

# Physical Development - Male and Female

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# Population and Family Life

## Unit 3 : Physical Development - Male and Female

### Unit Introduction

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This unit is intended to provide opportunity to the student to understand the physical, emotional and psychological changes that occur during puberty. Puberty is when boys and girls start to develop physical, intellectual and sexual characteristics of adults. It denotes sexual maturity or the ability to give birth to children. Alongside the physical changes there are tremendous emotional changes. An adolescent feels a powerful sexual drive that is discordant with the set of values imbibed from the family. There is an accompanied sense of guilt that result from these conflicting emotions. It does not help much when the adolescent faced with these challenges has only misinformation to fallback upon. Embarrassment and fear inhibits them from asking their elders about information; parents hesitate to talk about issues of sexuality and teachers overlook the topic even when it is included in school texts. The adolescent is not left with much choice but to gather bits and pieces of information from friends and sources that may not be totally reliable. We believe that the adolescent must be equipped with adequate knowledge and information if they are to use their sexuality responsibly. Adequate information about the reproductive systems and their functions, ovulation and conception are important in preparing the adolescent to accept their physical changes with confidence and to perform his/her parental role in a responsible manner.

## Learning outcomes of this unit

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At the end of learning through this unit, you should be able to :

- describe the process of growing up from the reproductive and anatomical perspective.
- name the different organs of the male and female reproductive system
- comprehend the changes that occur in adolescence.
- conceptualise the human reproductive cycle.

## Anatomy and reproduction

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Anatomy is a study of the structure and functions of various body systems. Here, you will be introduced to the reproductive system - the reproductive organs of male and female and their functions. All mammals including man are equipped with a reproductive system, the function of which is to perpetuate their progeny.

### Male reproductive organs and their functions (Fig. 3.1)

Penis	:	The male organ for sexual intercourse.
Scrotum	:	The pouch located behind the penis which contains the testicles, provides protection to the testicles, controls temperature necessary for sperm production and survival (The scrotum along with penis form the external reproductive organs).
Testes	:	Two round glands which descend into the scrotum following birth, produce and store sperms (reproductive cells) with the onset of puberty; produce the male sex hormone testosterone.
Seminal Vesicle	:	A sac-like structure lying behind the bladder; secretes a thick milky fluid that forms part of the semen.
Seminal duct	:	It carries the semen from testicles to the urethra.
Urethra	:	A tube that carries urine from the bladder to outside. It passes through the penis. Semen also passes through it.
Prostate gland	:	A gland located in the male pelvis which secretes a thick milk fluid that forms part of the semen.

- Epididymis** : It is responsible for the storage, maturing and transportation of sperms. It starts from the testes and continues further as the vas deferens.
- Vas deferens** : A pair of tubes (continuation of epididymis) that open the urethra. They serve both as a storage and a passage for sperms.
- Cowper's Glands** : Two glands located near the prostate gland that produce a small amount of clear sticky liquid. This fluid is released into the urethra prior to ejaculation, which changes the environment of the urethra to enable sperms to remain alive as they pass through it.
- Erection** : The process by which the penis is filled with blood in response to thoughts, fantasies, temperature, touch or sexual stimulation and grows taut.
- Ejaculation** : The release of semen from the penis caused by sexual excitement is called ejaculation. This occurs in situations other than intercourse as well; e.g. it may occur at night and is commonly called "wet dream". It is a natural and normal phenomenon. During ejaculation, the urethra is closed to urination.

### **Female reproductive organs and their functions (Fig. 3.2)**

The following are the female reproductive organs.

- Labia majora and labia minora** : Two sets of folds on either side of the vagina, provide protection to the clitoris and the openings. urethra and vagina
- Clitoris** : A small structure located above the urethral opening at the point where the labia meet; the focal point of stimulation for the female.
- Vaginal Opening** : Located between the urethral opening and the anus; usually covered by a thin membrane prior to first sexual intercourse; outlet for the menstrual flow.
- Hymen** : A piece of tissue which partly covers the opening of the vagina.
- Urethra** : A passage way that carries urine from the bladder out of the body.

