REPRODUCTIVE HEALTH

- Reproductive health literally means **healthy reproductive organs with normal functions.** According to world health organisation (W.H.O), reproductive health means a total well being in physical, emotional, behavioral and social aspects of reproduction. A reproductive healthy person is one who has physically and functionally normal reproductive organs and normal behavioral and emotional interactions with other persons in all sex related aspects.

PROBLEMS AND STRATEGIES REGARDING REPRODUCTIVE HEALTH

- Rapidly expanding human population, particularly in the developing countries like India and China have greater proportions of young individuals who determine the size, health and prosperity of the future population.
- Government of India initiated number of programmes at national level to attain total reproductive health as a social goal. At present, much more improved programmes in reproduction related areas are in operation. These are popularly termed as **reproductive and child health care (RCH) programmes.**
- The main aim of such programmes is to create awareness among people about reproductive organs, accessory organs of reproduction, secondary sexual characters, adolescence and associated changes, safe and hygienic sexual practices, sexually transmitted diseases (STDs), etc. And providing facilities and support for building up of reproductively healthy society.
- Few programmes undertaken by the government in this connection include massive child immunisation, statutary ban on amniocentesis to legally check increasing female foeticides and maternity and child health and family planning.

MATERNAL AND CHILD HEALTH (MCH) SERVICES AND FAMILY PLANNING

- Maternity and child health services and family planning is one of the important programmes of **health care centres.** Under this programmes, health care centres carry out the following activities:
  - It gives necessary information, guidance and help to the mothers before and after delivery so that they may properly look after themselves and the infants.
  - It ensures safe delivery of infant and postnatal care.
  - It organizes immunization programmes and arranges milk feeding programme
  - It trains the midwives also, to safely handle the delivery of infants.
  - It educates, the newly wedded couples about the importance of small family and guides and helps them in having a small family.
- In May, 1974 W.H.O launched programme to immunize the children of entire world against six communicable diseases–diphtheria, pertussis, tetanus, polio, tuberculosis and measles. The universal immunization programme of India was launched in **1985.**

POPULATION EXPLOSION

- At present, human population is increasing at a rate of over 2 persons every second or about 2,00,000 people every day or 8 million people every month. The world population which was around 2 billion (2000 million) in 1900 rocketed to about 6 billions by 2000. A similar trend was observed in India too. Our population which was approximately 350 million at the time of our independence reached close to the billion mark by 2000 and crossed 1 billion in May 2000. That means, every sixth person in the world is an Indian.
- This rapid increase in population over a relatively short period is called **population explosion.** The various reasons for population explosion are :
  - Increase in longevity due to decline in death rate, maternal mortality rate (MMR) and infant mortality rate.
  - Control of diseases has reduced the death rate and increased the average human age.
  - Better public health care, improvements in medical facilities and greater medical attention are playing crucial role in decreasing death rate and increasing birth rate.
  - Advancement in agriculture, improvement in food storage conditions and better means of transport are causing rapid increase of human population.
  - Protection from natural calamities has decreased death rate.
  - Certain religions are against family planning.
- Reduction in birth rate is the only practicable and direct method to control the population. It can be done in various ways.
- People particularly those in the reproductive age group, should be educated about the advantage of small family. Posters showing a happy couple with two children with a slogan "Hum Do Humare Do" should be displayed. At present marriageable age is 18 years for girls and 21 years for boys. By increasing the age of marriage population growth can be checked. Couples with small families can be encouraged by giving incentives. There are many birth control measures which can check birth rate such as, **family planning, use of contraceptives, medical termination of pregnancies,** etc.

BIRTH CONTROL

- The regulation of conception by **preventive methods** or **devices** to limit the number of offspring is called **birth control.** A variety of methods are known for birth control. The birth control methods which deliberately prevent fertilization are referred to as **contraception.** These methods act by blocking one of the three major steps in the reproductive processes : By blocking sperm transport to the ovum, blocking ovulation and by blocking implantation of early embryo.

