

## 1. Details of Module and its structure

Module Detail	
Subject Name	Biology
Course Name	Biology 03 (Class XII, Semester - 1)
Module Name/Title	Reproductive Health – Part 1
Module Id	lebo_10401
Pre-requisites	Knowledge about how organisms reproduce?
Objectives	After going through this lesson, the learners will be able to understand the following: 1. Reproductive Health; Problems and Strategies 2. Population Explosion and Birth Control
Keywords	Reproductive health, RCH. AIDS, Sexual diseases, Contraceptive methods

## 2. Development Team

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### **1. Introduction**

Good sexual and reproductive health is a state of complete physical, mental and social well-being in all matters relating to the reproductive system. It implies that people are able to have a satisfying and safe sex life, the capability to reproduce, and the freedom to decide if, when, and how often to do so. To maintain one's sexual and reproductive health, people need access to accurate information and the safe, effective, affordable and acceptable contraception method of their choice. They must be informed and empowered to protect themselves from sexually transmitted infections. And when they decide to have children, women must have access to services that can help them have a fit pregnancy, safe delivery and healthy baby (UNFA).

Within the framework of WHO's definition of health as a state of complete physical, mental and social well-being, and not merely the absence of disease or infirmity, reproductive health addresses the reproductive processes, functions and system at all stages of life. Reproductive health, therefore, implies that people are able to have a responsible, satisfying and safe sex life and that they have the capability to reproduce and the freedom to decide if, when and how often to do so.

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The term simply refers to healthy reproductive organs with normal functions. However, it has a broader perspective and includes the emotional and social aspects of reproduction also. Therefore, a society with people having physically and functionally normal reproductive organs and normal emotional and behavioural interactions among them in all sex-related aspects might be called reproductively healthy. Why is it significant to maintain reproductive health and what are the methods taken up to achieve it? Let us examine them.

## **2. Reproductive Health – Problems and Strategies**

India was amongst the first countries in the world to initiate action plans and programmes at a national level to attain total reproductive health as a social goal. These programmes called ‘family planning’ were initiated in 1951 and were periodically assessed over the past decades. Improved programmes covering wider reproduction-related areas are currently in operation under the popular name ‘Reproductive and Child Health Care (RCH) programmes’.

The Reproductive and Child Health (RCH-1) Programme was launched in October 1997. The main aim of the programme was to reduce infant, child and maternal mortality rates. The main objectives of the programme in its first phase were (Childline India Foundation):

- To improve the implementation and management of policy by using a participatory planning approach and strengthening institutions to maximum utilization of the project resources
- To improve quality, coverage and effectiveness of existing Family Welfare services
- To gradually expand the scope and coverage of the Family Welfare services to eventually come to a defined package of essential RCH services.
- Progressively expand the scope and content of existing FW services to include more elements of a defined package of essential
- Give importance to disadvantaged areas of districts or cities by increasing the quality and infrastructure of Family Welfare services.

The Second phase of and RCH-2 was launched in April, 2005 with following objectives:

- Expand services to the entire sector of Family Welfare beyond RCH scope

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- Holding States accountable by involving them in the development of the programme
  - Decentralization for better services
  - Allowing states to adjust and improve programmes features according to their direct needs.
  - Improving monitoring and evaluation processes at the District, state and the Central level to ensure improved program implementation.
  - Give performance based funding, by rewarding good performers and supporting weak performers.
  - Pool together financial support from external sources
  - Encourage coordination and convergence, within and outside the sector to maximize use resources as well as infra structural facilities

Creating awareness among people about various reproduction related aspects and providing facilities and support for building up a reproductively healthy society are the major tasks under these programmes.

