

**Activity :****Observe the above picture.**

What do you see?

A boy and a girl.

How did you recognize and label them as a boy and a girl?

You would have observed the outward physical appearance to differentiate them.

Activity :

Both male and female have some common body systems. Can you name a few?

- 1
- 2
- 3
- 4

Which is the only system that differentiate a male from a female? Yes, you guessed right. The reproductive system is the only system in the body that distinguishes males from females.

The reproductive system consists of internal and external organs, in both, males and females. These organs function together for the purpose of procreating. The male and female reproductive systems are very different in nature. The male reproductive system has one main function i.e to produce and deposit sperms. Female reproductive system has two functions namely, to produce egg cells and to protect as well as nourish the foetus.

3 Male Reproductive System

The male reproductive system includes the external genitals i.e the penis and the scrotum and the internal organs that include the prostate gland, vas deferens, seminal vesicles, epididymis and testicles.

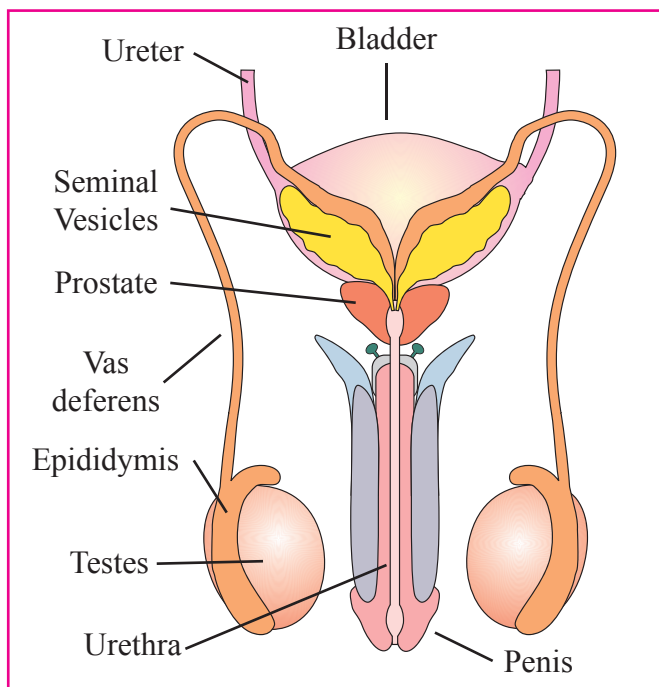


Fig 3M Male Reproductive System

Penis :

This organ is used to eliminate urine and to release seminal fluid with sperms. The penis as well as the urethra belong to both the urinary and reproductive systems in males. Head of the penis is called the glans which is covered with loose layer of skin called foreskin. Opening of the urethra, the tube that transports semen and urine is at the tip of the glans. The penis also has many sensitive nerve endings.

Scrotum :

The testes are carried in the external pouch called scrotum. Two scrotums are located below the penis. They are loose pouch like sacs on either side of penis which normally remain slightly cooler than the body temperature to facilitate sperm production.

Testicles / Testes :

Testes are the glands located in the scrotum. Production of sperm cells in the testes starts from adolescence. For the maturation of sperm cells testosterone, the male hormone is required. Testes contain two types of cells namely sperm cells and interstitial cells. Interstitial cells produce the hormone called Androgen which is the sex hormone.

Epididymis :

This is a long-coiled tube that helps in the transport and storage of sperm cells. The function of Epididymis is to initiate maturation of the sperms.

Vas Deferens :

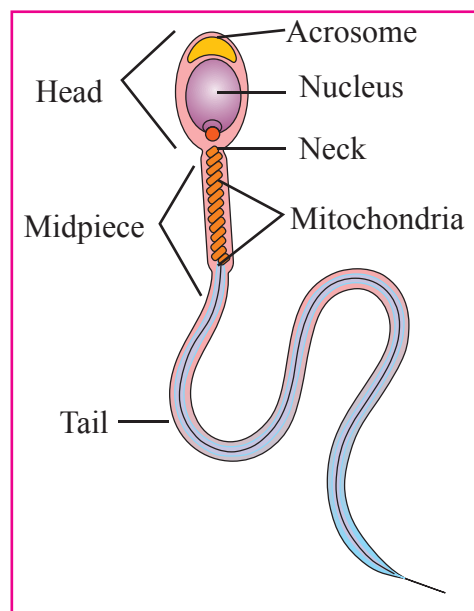
This is a tube with thick muscle walls where mature sperm cells are stored. These mature sperms are transported to the urethra in preparation of ejaculation.