- The various birth control methods can be grouped into following three types :
  (i) Temporary methods (ii) Permanent methods
  (iii) Medical termination of pregnancy

Temporary methods

- **Temporary methods** are further of many types, such as: natural methods, barrier methods, oral contraceptives, other contraceptives and abstinence.
- **Natural methods** avoid meeting of sperm and ovum. These include safe period, coitus interruptus and lactational amenorrhoea. **Safe period** or **rhythm method** is also termed **periodic** or **temporary abstinence** because it requires refraining from sexual intercourse when conception is most likely, *i.e.*, a few days before and a few days after ovulation. **Coitus interruptus** or **withdrawal method** involves withdrawal of the penis from the vagina by the male before ejaculation so that semen is not deposited in the vagina and there is no fertilization. **Lactational amenorrhoea method (absence of menstruation)** is based on the fact that ovulation and therefore the menstrual cycle do not occur during the period of intense lactation following child birth **(parturition).** This method is considered effective only upto a maximum period of **six months** following parturition and has no side effects.
- In **barrier methods** ovum and sperms do not meet due to barriers so that fertilization does not occur It includes chemical means (spermicides) and mechanical means (condoms, diaphragm, cervical cap, vault and intrauterine devices).
- **Condoms** are made of thin rubber/latex sheath used to cover the penis in the male or vagina and cervix in the female just before coitus so that the ejaculated semen is not released in the female reproductive tract and hence prevent fertilization. It is given free also by government under the trade name **'Nirodh'. Diaphragms, cervical caps and vaults** are also made of rubber, inserted into the female reproductive tract to cover the cervix before coitus. They prevent conception by blocking the entry of sperms through the cervix. They are reusable.
- **Intra uterine devices (IUDs)** are plastic or metal objects which are inserted by doctors in the uterus through vagina. These are available as **non-medicated** IUDs (*i.e.*, Lippes loop), **copper releasing** IUDs (CuT, Cu7, multiload 375) and **hormone releasing** IUDs (progestasert, **LNG-20**). IUDs increase **phagocytosis** of sperms within the uterus and the Cu ions released by some suppress **sperms' motility** and **fertilizing capacity.** The hormone releasing IUDs make the uterus unsuitable for implantation and the cervix hostile to the sperms.
- **Oral contraceptives** are physiological contraceptive devices. These are used in the form of tablets, therefore, they are called **pills.** Pills have to be taken for **21 days** starting within the first five days of menstrual cycle. After a gap of seven days it has to be repeated. Pills are very effective with a lesser side effects.
- **Hormonal pills act in following four ways :**
  - By inhibiting the ovulation.
  - By inhibiting the motility and secretory activity of oviducts.
  - By changing the cervical mucus and impairing its ability to allow passage and transport of sperms.
  - By alteration in uterine endometrium to make it unsuitable for implantation.
- Oral contraceptive pills contain either **progesterone** alone or a combination of **progesterone** and **estrogen.** These are of two types : combined pills and mini pills.
- **Combined pills** are most commonly used contraceptive pills which contain synthetic progesterone and estrogen to check ovulation. **Mini pills** contain progestin only Pills **Mala D** and **Mala N** are commonly used combined contraceptive pill. These are taken daily without break. Saheli, a new oral contraceptive pill for female has been developed at Central Drug Research Institute (CDRI), Lucknow. It contains a nonsteroidal preparation called **centchroman** which is taken once in a week after an initial intake of twice a week dose for three months. It has very high contraceptive value with very little side effects.
- **Other contraceptives** include implants, hormone injections, etc.
- The most common form of **emergency contraceptive** is a kit consisting of high dose of birth control pills. These kits can prevent pregnancy within **72 hours** after unprotected sexual intercourse.

Permanent method

- **Permanent method or surgical method** involves **sterilization** which provides a permanent and sure birth control. Steriiization in male is called **vasectomy** and in female it is called **tubectomy. Vasectomy** is very simple surgical method involving the **cutting** of the **vas deferens** in man. The vas deferens is cut and then both ends are folded and tied so that the sperm from the testicles cannot move out. **Tubectomy** involves the **blocking** of the **Fallopian tubes.** The Fallopian tubes are tied twice and cut between the knot. In the latest methods the Fallopian tubes are folded and ringed by synthetic rings with the help of an instrument called laproscope.

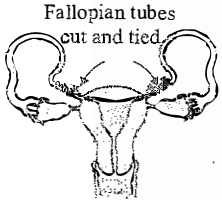


Fig.: Tubectomy (in female)