With the help of audio-visual and the print-media governmental and non-governmental agencies have taken various steps to create awareness among the people about reproduction-related aspects. Parents, other close relatives, teachers and friends, also have a major role in the dissemination of the above information. Introduction of sex education in schools should also be encouraged to provide right information to the young so as to discourage children from believing in myths and having misconceptions about sex-related aspects. Proper information about reproductive organs, adolescence and related changes, safe and hygienic sexual practices, sexually transmitted diseases (STD), AIDS, etc., would help people, especially those in the adolescent age group to lead a reproductively healthy life. Educating people, especially fertile couples and those in marriageable age group, about available birth control options, care of pregnant mothers, post-natal care of the mother and child, importance of breast feeding, equal opportunities for the male and the female child, etc., would address the importance of bringing up socially conscious healthy families of desired size. Awareness of problems due to uncontrolled population growth, social evils like sex-abuse and sex-

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related crimes, etc., need to be created to enable people to think and take up necessary steps to prevent them and thereby build up a socially responsible and healthy society. Successful implementation of various action plans to attain reproductive health requires strong infrastructural facilities, professional expertise and material support. These are essential to provide medical assistance and care to people in reproduction-related problems like pregnancy, delivery, STDs, abortions, contraception, menstrual problems, infertility, etc. Implementation of better techniques and new strategies from time to time are also required to provide more efficient care and assistance to people. Statutory ban on amniocentesis (a foetal sex determination test based on the chromosomal pattern in the amniotic fluid surrounding the developing embryo) for sex-determination to legally check increasing female foeticides, massive child immunisation, etc., are some programmes that merit mention in this connection.

Research on various reproduction-related areas are encouraged and supported by governmental and non-governmental agencies to find out new methods and/or to improve upon the existing ones.

***Do you know that ‘Saheli’—a new oral contraceptive for the females—was developed by scientists at Central Drug Research Institute (CDRI) in Lucknow, India?***

Better awareness about sex related matters, increased number of medically assisted deliveries and better post-natal care leading to decreased maternal and infant mortality rates, increased number of couples with small families, better detection and cure of STDs and overall increased medical facilities for all sex-related problems, etc. all indicate improved reproductive health of the society.

### **3. Population Explosion and Birth Control**

**Family planning in India** is based on efforts largely sponsored by the government. In the 1965-2009 period, contraceptive usage has more than tripled (from 13% of married women in 1970 to 48% in 2009) and the fertility rate has more than halved (from 5.7 in 1966 to 2.4 in 2012), but the national fertility rate is still high enough to cause long-term population growth. India adds up to 1,000,000 people to its population every 20 days.

Population explosion is not only a problem in India; it has reached a menacing proportion all over the world, especially in the poorer countries. Although the fertility rate (average number of children born per woman during her lifetime) in India has been declining, it has not reached replacement rate yet. The replacement rate is defined as the total fertility rate at which newborn girls would have an average of exactly one daughter over their lifetimes. In

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more familiar terms, women have just enough babies to replace themselves. Factoring in infant mortality, the replacement rate is approximately 2.1 in most industrialised nations and about 2.5 in developing nations (due to higher mortality). Discounting immigration and population momentum effects, a nation that crosses below the replacement rate is on the path to population stabilisation and, eventually, population reduction.

Seven Indian states have dipped below the 2.1 replacement rate level and are no longer contributing to Indian population growth - Andhra Pradesh, Goa, Tamil Nadu, Himachal Pradesh, Kerala, Punjab and Sikkim. Four Indian states have fertility rates above 3.5 - Bihar, Uttar Pradesh, Meghalaya and Nagaland. Of these, Bihar has a fertility rate of 4.0, the highest of any Indian state. For detailed state figures and rankings, In 2009, India had a lower estimated fertility rate than Pakistan and Bangladesh, but a higher fertility rate than China, Iran, Myanmar and Sri Lanka (Central Intelligence Agency).

The Ministry of Health and Family Welfare is the government unit responsible for formulating and executing family planning related government plans in India. An inverted Red Triangle is the symbol for family planning health and contraception services in India.

