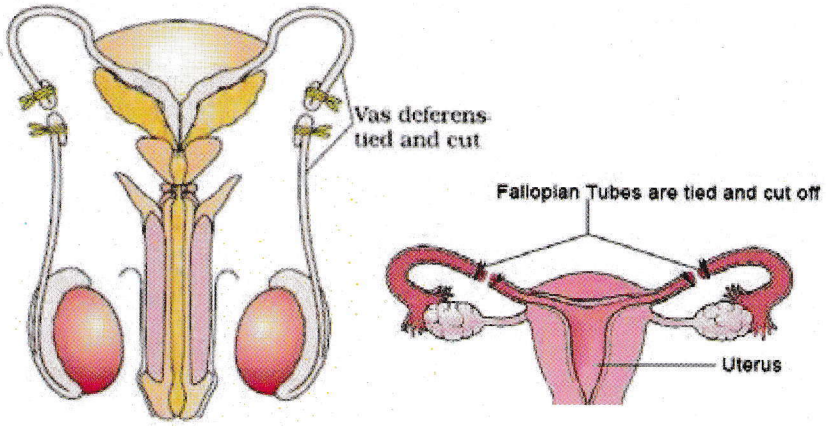
Module 4

BIOLOGY

Stage II

Demonstrating Knowledge in Reproduction, Sexuality and HIV/AIDS Issues in Real Life



Institute of Adult Education
Alternative Secondary Education Pathway

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STAGE II

Demonstrating Knowlege in Reproduction, Sexuality and HIV/AIDS Issues in Real Life

Institute of Adult Education
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Institute of Adult Education
Alternative Secondary Education Pathway

P. O. Box 20679,
Dar es Salaam,
Bibi Titi Mohamed Street,
Tanzania

Tel: +255 22 2150838
Email: info@iae.ac.tz
Website: www.iae.ac.tz

Acknowledgement

This module is a product of the Institute of Adult Education (IAE) produced in 2021 for Alternative Education Pathway (AEP), and reflecting the current syllabi of 2010 secondary education in Tanzania, as recommended by Tanzania Institute of Education.

This module is indeed an outcome of concerted efforts of various experts from within and outside the IAE. The IAE profoundly acknowledges the valuable inputs of all stakeholders for devoting their time and resources to ensure effective preparation of this module.

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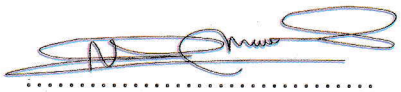
Baraka S. Kionywaki	Institute of Adult Education (Coordinator)
Amina M. Abubakar	Institute of Adult Education (Assistant Coordinator)
Consolata Blas	Pugu Secondary School (Reviewer)
Anatory Wilson	Kilakala Secondary School (Reviewer)
Jackson Salma	Kivule Secondary School (Reviewer)
Eric E. Samba	Institute of Adult Education (Editor)
Ms. Janeth Mzava	Institute of Adult Education (Secretary)



Dr. Michael W. Ng'umbi
Director
Institute of Adult Education

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About this module

This module has been produced by the Institute of Adult Education. All Modules produced by the Institute of Adult Education are structured in the same way, as outlined below.

How this module is structured

The Module Overview

The module overview gives you a general introduction to the module. Information contained in the module overview will help you determine:

- If the module is suitable for you,
- What you already know,
- What you can expect from the module, and
- How much time you will need to invest to complete the module.

The overview also provides guidance on:

- Study skills,
- Where to get help,
- Module assignments and assessments,
- Activity icons, and
- Units.

We strongly recommend that you read the overview carefully before starting your study.

The module content

The module is broken down into units. Each unit comprises:

- An introduction to the unit content,
- Unit outcomes,
- Core content of the unit with a variety of learning activities,
- A unit reflection,

- Assignments and/or assessments, as applicable, and
- Answers to Assignment and/or assessment, as applicable.

Resources

For those interested in learning more on this subject, we provide you with a list of additional resources at the end of this module; the resources are books, articles or web sites.

Your comments

After completing this module, we would appreciate it if you would take a few moments to give us your feedback on any aspect of this module. Your feedback can include comments on:

- Module content and structure,
- Module reading materials and resources,
- Module assignments,
- Module assessments, and
- Module support (assigned tutors, technical help, etc.).

Your constructive feedback will help us to improve and enhance this module.

Module overview

Welcome to this module

Dear learner, welcome to module four which deals with issues related to reproduction, sexuality and HIV/AIDS. Hence, this module consists of three units. Unit one is about reproduction in plants while unit two deals with reproduction in mammals and last unit is about issues related to HIV/AIDS.

I hope you will enjoy studying this module.

General Competence

After completing this module, you should be able to demonstrate knowledge, concepts, principles and skills of reproduction, sexuality and HIV/AIDS issues in real life situation.

Study skills

As an adult learner' your approach to learning will be different from the approach you used during your school days. Now you will choose what you want to study, you will have professional and/or personal motivation for doing so and you will most likely be fitting your study activities around other professional or domestic **responsibilities.**

Essentially you will be taking control of your learning environment. As a consequence, you will need to consider performance issues related to time management, goal setting, stress management, etc. Perhaps you will also need to acquaint yourself in areas such as essay planning, coping with exams and using the web as a learning resource.