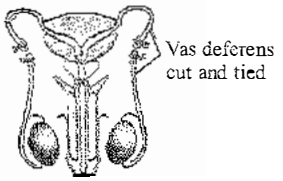
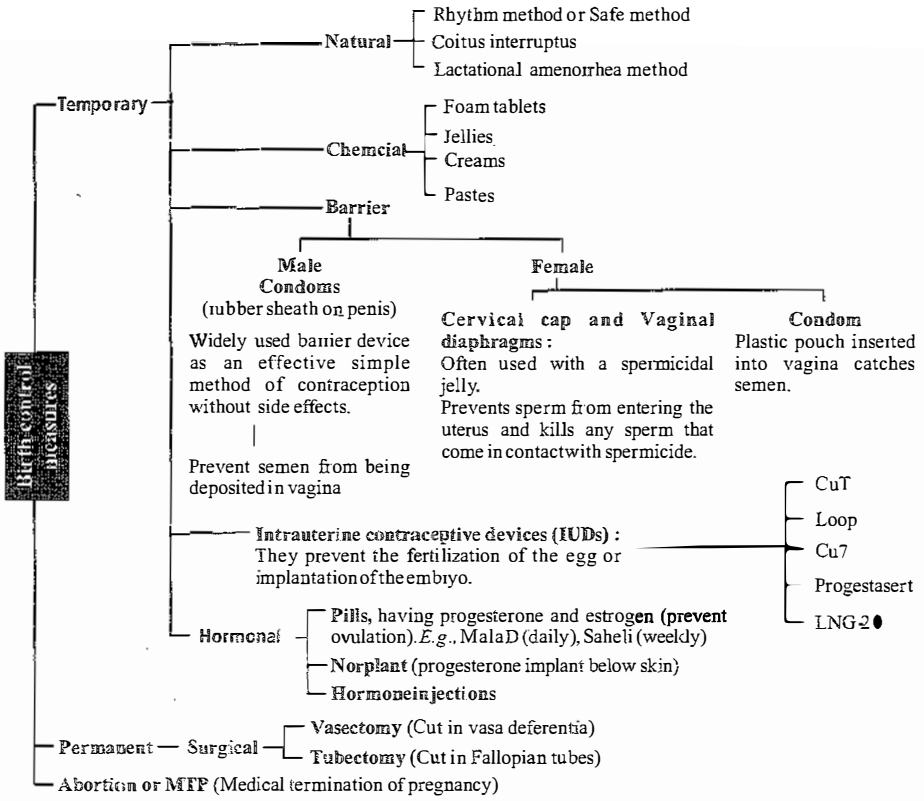


Fig.: Vasectomy (in male)

- No doubt, the widespread use of these methods have a significant role in checking uncontrolled growth of population. However, their possible ill-effects like nausea, abdominal pain, breakthrough bleeding, irregular menstural bleeding or even breast cancer, though not very significant, should not be totally ignored.

Medical termination of pregnancy

- **Medical termination of pregnancy (MTP) or Induced abortion** is **intentional** or **voluntary termination** of pregnancy before the foetus becomes viable. It is one of the most widely used methods of fertility control in the



Flow chart : Brief account on birth control measures

world. MTP is comparatively safe upto 12 weeks (the first trimester) of pregnancy. It becomes risky after the first trimester period of pregnancy as the foetus becomes intimately associated with the maternal tissues.

- Government of India legalised MTP in 1971. At present termination is legally allowed upto 28th week of pregnancy if the family physician and the gynaecologist consider the need for abortion. MTPs plays a significant role in decreasing the human population but now a days it is being misused to abort even the normal female foetuses.

SEXUALLY TRANSMITTED DISEASES (STDs)

- Diseases or infections which are transmitted through sexual intercourse with infected persons are collectively called **sexually transmitted diseases** (STDs) or **venereal diseases** (VD) or **reproductive tract infections** (RTI). Gonorrhoea, syphilis, genital herpes, chlamydiasis, genital warts, trichomoniasis, hepatitis-B and of course, the most discussed infection in the recent years, HIV leading to **AIDS** are some of the common STDs. Except HIV infection, hepatitis - B and genital herpes all other STDs are completely curable if detected early and treated properly.
- STDs are usually caused by bacteria, viruses, protozoans, nematodes, ectoparasites and fungi.
- If proper and timely treatment is not given it may lead to complications such as pelvic inflammatory diseases (PID), abortions, stillbirths, ecotopic pregnancies, infertility or even cancer of reproductive tract.
- **Syphilis** : It is caused by bacterium *Treponema pallidum*. Symptoms of this disease are painless ulcer or chancre on the genitals, swelling of local lymph glands, skin lesions, rashes, hair loss, swollen joints. It is transmitted through sexual contact and from mother to children.
- **Gonorrhoea** : Gonorrhoea is caused by bacterium *Neisseria gonorrhoeae*. The bacterium lives in genital tubes, produces pus containing discharge, pain around genitalia and burning sensation during urination. It may lead to arthritis and eye infection in children of gonorrhoea afflicted mothers. It is spread through sexual contact, common toilets and under-clothes.
- **AIDS** : AIDS is caused by **human immunodeficiency virus (HIV).** The symptoms of AIDS include fever, lathargy, pharyngitis, weight loss, nausea, headache, rashes, etc. HIV is transmitted *via* semen and blood.
- **Hepatitis B** : It is caused by hepatitis B virus (HBV). Its symptoms include fatigue, jaundice, persistent low grade fever, rash and abdominal pain. It can cause cirrhosis and possibly liver cancer. It is most infectious disease. Mode of transmission may be blood transfusion, sexual contact, saliva, tears, intravenous drug abuse, tatooing, ear and nose piercing, sharing of razors, etc.
- **Genital herpes** : Genital herpes is caused by herpes simplex virus. Vesiculopustular lesions followed by clusters of painful erythematous ulcers over external genitalia and perianal regions, vaginal and urethral discharge and swelling of lymph nodes are some common symptoms of the disease. The disease is primarily transmitted through genital secretions but also contact with genitalia.
- **Genital warts** : Genital warts is caused by human papilloma virus. Symptoms include benign, hard outgrowths with horny surface (warts) over the skin and mucosal surface of external genitalia and perianal area. It spreads through sexual intercourse with carriers of the viruses of this disease.
- **Chlamydiasis** : Chlamydiasis is caused by *Chlamydia trachomatis* of DEFGHIJK serotypes. *Chlamydia* is an obligate intracellular pathogen. It causes urethritis, epididymitis, mucopurulent, cervicitis, inflammation of Fallopian tubes, proctitis (rectal pain with mucus and occasional bleeding), etc. It spreads by sexual contact with infected mating partner.
- **Trichomoniasis** : Trichomoniasis is caused by *Trichomonas vaginalis*. The parasite affects both males and females. In females it causes vaginitis with foul smelling, yellow