In the last century an all-round development in various fields significantly improved the quality of life of the people. However, increased health facilities along with better living conditions had an explosive impact on the growth of population. The world population which was around 2 billion (2000 million) in 1900 rocketed to about 7.4 billion by August, 2016 (Population Reference Bureau). A similar trend is also being observed in India too. Our population which was approximately 350 million at the time of our independence reached close to 1.3 billion mark by 2015. That means, every sixth person in the world is an Indian. A rapid decline in **death rate**, **maternal mortality rate (MMR)** and **infant mortality rate (IMR)** as well as an increase in number of people in reproductive age are probable reasons for this. Through our RCH programmes, though we could bring down the population growth rate, it was only marginal. According to the 2011 census report, the population growth rate was still around 1.3 per cent, i.e., 13/1000/year, a rate at which our population could double in few years. Such an alarming growth rate could lead to an absolute scarcity of even the basic requirements, i.e., food, shelter and clothing, in spite of significant progress made in those areas. Therefore, the government was forced to take up serious measures to check this population growth rate.

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The most important step to overcome this problem is to motivate smaller families by using various contraceptive methods.

**Contraceptive methods** are the deliberate use of artificial methods or other techniques to prevent pregnancy as a consequence of sexual intercourse.

You might have seen advertisements in the media as well as posters/bills, etc., showing a happy couple with two children with a slogan *Hum Do Hamare Do* (we two, our two). Many couples, mostly the young, urban, working ones have even adopted 'one child norm'. Statutory raising of marriageable age of the female to 18 years and that of males to 21 years, and incentives given to couples with small families are two of the other measures taken to tackle this problem. Let us describe some of the commonly used contraceptive methods, which help prevent unwanted pregnancies.

An ideal contraceptive should be user-friendly, easily available, effective and reversible with no or least side-effects. It also should in no way interfere with the sexual drive, desire and/or the sexual act of the user. A wide range of contraceptive methods are presently available which could be broadly grouped into the following categories, namely Natural/Traditional, Barrier, IUDs, Oral contraceptives, Injectables, Implants and Surgical methods.

1. **Natural methods:** Natural methods work on the principle of avoiding chances of ovum and sperms meeting. Periodic abstinence is one such method in which the couples avoid or abstain from coitus from day 10 to 17 of the menstrual cycle when ovulation could be expected. As chances of fertilisation are very high during this period, it is called the fertile period. Therefore, by abstaining from coitus during this period, conception could be prevented. Withdrawal or coitus interruptus is another method in which the male partner withdraws his penis from the vagina just before ejaculation so as to avoid insemination. Lactational amenorrhea (absence of menstruation) method is based on the fact that ovulation and therefore the cycle do not occur during the period of intense lactation following parturition. Therefore, as long as the mother breast-feeds the child fully, chances of conception are almost nil. However, this method has been reported to be effective only upto a maximum period of six months following parturition. As no medicines or devices are used in these methods, side effects are almost nil. Chances of failure, though, of this method are also high.
2. **Barriers:** In barrier methods, ovum and sperms are prevented from physically meeting with the help of barriers. Such methods are available for both males and females. Condoms (Figure 4.1 a, b) are barriers made of thin rubber/ latex sheath that are used to

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cover the penis in the male or vagina and cervix in the female, just before coitus so that the ejaculated semen would not enter into the female reproductive tract. This can prevent conception. 'Nirodh' is a popular brand of condom for the male. Use of condoms has increased in recent years due to its additional benefit of protecting the user from contracting STDs (Sexually Transmitted Diseases) and AIDS (Acquired Amino Deficiency Syndrome). Both the male and the female condoms are disposable, can be self-inserted and thereby give privacy to the user.

Diaphragms, cervical caps and vaults are also barriers made of rubber that are inserted into the female reproductive tract to cover the cervix during coitus. They prevent conception by blocking the entry of sperms through the cervix. They are reusable. Spermicidal creams, jellies and foams are usually used along with these barriers to increase their contraceptive efficiency.