Sperm cells :

The length of the sperm is 0.05 micron and is visible only under a high power microscope. The sperm is divided into three parts:

1. Acrosome - Head
2. Nucleus and Mitochondria - Middle part
3. Flagellum - Tail

The head contains enzymes that help the sperms penetrate the ovum. The middle part of the sperm consist of the nucleus and mitochondria and the tail of the sperm helps the sperm move forward. In a month 10-30 billions sperms are produced in the testicles which take 6- 72 hours to mature.



Prostate Gland :

Prostate gland is located between the bladder and the penis. It matures during adolescence. It produces a milky secretion with alkaline characteristics. It contains calcium phosphate and citric acid that nourish the sperms.

Seminal Vescicles :

Seminal vesicles are located above the prostate gland and behind the urinary tract. They are in the form of bags which transport sperms to the urethra.

Let's Try

- Name the organs of the male reproductive system.
- State the function of each.

32 Female Reproductive System

The female reproductive system has external organs namely as Labia Majora, Labia Minora, Clitoris and internal organs which consist of ovaries or gonads, fallopian tubes, uterus and vagina.

a) External organs of Female Reproductive System

• Labia Majora :

The labia majora encloses and protects other internal reproductive organs. This organ is covered with pubic hair at puberty.

• Labia Minora :

It lies just inside the Labia majora and surrounds the opening of vagina and urethra (opening for urinary excretion)

• Clitoris :

Meeting point of Labia majora and Labia minora is called clitoris which is sensitive to stimulation.

b) Internal Organs of Female Reproductive System :

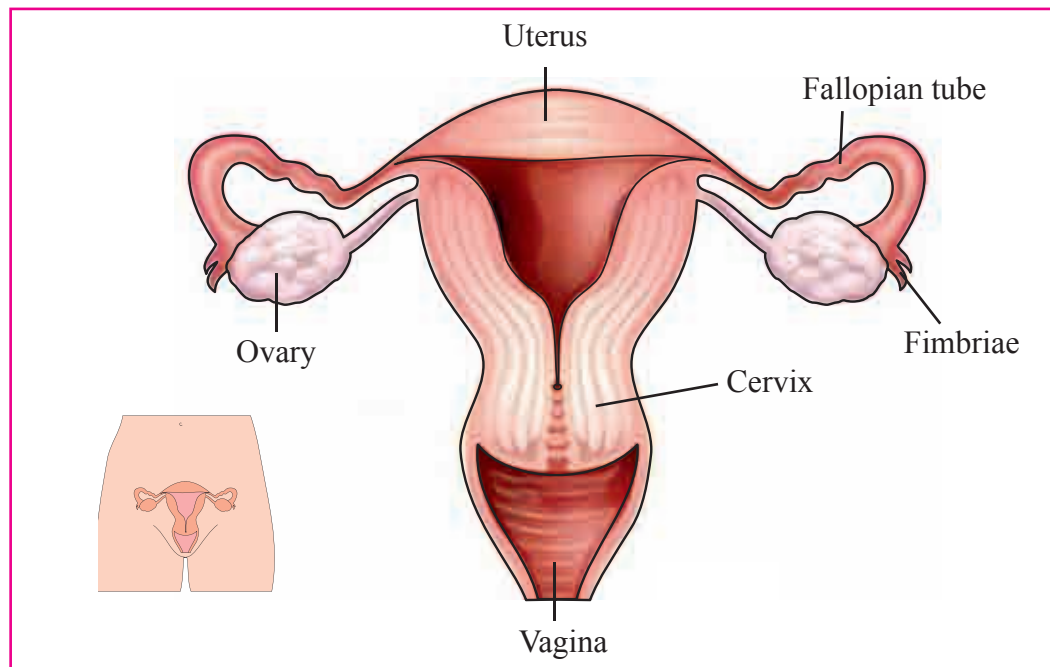


Fig3F Female Reproductive System

- **Uterus :**

Uterus is a pear-shaped muscular organ located inside the pelvis on top of the vagina. It is placed in between the bladder and rectum. It's width is 5cms, length is 7.5cms, thickness is 2 to 2.5cms and weighs around 50 to 60gm. The uterus is divided into 3 parts

Fundus : The dome shaped part above the fallopian tubes

Corpus : The middle and broad part which expands to hold the foetus

Cervix : It is the mouth of the uterus. The uterus narrows down towards the cervix and joins the vagina

The lining of the uterine cavity is called Endometrium. If conception does not take place this lining is shed off through the menstrual cycle.