vaginal discharge and burning sensation. In males it causes urethritis, epididymitis and prostatitis resulting in pain and burning sensation. It is transmitted through sexual intercourse.

- STDs are a major threat to a healthy society. Therefore, prevention or early detection and cure of these diseases are given prime consideration under the reproductive health-care programmes. Though all persons are vulnerable to these infections, their incidences are reported to be very high among persons in the age group of 15-24 years. Following precautions should be taken :
  - Avoid sex with unknown partners/multiple partners.
  - Always use condom during coitus.
  - In case of doubt a qualified doctor should be consulted for early detection and complete treatment if diagnosed with disease.

INFERTILITY

- Inability to conceive or produce children inspite of unprotected sexual cohabitation is called **infertility.**
- It is caused by various reasons which can be grouped under **physical, congenital, immunological** or even **psychological disorders.**
- **Specialized infertility clinics** can help in the diagnosis and proper treatment of some of these disorders and enable these couples to have children.
- However, where such diagnosis and treatment are not possible, the couples can be assisted to have children through certain special techniques called assisted reproductive technologies (ART).

Assisted reproductive technologies (ART)

- **Assisted reproductive technologies (ART)** include a number of special techniques which assist infertile couples to have children. Some important techniques of ART are :
  (i) Test tube baby programme
  (ii) Artificial insemination technique (AIT)
  (iii) Gamete intra Fallopian transfer (GIFT)
  (iv) Intracytoplasmic sperm injection (ICSI).

Test tube baby programme

- The baby produced by conceiving in a culture dish and nursing in the uterus is called a test tube baby.
- This method involves *in vitro* fertilization **(IVF)**, *i.e.*, **fertilization** of male and female gamete outside the body in almost similar conditions as that in the body followed by **embryo transfer (ET).**
- **Embryo upto 8 blastomeres** is transferred into the Fallopian tube (ZIFT - **Zygote Intra Fallopian Transfer)** to complete its further development.
- If the embryo is with **more than 8 blastomeres,** it is transferred into uterus **(IUT - Intra Uterine Transfer)** to complete its further development.
- A developing embryo can be inserted in the uterus of another female. A woman who substitutes or takes the place of the real mother to nurse the embryo is called **surrogate mother** or **genetic mother.**

Artificial insemination technique (AIT)

- This technique is used in those females where the husband is either unable to inseminate the female or has **very low sperm counts** in the ejaculation.
- In this technique the semen collected either from the **husband** or a **healthy donor** is artificially introduced into the vagina or into the uterus **(IUT - intrauterine insemination)** of the female.

Gamete intra Fallopian transfer (GIFT)

- This method is used in females who cannot produce ova but can provide suitable environment for **fertilization** and further development of embryo in the oviducts.
- In this technique, ovum from the donor female is surgically removed and then introduced into the Fallopian tube of females incapable of producing ovum for fertilization.

Intra cytoplasmic sperm injection (ICSI)

- In this technique sperm is directly injected into the ovum to form an embryo in the laboratory The embryo is later transferred by ZIFT or IUT in woman.