The above structures form the external reproductive organs of female system. The vulva is a term used to refer to the labia, urethra and vaginal opening together. The pelvis is the basin shaped bone structure that provides support and protection to the internal reproductive organs. The internal organs are :

- Vagina : A tube shaped passage extending from the uterus to the outside of the body; canal through which a baby passes during birth; passage for the menstrual flow to the outside; place where intercourse occurs. Capable of expanding during intercourse and childbirth. Lubricates during sexual arousal.
- Cervix : The mouth or opening into the uterus.
- Uterus : A muscular organ shaped like an upside down triangle located in the lower abdomen; place where the foetus (growing baby) develops before birth; regular shedding of its lining is called menstruation.
- Fallopian Tube : Two tubes that are connected to the upper right and left side of the uterus; Passageway for the egg from the ovary to the uterus; place where fertilisation occurs.
- Ovaries : Two small oval shaped glands located on either side of the uterus, contains thousands of egg cells that are released regularly for fertilisation; produce female sex hormones oestrogen and progesterone; begin release of eggs at the time of puberty.
- Ovum : The egg that is released by the ovary which is about the size of a pinhead of not fertilised, dissolves and is absorbed. Usually one egg is released once a month, if more than one is released and they are fertilised, it may result in twins or multiple births.



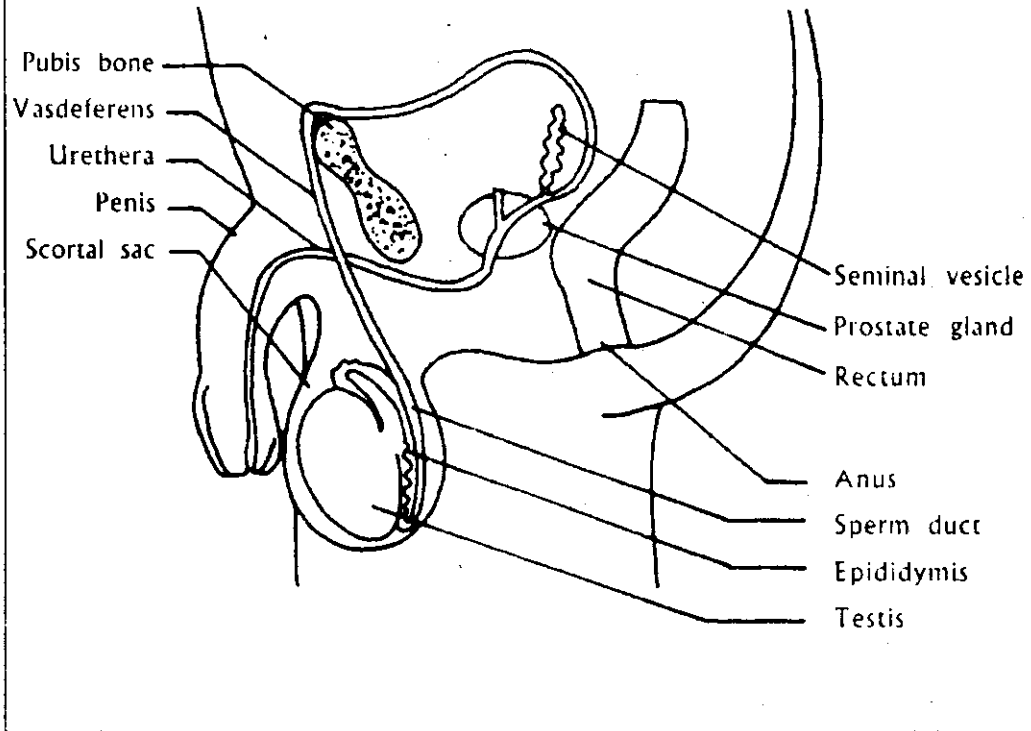
### Activity 3.1

Study the figures (figures 3.1 and 3.2) of male and female reproductive systems of humans. Try to draw them, identify and label the various organs in these diagrams.