- **Fallopian Tube :**

To the right and left of the uterus are two 10-12cm long tubes. These tubes narrow down at the entrance of the uterus and are wide at the outer end close to the ovaries. The outer ends of the fallopian tube have a number of finger like projections called fimbriae which stretch towards the ovaries and collect the egg cells. Fertilization occurs in the tube after which the fertilized egg travels down to the uterus for implantation.

- **Ovaries :**

Ovaries are oval shaped ovum producing organs that lie on each side of the uterus near the outer end of the fallopian tubes. Ovaries are 3cms in length, 2cms in width having 1cm thickness. Each ovary contains about two lakh ova in early life but its production decreases with age. Approximately only four hundred ova actually mature in both the ovaries during the life span. Every month a mature ova is released from alternate ovary into the fallopian tube.

Ovulation takes place when a mature egg is released from the ovary, pushed down in the fallopian tube, and is made available for fertilization.

Ovaries serve 2 functions :

- To produce egg cells (ova)
- To produce female hormones – Oestrogen and Progesterone

Importance of Oestrogen (Estrogen) and Progesterone

- 1) Oestrogen and Progesterone are female sex hormones that promote the development and maintenance of female characteristics.
- 2) They help to promote female secondary sex characteristics.
- 3) These hormones help to regulate the menstrual cycle and maintain the endometrium.
- 4) They help in increasing the calcium and phosphorus levels in blood.
- 5) They help in normalizing the blood sugar level.
- 6) They help in metabolism.
- 7) They provide protection against osteoporosis.
- 8) They function as natural anti-depressants.
- 9) They help in converting fats into energy.

Do you know?

A Hymen is of varying size, shape and thickness. The Hymen is flexible and may not remain intact due to vigorous physical activity like swimming, trekking, cycling and regular play.

• Vagina :

Vagina is a hollow tube between the bladder and the rectum and measures around 7-10 cms. Cervix opens in the vagina. At the lower end of the vagina there is a membranous fold called the “Hymen”. Vagina allows the menstrual flow and also serves as a birth canal. During intercourse, the penis enters the vagina. The penis releases the sperms which are deposited at the mouth of the uterus i.e. cervix. From the cervix the sperms then travel towards the fallopian tube where fertilization may take place.

Table : 3F Female Reproductive Organs and their Functions :

Organs	Functions
1. Ovaries	<ul style="list-style-type: none">• Ovaries produce Ova (oogenesis)• Discharge of mature ova (ovulation)• Secretion of hormones - Oestrogen and Progesterone
2. Fallopian Tubes	<ul style="list-style-type: none">• Collect released ovum• Tube where fertilization of ovum takes place• Transport ovum/egg to the uterus
3. Uterus	<ul style="list-style-type: none">• Zygote gets implanted in the uterus• It protects and nourishes the embryo after implantation
4. Vagina	<ul style="list-style-type: none">• Passage for menstrual flow• Sperms are deposited in the vagina during sexual intercourse• Serves as a birth canal

3 Menstrual Cycle

a) Menarche :

The period (age) when menstrual cycle starts is called menarche. The average age of menarche was 13-15 years. The onset of menarche is earlier now. The onset of menarche is associated with geographical region, linguistic groups, education, wealth status, caste and religious affiliations.

Menopause : The period (age) when the menstrual cycle stops is called menopause

b) Menstruation :

Menstruation refers to the periodic shedding of the uterine lining or the discharge of blood and mucosal tissues from the uterus. Menarche marks the onset of puberty in girls. Menstruation starts from menarche and ends with menopause. The average menstrual cycle takes around 28 days. Girls who have reached puberty start getting their periods once a month. This happens because the lining of the uterus has prepared itself for a possible pregnancy by becoming thicker and richer in blood vessels. If pregnancy does not occur this thickened lining is shed accompanied by bleeding. Menstrual bleeding lasts for three to eight days.

Activity :

A) Give one word for :

1. Periodic shedding of uterine lining —
2. Natural antidepressant —
3. 10 to 12 cms long tubes —
4. The part which expands to hold foetus —
5. Onset of menstrual cycle —

B) Find the Co-relation :

- | | | | | |
|-----------|---|---------------------|---------|-------------------|
| i) Testes | : | sperms | Ovary: | ? |
| ii) Male | : | ? | Female: | Estrogen |
| iii) ? | : | Maturation of sperm | Ovary: | Maturation of ova |
| iv) Male | : | ? | Female: | 2 ovaries |

Do you Know?