DETECTION OF FOETAL DISORDERS DURING EARLY PREGNANCY

- Foetal disorders during early pregnancy can be detected by following techniques :
  - amniocentesis
  - chorionic villi sampling (CVS)
  - noninvasive techniques and
  - foetoscopy.

Amniocentesis

- Transabdominal aspiration of fluid from the amniotic sac of the foetus is called **amniocentesis.** It is a foetal **sex determination** and **disorder test** based on the chromosomal pattern in the amniotic fluid surrounding the developing embryo.
- At the early stage of pregnancy (14^{th} or 15^{th} week), the location of the foetus and placenta is determined by **sonography.**
- Then a small amount of **amniotic fluid** is drawn by passing a special surgical syringe needle into the abdominal wall and uterine wall into the amniotic sac containing amniotic fluid.
- The amniotic fluid contains cells from foetus skin and respiratory tract.
- These cells are cultured and are used to determine chromosomal abnormalities (Down's syndrome, Klinefelter's syndrome, etc.) and metabolic disorders (phenylketonuria, sickle cell anaemia, etc.) of the foetus.
- Unfortunately, this useful technique, is being misused to kill the normal female foetuses. It has been **legally banned** for the determination of sex to avoid **female foeticide.**

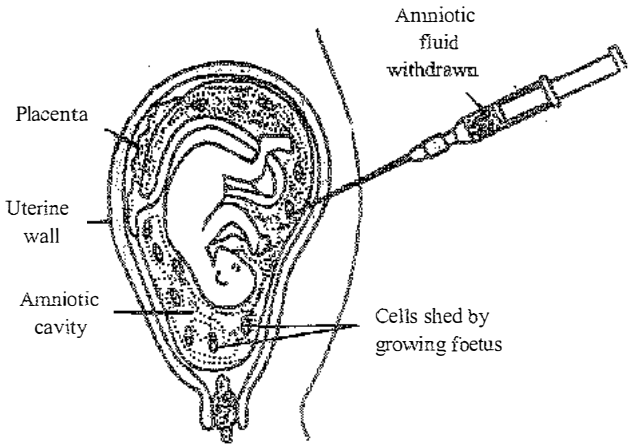


Fig.: Amniocentesis

Chorionic villi sampling

- **In chorionic villi sampling (CVS)** technique the physician inserts a narrow, flexible tube through the mother's vagina and cervix into the uterus and withdraws a small amount of **foetal tissue** (chorionic villi) from the placenta.

Non-invasive technique

- One of the widely used **non-invasive technique** to determine foetal condition is **ultrasound imaging.**
- Another technique is based on the fact that a few foetal blood cells leak across the placenta into the mother's blood stream. A blood sample from the mother provides enough foetal cells that can be tested for genetic disorders.

Foetoscopy

- **Foetoscopy** is another technique in which a needle thin tube containing a viewing scope is inserted into the uterus, giving the physician a direct view of the foetus.

CONCEPT MAP

Reproductive Health

Strategies of reproductive health

- It is counselling and creating awareness amongpeople about :
  - Reproductive organs
  - Adolescence & associated changes
  - Safe & hygienic sexual practices
  - Sexually transmitted diseases
    - AIDS, syphilis, genital herpes, genital warts, gonorrhoea, hepatitis B, etc are some of the diseases transmitted through sexual intercourse with infected person.
    - Itcanbepreventedby:
      - Avoiding sex with unknown/ multiple partners.
      - Using condoms during coitus.
      - Early detection and complete treatment if diagnosed with disease.
- Programmes undertakenregardingthis are :
  - Child immunisation
  - Ban on amniocentesis to legally check female foeticides
  - Maternity and child health and familyplanning

Population explosion & birth control

- All round development, increased health facilities, better living conditions; these all have resulted in population explosion.
- This can overcome by motivating smaller families by using contraceptive methods/ measures.

Types of contraceptive measures

Temporary methods
- Coitus interruptus
- Lactational amenorrhea
- Condoms, cervical caps, etc.
- Foam tablets, jellies, creams, etc
- IUCD
- Pills, norplant, etc.

Permanent methods
- Vasectomy
- Tubectomy

Medical termination of pregnancy

Infertility

- It is inability to conceive or produce children inspite of unprotected sexual cohabitation.
- It can be caused by physical, congenital, immunological or even psychological disorders.
- Specialized **infertility clinics** can help in the diagnosis and proper treatment of some of these disorders.
- However, where such diagnosis and treatment are not possible, the couples can be assisted to have children through certain special techniques called assisted reproductive technologies (ART).
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