- 3. Intra Uterine Devices (IUDs):** Another effective and popular method is the use of Intra Uterine Devices (IUDs). These devices are inserted by doctors or expert nurses in the uterus through vagina. These Intra Uterine Devices are presently available as the non-medicated IUDs (e.g., Lippes loop), copper releasing IUDs (CuT, Cu7, Multiload 375) and the hormone releasing IUDs (Progestasert, LNG-20) (Figure 4.2). IUDs increase phagocytosis of sperms within the uterus and the Cu ions released suppress sperm motility and the fertilising capacity of sperms. The hormone releasing IUDs, in addition, make the uterus unsuitable for implantation and the cervix hostile to the sperms. IUDs are ideal contraceptives for the females who want to delay pregnancy and/or space children. It is one of most widely accepted methods of contraception in India.
- 4. Oral administration:** Oral administration of small doses of either progestogens or progestogen-estrogen combinations is another contraceptive method used by the females. They are used in the form of tablets and hence are popularly called the pills. Pills have to be taken daily for a period of 21 days starting preferably within the first five days of menstrual cycle. After a gap of 7 days (during which menstruation occurs) it has to be repeated in the same pattern till the female desires to prevent conception. They inhibit ovulation and implantation as well as alter the quality of cervical mucus to prevent/ retard entry of sperms. Pills are very effective with lesser side effects and are well accepted by the females. *Saheli* –the new oral contraceptive for the females contains a non-steroidal preparation. It is a 'once a week' pill with very few side effects and high contraceptive value.



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5. **Injectables:** Progestogens alone or in combination with estrogen can also be used by females as injections or implants under the skin (Figure 4.3). Their mode of action is similar to that of pills and their effective periods are much longer. Administration of progestogens or progestogen-estrogen combinations or IUDs within 72 hours of coitus have been found to be very effective as emergency contraceptives as they could be used to avoid possible pregnancy due to rape or casual unprotected intercourse.
  6. **Surgical methods:** Surgical methods, also called sterilisation, are generally advised for the male/female partner as a terminal method to prevent any more pregnancies. Surgical intervention blocks gamete transport and thereby prevent conception. Sterilisation procedure in the male is called 'vasectomy' and that in the female, 'tubectomy'. In vasectomy, a small part of the vas deferens is removed or tied up through a small incision on the scrotum (Figure 4.4a) whereas in tubectomy, a small part of the fallopian tube is removed (Figure 4.4b) or tied up through a small incision in the abdomen or through vagina. These techniques are highly effective but their reversibility is very poor.

It needs to be emphasised that the selection of a suitable contraceptive method and its use should always be undertaken in consultation with qualified medical professionals. One must also remember that contraceptives are not regular requirements for the maintenance of reproductive health. In fact, they are practiced against a natural reproductive event, i.e., conception/pregnancy. One is forced to use these methods either to prevent pregnancy or to delay or space pregnancy due to personal reasons. No doubt, the widespread use of these methods has a significant role in checking uncontrolled growth of population. However, their possible ill-effects like nausea, abdominal pain, breakthrough bleeding, irregular menstrual bleeding or even breast cancer, though not very significant, should not be totally ignored.

#### 4. Summary

Reproductive health refers to a total well-being in all aspects of reproduction, i.e., physical, emotional, behavioural and social. Our nation was the first nation in the world to initiate various action plans at national level towards attaining a reproductively healthy society.

Counselling and creating awareness among people about reproductive organs, adolescence and associated changes, safe and hygienic sexual practices, sexually transmitted diseases (STDs) including AIDS, etc., is the primary step towards reproductive health. Providing medical facilities and care to the problems like menstrual irregularities, pregnancy related aspects, delivery, medical termination of pregnancy, STDs, birth control, infertility, post natal

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child and maternal management is another important aspect of the Reproductive and Child Health Care programmes.

An overall improvement in reproductive health has taken place in our country as indicated by reduced maternal and infant mortality rates, early detection and cure of STDs, assistance to infertile couples, etc. Improved health facilities and better living conditions promoted an explosive growth of population. Such a growth necessitated intense propagation of contraceptive methods. Various contraceptive options are available now such as natural, traditional, barrier, IUDs, pills, injectables, implants and surgical methods. Though contraceptives are not regular requirements for reproductive health, one is forced to use them to avoid pregnancy or to delay or space pregnancy.