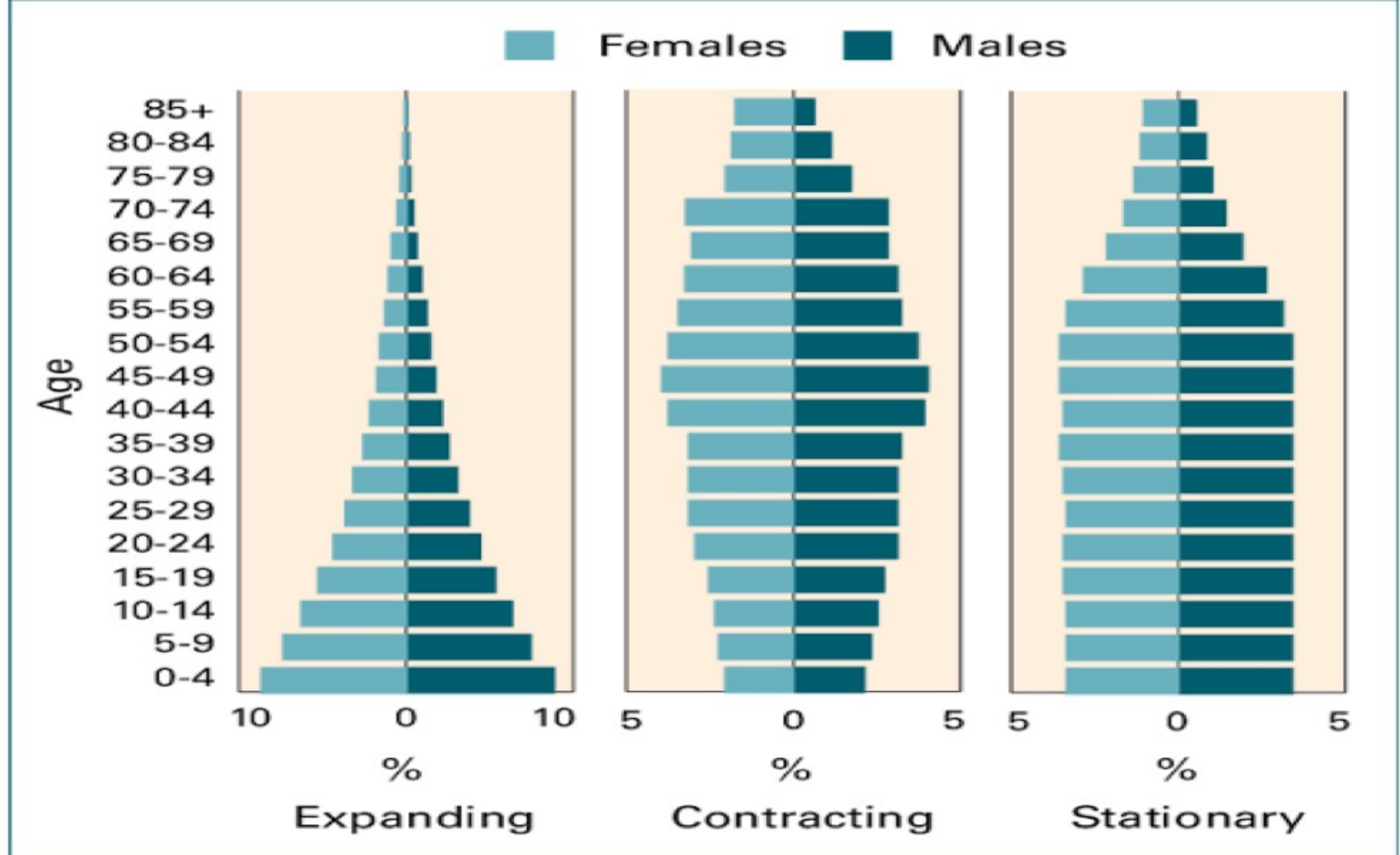
iii. Stationary pyramid –

- Nearly uniform shape from base to top.
- Suggests low fertility, low mortality and stable population.