According to a National Family Health Survey (NFHS) 2015-16 about 57.6 percent of the **Indian** women use sanitary napkins and 8 percent women in the age group 15-24 years still rely on a cloth during **periods**

Overview of Menstrual Cycle :

- **Days 1-5** : menstrual bleeding takes place.
- **Days 6-14** : as the bleeding stops, the uterine lining (endometrium) begins to develop again for a possible pregnancy. It becomes thicker and gets enriched with blood and nutrients.
- **Days 14-16** : around day 14 an egg is released from one of the ovaries and begins its journey down the fallopian tube to the uterus. If the sperms are present in the fallopian tube, fertilization can occur. After fertilization, the egg will travel to the uterus and attempt to implant itself in the uterine wall.
- **Days 16-28** : if the egg does not get fertilized, levels of estrogen and progesterone drop causing the shedding of the uterine lining along with the unfertilized egg.

Do You Know?

The **Chaupadi** tradition is a practice in rural parts of Nepal where women are literally put in isolation during their period. The reason stems back to “being unclean.” Girls are not allowed to be in classrooms with other students while menstruating. Similarly there are many regions in India where the same holds true.

Do You Know?

- Certain environmental factors such as stress, poor diet, prolonged strenuous exercise can have an effect on the menstrual cycle
- Tampons is another option that can be used instead of sanitary napkins during menstrual cycle. It is made of cotton or rayon. It is inserted into the vagina which absorbs menstrual blood during the periods
- Menstrual cup can also be used during periods. It is made up of flexible medical grade silicone. The cup is folded and inserted in the vagina where it opens up and the blood is collected in it. The cup needs to be emptied, washed and reinserted depending upon the menstrual flow of the female using it.

***Tampons and menstrual cup should be used only after consulting a gynaecologist**

34 Hygiene and Care during Menstruation

May 28 is observed as Menstrual Hygiene Day to create awareness regarding the importance and management of Menstrual Hygiene.

Menstruation and menstrual practices are still surrounded by taboos and socio-cultural restrictions. This results in adolescent girls remaining ignorant of the scientific facts and hygienic health practices which sometimes results in adverse health outcomes. Hygiene related practices of women during menstruation are significant as lack of it may have negative impact on their health resulting in vulnerability to reproductive tract infections. Hence, knowledge about menstrual hygiene right from childhood may encourage safe practices and help in enhancing the health conditions of women.

Points to be kept in mind for Menstrual Hygiene :

- Take a bath at least once a day.
- Use clean undergarments and change them regularly.
- Select suitable sanitary pads - women with sensitive skin should avoid sanitary pads with plastic lining, as they can cause rashes, itchiness, and boils when rubbing against the skin.
- Changing pads and napkins often can help prevent infections.
- It is necessary to gently clean around the external private part and keep it dry.
- Never use talcum powder/ deodorants on or near the private parts.
- Wash the reusable sanitary cloth with soap and clean water and dry it in the sun.
- Always wrap the used sanitary napkin in a paper and then throw them in the dustbin to prevent the spread of infections.
- Wash hands with soap and water before and after changing the sanitary napkin/material.
- Never flush sanitary napkins/pads in the toilet as that will lead to clogged drains.

Reflection / Darpan

1. What are the physical changes that you have observed in yourself since puberty?

Tick the changes you see in yourself.

- a) Irritability
 - b) Emotional outburst
 - c) Wanting to be alone at times
 - d) Change in mood
 - e) Change in body odour
 - f) Pimples, acne, healthy skin, oily skin
 - g) Lethargy
 - h) Growth of hair on genital organs and under arms.
 - i) Facial hair
 - j) Change in voice
 - k) Broadening of shoulders
 - l) Broadening of hips
 - m) Development of breasts
2. Are there any family rituals/practices that are followed when the women in family is menstruating?

Table 3H Health Hazards of Incorrect Practices during Menstruation:

Incorrect Practice	Health Hazard
Unclean sanitary napkin/material	Risk of reproductive tract infection / urinary tract infection
Changing pad infrequently	May cause skin irritation, rashes, infection due to wetness
Insertion of unclean material into the vagina	Bacteria have easy access to cervix and uterine cavity
Unsafe disposal of used sanitary napkin / material	A person infected with hepatitis can transmit the infection to others through unsafe disposal of used sanitary napkin.
Lack of washing hands after changing sanitary napkin/material	Can spread infections

Do You Know?

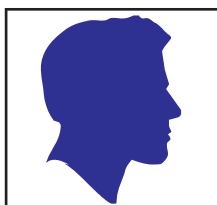
In the desert regions of Rajasthan (Jaisalmer), a rectangular shaped pocket was filled with fine sand to use as an absorbent. In the hilly areas of Uttarakhand, ash was used.