### Fig. 3.1 Human male reproductive system

The reproductive system of the human male

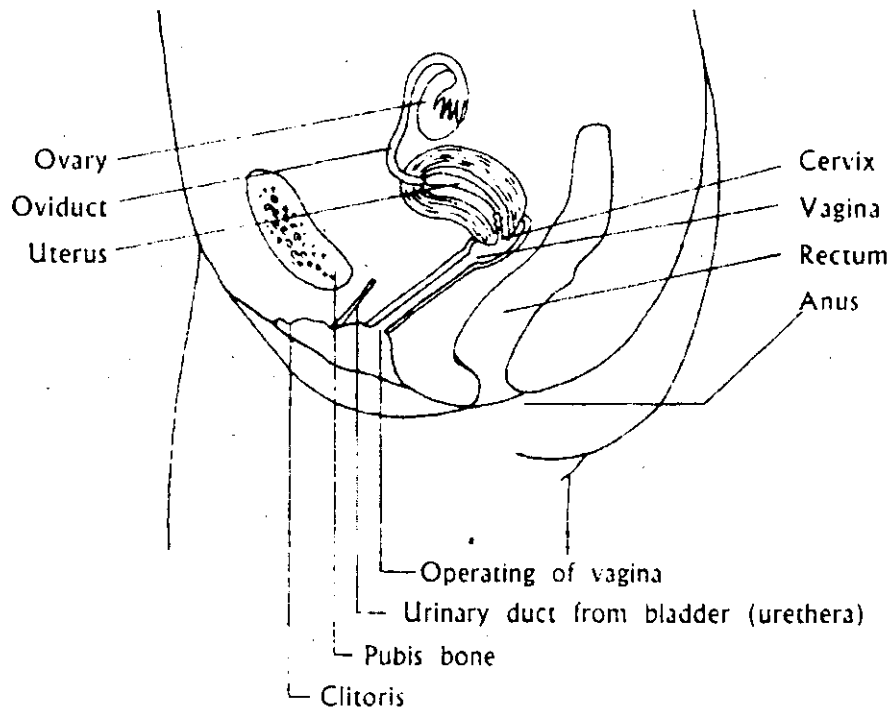
Side view



**Fig. 3.2 Human female reproductive system**

**The reproductive system of the human female**

Side view



## The reproductive cycle

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The formation and release of ovum or egg in females follows a cyclic pattern and this cycle is known as menstrual cycle. This cycle is regulated by hormones. In this section you will learn some of the terminology associated with the reproductive cycle.

- **What is ovulation?**

Ovulation is a process of releasing a mature egg from the ovary which then becomes available for fertilisation. It occurs approximately 14 days before the menstrual period begins, but is frequently irregular in young girls. The first ovulation may or may not coincide with the first menstrual period. A girl may begin to ovulate before, at the same time or some time after she first menstruates.

- **What is fertilisation?**

It is the fusion of an egg or ovum with a sperm in the fallopian tube. Sperms are capable of fertilisation until 7 days after their entry into the female system.

- **How does conception take place?**

Conception is the beginning of life when the egg is fertilised by a sperm during sexual intercourse.

Millions of sperms are produced in a man by the testes from his early teens onwards. On the other hand, a woman's ovary produces one egg per every menstrual cycle from the early teens to the late forties. After the egg is released, it travels along the fallopian tube towards the uterus. If sexual intercourse takes place around this time, fertilisation occurs in the fallopian tube when the sperm meets the egg. Life then begins in the form of a single cell called zygote. The zygote contains all the information needed to guide the development of a new human being. The sex of the baby is determined by the sperm and not by the ovum. The entire process of development takes place in a duration of nine months during which time the foetus is fully grown and is ready to be delivered.



## Changes occurring at adolescence and at puberty

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Adolescence is characterised by physical, psychological and physiological changes in boys and girls.

The emotional and psychological changes relate to :

- The body
- Emotions
- Attitudes and values
- Intellect
- Relationship with parents and peers
- Freedom and responsibility

The growing up days are full of doubts and anxieties, moments of joy and sorrow. Part of the emotional see-saw can be explained due to the hormonal changes that occur inside the body. Part of it is related to the psychological adjustment that the adolescent has to make in response to his/her sexual feelings, need to be accepted as an adult and feelings of inadequacy. The adolescent is often ridden with conflicts as he veers between a desire for assertiveness and a feeling of inadequacy (arising from his knowledge that he still does not have enough skills to cope with the adult world).

Adolescence is also marked by special needs, interests and problems that are quite different from those of childhood. They have a great desire for independence, yet their parents doubt their maturity. They feel that their parents do not understand them and hence they become rebellious against parental attitudes, values and judgement. Often this rebellion is expressed in inappropriate ways which leads to shame and guilt in the adolescent. Therefore it is important for the adolescent to learn communication skills so that he or she can express his/her feelings without taking recourse to verbal outbursts or tantrums. Similarly, parents must make the effort to understand their moody offspring without a judgmental or condescending attitude.

Further an adolescent has a different relationship with his/her parents from one that he/she had during childhood. As a child, the need for security was met by parents. The present needs of love, affection and friendship are sought outside the family amongst peers. Affiliation with peers is the most important factor now in the adolescent's life. Experimenting with new things in life (smoking, sex, drugs, alcohol) is a way of proving to oneself that one is really grown up. Many a time, this proves to be disastrous as it can go beyond one's control. The adolescent must be helped to find ways to channelise his/her energy in a positive direction.

The adolescent must accept the changes in his mood and emotions as natural. One should also understand that too much freedom, and too soon before being emotionally mature, will have an adverse effect on one's future, health and welfare.