Ex: USA

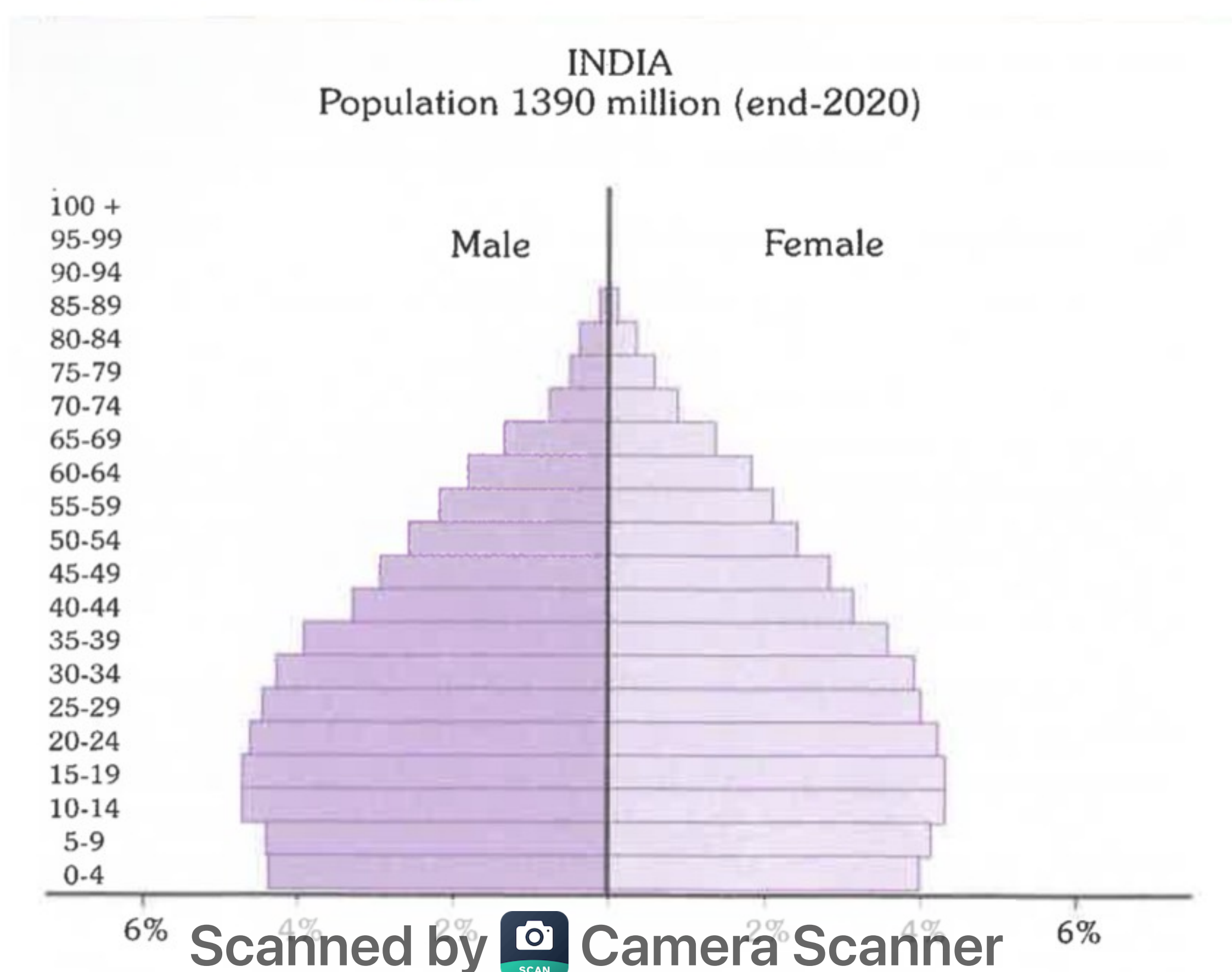
Uses of Age-Sex Pyramid –

- Helps in assessing fertility, mortality and dependancy ratio.
- Useful for health planning (e.g: maternal and child health services if broad base, geniatric services if top heavy).
- Indicates stage of the demographic cycle.
- Shows impact of wars, epidemics, migration.