Arunachalam Muruganathan developed and patented a low cost machine to make disposable sanitary napkins. The sale of Muruganathan's pad making machine increased with many NGOs installing units across India.

2012 saw the government's flagship sanitation programme, **Nirmal Bharat Yatra** including menstruation management as a part of the sanitation agenda, through collaborations with *Water Supply & Sanitation Collaborative Council (WSSCC)*.

State governments in India started the policy of giving out packs of sanitary napkins to every adolescent girl in government schools.

Revise the points



Male Reproductive System

External organs

Penis
Scrotum
Testes

Internal Organs

Epididymis
Vas deference
Prostate gland
Seminal vesicles



Female Reproductive system

External organs

Labia Majora
Labia Minora
Clitoris

Internal Organs

Uterus
Fallopian Tube
Ovaries
vagina

Menstruation refers to periodic shedding of the uterine lining. Thickened lining is shed off when pregnancy does not occur. It begins at Menarche and ends at Menopause.



Exercises

Q.1 Select the most appropriate answers from the choice given below and fill in the blanks.

- is the female reproductive organ.
a) *testicles* b) *ovary*,
c) *prostate gland*
- Testes secrete hormone.
a) *estrogen* b) *progesterone*
c) *testosterone*
- The average menstrual cycle is of days
a) *♀* b) *♂*
c) *♂*
- Onset of menstrual cycle at the time of puberty is called
a) *menopas e* b) *menarche*
c) *metabolism*
- Discharge of ova is called as
a) *fertilization* b) *ovlu ation*
c) *conception*

- The zygote gets implanted in the
a) *tu eru* b) *fallopian the*
c) *ovary*
- The lining of the uterus is called
a) *menstral* b) *endometrim*
c) *labia*
- is a pear shape muscular organ located on top of the vagina.
a) *Clitoris* b) *Uteru*
c) *Ovaries*
- The length of the fallopian tube is
a) *0 2 m* b) *46 m*
c) *46 m.*
- Membraneous fold at the lower end of the vagina is called
a) *cervix* b) *hymen*
c) *vas deferens*

b. Match the following

A	B
1. Ovary	a. External organ
2. Testes	b. 28da ys
3. Uterus	c. Produces ova
4. Menstrual cycle	d. Implantation
5. Labia majora	e. Sperms
	f. 40 days

Q.3 Write whether the following statements are right or wrong and correct the wrong ones and rewrite the statements.

- Menopause is a sign of pregnancy.
- Vagina serves as a birth canal.
- Ovulation occurs during menstruation.

Q.4 List the Following

- Female reproductive organs
- Male reproductive organs

Q. 5 Write short notes

1. Fallopian tubes
2. Testicles
3. Health hazards due to incorrect practices during menstruation
4. Menstrual hygiene practices

Q. 6. Explain the terms

1. Menstruation
2. Ovulation
3. Menopause
4. Menarche

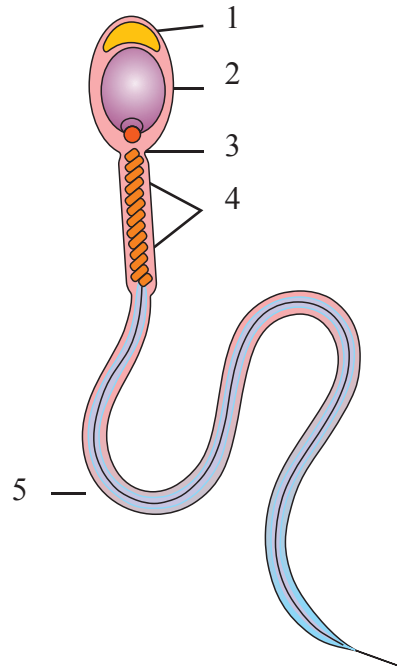
Q. 7. By considering the first correlation complete the second correlation

1. Female sex hormone : Estrogen : : Male sex hormone : _____
2. Testes : Sperm : : Ovary : _____

Q. 8. Identify the odd word

Ovaries, Uterus, Testes, Fallopian tubes, Vagina

Q. 9. Identify and label the diagram.



Q. 10(a) Draw the female reproductive system.

(b) Write functions of the following

- Ovaries
- Uterus

Q. 11(a) Name the organs of male reproductive system.

(b) Write in brief about Testes and Sperm Cells.

Project / Self Study

- Make a poster and slogan on menstrual hygiene.
- Display charts on myths and the facts of menstruation.
- Prepare a quiz on the topic of hygiene during menstruation and play the game in your classroom.