And the physiological changes relate to :

### **Changes in boys :**

- Voice changes (becomes gruff and deep)
- Moustache and beard appears
- Development of hair under armpits, on the chest and over genital organ
- Muscular growth
- Pimples appear on the face
- Nocturnal emission
- Penis becomes erect when sexually excited
- Concerned about physical appearance
- Feelings towards opposite sex on the rise

### **Changes in girls :**

- Voice changes
- Development of pubic hair and hair in the armpits
- Development of breasts
- Softening of physical features (becomes more delicate)
- Hips become wider
- Menstruation begins
- Pimples appear on face
- Sudden growth spurt

## **Menstrual cycle and menstruation**

Menstruation is a major physiological change that begins in adolescent girls. It signifies coming of age, of becoming a woman. Though the adolescent girl is capable of giving birth to a child, it does not indicate that she has the mental maturity to be a parent. Moreover, although she is now technically prepared to give birth, she is still not developed physically to bear the rigours of child birth. Studies have proved time and again that early pregnancies and deliveries are the cause of many health problems for the women. It is important for the adolescent boy and girl to understand about menstruation and ovulation in order to stay clear of many myths and mysteries surrounding the subject.

### **● What is menstruation ?**

Menstruation is a cyclic process occurring in females in which the ovum is periodically released. In females, every month one of the ovaries releases an ovum which is picked up by the fallopian tube. The uterus builds up a wall to harbour the egg. If the egg is not fertilised by the sperm, it degenerates and is shed, and with it the lining of the uterus too is shed. This is released in the form of blood, and this process is referred to as menstruation.

- **Age, frequency and duration of Menstruation**

The age of onset of menstruation varies from 9 - 17 years. It is temporarily terminated during pregnancy, after a long illness or a mental trauma. Menstruation normally stops between 45 and 55 years. The length of menstrual cycle varies, average being 28 days. Intervals may be irregular in young girls. The duration of menstrual flow varies, average is 2 - 7 days. The amount of flow also varies.

- **Physical Pain During Menstruation**

Some girls experience severe cramps in the abdomen due to the uterine contractions. These cramps may last for anything between a few hours to a couple of days, and normally start before the menstruation is due. Some girls may also suffer from backache, pain in the limbs, headache, tenderness in the breasts or pimples on the face. These are the normal changes that a girl has to undergo. Medical consultation is required in case of acute pain or dysmenorrhoea (inconsistent menstruation).

- **Common misconceptions regarding menstruation in some cultures**

Bathing causes menstrual cramps - This is not true. On the contrary, it is extremely important to have a regular bath and maintain proper hygiene during this time.

Bathing and washing one's hair is harmful while menstruating - There is no connection between the two. Menstruation is an absolutely natural and normal phenomenon and hence one should continue with all the normal activities that one does during other times.

Menstruation is a dirty process, therefore the menstruating girl/woman must not attend religious ceremonies, perform household duties and stay isolated - This is again not true. There is nothing to be ashamed of in menstruation. It is not a curse on women or punishment handed out by God.

## **Importance of maintenance of hygiene**

During adolescence, one must take good care of one's personal hygiene so that it adds to one's urge to look and feel good and attractive to others. In boys, besides normal personal hygienic measures, during bath and after urination they must gently pull back the foreskin of the penis and wash it with water. One must wear clean undergarments and clothes. In girls, during menstruation they must have a daily bath and change sanitary napkins a few times a day. Girls must cleanse their vulva with water with each change of napkin. Since the body perspires more during this period, it becomes oily and result in the growth of pimples. It is helpful to wash one's face frequently to prevent the formation of pimples.



## Self-help questions

1. Name the reproductive organs of male and female, and state their functions

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2. Explain the process of reproduction. How long it takes for an ovum to be delivered as a baby ?

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3. Getting attracted to members of the opposite sex is very normal. Why parents are so apprehensive about pre-marital sex ?

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### Self-help questions (contd.)

4. Identify three changes in adolescent growth which are common amongst boys and girls.

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5. Teenagers differ with strict rules which parents try to impose on them. List three such rules which you feel are ridiculous.

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6. There are many myths associated with menstruating girls/women; describe the myths prevalent in your community.

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## **Unit Summary**

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This unit describes the anatomy of human reproductive system, both male and female, and the process of reproduction. Also the changes that take place in human body during transition from adolescence to adulthood are briefly described. Biological terms such as ovulation, fertilisation and menstruation are defined. Some of the misconceptions and facts relating to menstruation are listed.