India's Pyramid →

- India's population pyramid is expansive with broad base.
- This indicates a young population, high fertility in the past and declining mortality.
- However declining fertility causing a gradual transition towards a stationary pyramid.



13. Eligible Couple and Couple Protection Rate-

Eligible Couples →

- An "Eligible couple" refers to a currently married couple wherein the wife is in the reproductive age, which is generally assumed to lie b/w the ages of 15 and 45.
- There will be atleast 150 to 180 such couples per 1000 population in India. These couples are in need of family planning services.
- About 20% of eligible couples are found in the age group of 15-24 years.
- On an average 2.5 million couples are joining the reproductive group every year.

Couple Protection Rate →

- Couple Protection Rate (CPR) is an indicator of the prevalence of contraceptive practice in the community.
- It is defined as the percent of eligible couples effectively protected against childbirth by one or the other approved methods of family planning, viz. Sterilization, IUD, Condom, or oral pills.

Uses of CPR -

- It is an important indicator of the success of family planning programmes.
- Helps in monitoring coverage & effectiveness of contraception.
- Higher CPR

indicators.

- Provides basis for planning MCH and family welfare services.

*** Couple Protection Rate of India is ~56%.

14. Unmet Need of Family Planning-

- Unmet need for family planning refers to the percentage of married women of reproductive age (15-49 yrs) who are fecund and sexually active, and who want to stop or delay childbearing, but are not using any method of contraception.

Components →

- a) Unmet need for spacing- women who want to postpone the next birth but are not using contraception.
- b) Unmet need for limiting- women who want no more children but are not using contraception.

Causes of Unmet Need →

- Lack of awareness of family planning methods.
- Fear of side effects.
- Opposition from husband / family / society.
- Lack of access to contraceptives & services.
- Religious and cultural barriers.

India's situation →

- Unmet need for family planning in india is about 9%.
(5% for limiting, 4% for spacing).
- This indicates that despite progress, there remains a significant proportion of

planning services.

15. Sex ratio-

- Sex ratio is defined as the number of females per 1000 males.
- One of the basic demographic characteristics of the population is the sex composition.
- The sex composition of the population is affected by the differentials in mortality conditions of males and females, sex selective migration and sex ratio at birth.
- A low sex ratio indicates strong male child preference and consequent gender inequities, neglect of the girl child resulting in higher mortality at younger age, female infanticide, female foeticide, higher maternal mortality & male bias in enumeration of population.

Sex ratio in India

Year	Females per 1000 males
1901	972
1911	964
1921	955
1931	950
1941	945
1951	946
1961	941
1971	930
1981	934
1991	927
2001	933
2011	940

- The sex ratio in India has been generally adverse to women i.e. the no. of women per 1000 men has generally been less than 1000. Apart from being adverse to women, the sex ratio has also declined over the decades.

Sex ratio at birth →

- The sex ratio at birth for the country for the period 2018-20 has been estimated at 907. At national level, it is 907 in rural areas and 910 in urban areas.
- In the rural areas, the highest and lowest sex ratio at birth are in the states of Kerala (973) and Uttarakhand (853) respectively. The sex ratio at birth in urban areas varies from 975 in Kerala to 821 in Uttarakhand.

Child sex ratio (0-6 yrs) →

- ∴ Census 2011 marks a considerable fall in child sex ratio in the age group of 0-6 years and has reached an all time low of 914 since 1961.
- The fall has been 13 points from 927 to 914 for the country during 2001 to 2011.
- In rural areas, the fall has been significant - 15 points from 934 to 919 and in urban areas it has been 4 points from 906 to 902 over the decade.

16. Fertility Related Statistics-

- Fertility rates are refined measures of fertility which relate births to women of reproductive age (15-49 years). These are more precise than crude birth rate.
- Stillbirths, foetal deaths, and abortions are not included in the measurement of fertility in a population.

