



SEXUAL DEVELOPMENT

Development of sex organs: The physical and sexual development takes place more or less at the same time during puberty. The sex organs of boys and girls start developing. Testes in boys mature. They start producing semen. In girls, the reproductive organs are strengthened. The ovaries enlarge and the production of ova begins. The ovaries release mature ova. The girls start their monthly menstruation.

Development of secondary sexual characters: The development of secondary sexual characters also takes place. It starts in boys with the appearance of public and facial hair. In girls, the breasts start developing and the appearance of public hair takes place. Body hairs also become prominent.

Change in hormonal balance: Most of the changes that occur in adolescents are controlled by hormones. Hormones are the chemical substances produced and secreted by the endocrine glands. Hormonal balance in adolescents shifts strongly towards an adult state. This is triggered by the pituitary gland. Pituitary secretes hormones which influence the production of testosterone from testes in boys and estrogen and progesterone from ovaries in girls. These hormones are released into the blood stream and start the rapid maturation of the gonads (sex organs).

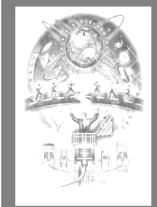
The reproductive phase in human beings: Humans become capable of reproduction when their testes and ovaries begin to produce gametes- the sperms and ova. The males produce gametes for a longer duration in their life as compared to females. In females, the ovaries become active when the girl reaches puberty, i.e. between 11-13 years of age. One ovum in one of the ovaries becomes mature once in about 28 days. The mature ovum enters the oviduct where it may get fertilized. If fertilized, it develops and reaches the uterus that is a pear-shaped structure present between the ovaries. Uterus is muscular and elastic and can grow, stretch and expand many times its size when the foetus grows and develops inside it.

Before the embryo enters the uterus, the uterus prepares itself to receive it by forming a thick lining of blood vessels. If fertilization does not occur, the egg disintegrates and the lining of blood vessels is shed off. This process of blood flow is termed as menstruation. It lasts 3-6 days. The first menstrual flow that begins in a girl at puberty is termed menarche.

The menstrual cycle stops when the woman is 45-50 years of age. This is termed menopause. In general, menstruation occurs regularly at intervals of 28-30 days. However, this period is variable. It may take about 6 months to one year for a girl's menstrual periods to become regular, but this should not cause any worry. If the ovum is fertilized by the sperm, a zygote is formed that begins to divide and gets embedded in the uterus for further development.

Determination of Sex of the Child

Human beings have 46 chromosomes in the nuclei of their cells. Of these, 44 are known as autosomes and the last pair is termed the sex chromosomes. This last pair is different in males and females. In males, it is XY and in females it is XX. The gametes (ovum and sperm) have half the number of chromosomes as that of cells occurring elsewhere in the body. This means that an egg will always have 22 + X chromosomes while a sperm will have either 22 + X or 22 + Y chromosomes.



During fertilization, if an egg fuses with a 22 + Y sperm, the resultant zygote will develop into a male child and if an egg fuses with a 22 + X sperm, the resultant zygote will develop into a female child. After understanding this, can you now analyze, which of the two, the father or the mother is responsible for determining the sex of the child.

Reproductive health: Poor nutrition in adolescence can have adverse health consequences in adulthood. Obesity and excessive fat intake increase the likelihood of being an overweight adult and puts the individual at risk for cardiovascular diseases and other health problems. Calcium and iron are both needed for growth. Vitamin D, which is needed to enable the body to absorb calcium, is often deficient if the diet contains no milk. Once a girl has started menstruating, her need for iron increases.

Personal hygiene: Personal hygiene entails more than just being clean. It includes many practices that help people to stay healthy. Bathing daily, use of a proper soap, maintain dental and oral hygiene, care of the eyes and ears, and grooming are some of the activities that adolescents need to carry out. Exercise also helps in better digestion of food and more efficient elimination of toxins from the body. It improves blood circulation and increase the respiratory efficiency of lungs.

Physical activity or exercise: is a daily requirement, just like food. Scientific evidence indicates that walking, jogging, running, playing games stimulates the growth process and keeps the individual fit. Exercise also helps in better digestion of food and more efficient elimination of toxins from the body. It improves blood circulation and increases the respiratory efficiency of lungs. Physical activity is also important to reduce stress and strain of adolescence.

Drug abuse and AIDS: Drugs are chemical substances that produce physical, mental, behavioral, or emotional changes in the user. Use of a drug for purpose other than medicinal use is called drug abuse. People who use drugs are also at risk of being infected with HIV, the deadly virus that causes AIDS. This virus can spread by sharing syringes used for injecting some drugs. It also spreads through sexual contact with an infected person.

Q1 Why is sex determination of unborn foetus banned by the Indian Government?

Q2. Give one word for the following:

1. The site which responds to hormones _____
2. Name the gland which transports secretions through ducts _____
3. Chemicals which control changes at adolescent stage _____
4. It marks the beginning of reproductive period _____

Q3. Study the given graph and explain the difference in the pattern of increase in height of girls and boys.