- Birth Rate is the simplest indicator of fertility and defined as the no. of live births per 1000 estimated mid-year population in a given year.

$$\text{Birth Rate} = \frac{\text{Number of live births during the year}}{\text{Estimated mid-year population}} \times 1000$$

- Limitation: It does not give a true idea of the fertility of a population.

b) General Fertility Rate →

- It is the number of live births per 1000 women in the reproductive age group (15-44 or 49 years) in a given year.

$$\text{GFR} = \frac{\text{Number of live births in an area during the year}}{\text{Mid-year female population age 15-44 (or 49) in the same area in same year}} \times 1000$$

- GFR is a better measure of fertility than the crude birth rate because the denominator is restricted to the no. of women in the child bearing age.

c) General Marital Fertility Rate (GMFR) →

- It is the number of live births per 1000 married women in the reproductive age group (15-44 or 49 yrs) in a given year.

$$\text{GMFR} = \frac{\text{Number of live births in a year}}{\text{Mid-year married female population in the age-group 15-49 years}} \times 1000$$

d) Age-Specific Fertility Rate (ASFR) →

- It is the no. of live births in a year to 1000 women in any

specified age group.

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

– Age-specific fertility rates throw light on the fertility pattern. They are also sensitive indicators of family planning achievement.

e) Age-Specific Marital Fertility Rate (ASMFR) →

– It is the number of live births in a year to 1000 married woman in any specified age group.

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



f) Total Fertility Rate (TFR) →

– Total Fertility Rate represents the average number of children a woman would have if she were to pass through her reproductive years bearing children at the same rates as observed in each age group.

$$\text{TFR} = \frac{5 \times \sum_{15-19}^{45-49} \text{ASFR}}{1000}$$

– It is computed by summing the age specific fertility rates for all ages.

– This measure gives the approximate magnitude of "completed

family size.

g) Total Marital Fertility Rate (TMFR) →

– Average number of children that would be born to a married women if she experiences the current fertility pattern throughout her reproductive span.

$$\text{TMFR} = \frac{5 \times \sum_{15-19}^{45-49} \text{ASMFR}}{1000}$$

h) Gross-Reproduction Rate (GRR) →

– Average number of daughters a woman would bear if she experiences the current fertility pattern throughout her reproductive span (15-44 or 49 yrs), assuming no mortality.

$$\text{GRR} = \frac{5 \times \sum_{15-19}^{45-49} \text{ASFR for female live births}}{1000}$$



i) Net Reproduction Rate (NRR) →

– Net Reproduction Rate is defined as the no. of daughters a newborn girl will bear during her lifetime assuming fixed-age specific fertility and mortality rates."

– NRR of 1 is equivalent to attaining approximately the 2-child norm.

– If the NRR is less than 1, it indicates a declining performance of the

population is said to be below replacement level.

J) Child-Woman Ratio →

- It is the no. of children 0-4 years of age per 1000 women of child bearing age (15-44 or 49 years).
- It is used where birth registration statistics do not exist or are inadequate.

K) Pregnancy Rate →

- It is the ratio of no. of pregnancies in a year to married women in the ages (15-44 or 49 yrs). The number of pregnancies includes all pregnancies, whether terminated as live births, stillbirths or abortions.

L) Abortion Rate →

- The annual no. of all types of abortions, usually defined as per 1000 women of child bearing age. (15-44 yrs).

M) Abortion Ratio →

- This is calculated by dividing the no. of abortions performed during a particular time period by the no. of live births over the same period.

N) Marriage Rate

17. Social Marketing Scheme-

- Social Marketing is "the use of marketing principles & techniques to achieve a social good."

- In family planning it means supplying contraceptives at subsidized prices through commercial outlets to motivate people to use them.

Objectives →

- i. To popularize contraceptives by making them easily available.
- ii. To overcome resistance to family planning by marketing contraceptives like ordinary consumer products.
- iii. To reach lower and middle income groups who may not access govt hospitals.

Contraceptives Under Social Marketing in India →

- Condoms - marketed under brands like Nirodh.
- Oral-contraceptive pills (OCPs) - Mala-D
- Other spacing methods as approved from time to time.

- Mala-N is supplied free through govt hospitals /dispensaries whereas Mala-D is supplied under social marketing scheme at subsidized rates through chemists & shops.

Advantages →

- i) Wide accessibility through commercial outlets.
- ii) Affordable to all sections.
- iii) Reduces stigma since purchased like any other consumer product.
- iv) Helps spread awareness & increases contraceptive use.