Your most significant considerations will be *time* and *space* i.e. the time you dedicate to your learning and the environment in which you engage in that learning.

We recommend that you take time now—before starting your self-study—to familiarize yourself with these issues. There are a number of excellent resources on the web. A few suggested links are:

- http://www.how-to-study.com/

  The "How to study" website is dedicated to study skills resources. You will find links to study preparation (a list of nine essentials for a good study place), taking notes, strategies for reading text books, using reference sources, test anxiety.

- http://www.ucc.vt.edu/stdysk/stdyhlp.html

  This is the website of the Virginia Tech, Division of Student Affairs. You will find links to time scheduling (including a "where does time go?" link), a study skill checklist, basic concentration techniques, control of the study environment, note taking, how to read essays for analysis, memory skills ("remembering").

- http://www.howtostudy.org/resources.php

  Another "How to study" website with useful links to time management, efficient reading, questioning/listening/observing skills, getting the most out of doing ("hands-on" learning), memory building, tips for staying motivated, developing a learning plan.

The above links are our suggestions to start you on your way. At the time of writing the web links were active. If you want to look for more go to www.google.com and type "self-study basics", "self-study tips", "self-study skills" or similar.

Need help?

Dear learner, in the course of your study, you may need help in various issues such as the location and how to get support from resource centres, clarification of various issues pertaining to your study materials (modules) and so on. If this happens, you are advised to ask for the help from your centre coordinator or facilitator. You can also visit the website of the Institute of Adult Education which is www.iae.ac.tz. And, you can call no +255 22 2150838 and ask for help.

Module assessment

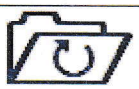
After each unit, you will be required to attempt one unit assignment. These are not meant for submission rather for reflection on what you have learned in the whole module. You will also be given tests and assignments for submission as you will be guided by your module facilitator. You will also sit for mock examinations to accomplish your continuous assessment.

Getting around this module

Margin icons

While working through module you will notice the frequent use of margin icons. These icons serve to "signpost" a particular piece of text, a new task or change in activity. They have been included to help you to find your way around this module.

A complete icon set is shown below. We suggest that you familiarize yourself with the icons and their meaning before starting your study.

 Activity	 Assessment	 Unit assignment	 Case study
 Discussion	 Group activity	 Help	 Note it!
 Outcomes	 Reading	 Reflection	 Study skills
 Summary	 Terminology	 Time	 Tip
 Computer-Based Learning	 Audio	 Video	 Feedback
Objectives	 Basic Competence	 Answers to Assessments	

Unit 1

Analysing Reproduction in Plants

Introduction

Dear learner, welcome to unit one of this module. The unit is about reproduction in Plants. You will recall that reproduction is one of the characteristics of all living organisms. ***This is the ability of living organisms of the same species to produce new organisms of their own kind***. It is through this process that the generations of one species can be maintained. In this unit you will learn the concept and types of reproduction, merit and demerits of sexual and asexual reproduction, stages of meiosis and its significance. Pollination and fertilization will also be discussed.

Learning Outcomes

Upon completion of this Unit, you should be able to:

- Explain the concept of reproduction, types, merits and demerits.
- Describe the process of meiosis and its significance.
- Describe the structure of the flower.
- Explain the types and agents of pollination; and
- Explain the process of fertilization in flowering plants.

Concept of Reproduction

You might have sown seeds of maize or beans and got several seeds from one seed. You might also have one hen and after sometimes you have several chicks from that hen. How do you term that process?

Dear learner, the ability of an organism to produce new generation of individuals of the same species is known as reproduction. Plants and animals have the ability to reproduce. However, the process of reproduction in plants and animals differ.

Importance of reproduction

If all animals and plants fail to reproduce what would happen? When the parent organisms die, that would threaten the continuation of generation. The significances of reproduction therefore are:

a) To transmit materials for inheritance (genetic material) from one generation to the next.

b) To increase the total number of individuals of the same species.

c) To bring about genetic variation among organisms of the same species e.g. the differences observed in human such as height, skin, and colour, type of hair, nose, ear lobe and tongue rolling.

d) To ensure that species survive over a long period of time even though individual members of the specie die.

Types of Reproduction

Look around your environment. Study the animals and plants you can see. Put the organisms into the following groups:

(a) Those laying eggs.

(b) Those who give birth.

(c) Those reproducing through sowing seeds.

(d) Those which you can just plant a piece of stem, tuber or roots to get new plant.

From the activity you have done you can therefore come up with two ways by which organisms can reproduce. These are:

i) Sexual reproduction.

ii) Asexual reproduction.

Sexual Reproduction

This is the type of reproduction which involves the union of male and female gametes. This type of reproduction produces offspring that are genetically different from their parents.

Asexual Reproduction

This is the type of reproduction which involves a single parent and therefore, does not involve production of gametes. The offspring produced asexually are identical to their parents.

Discuss with your friend, different ways you can use to get new plants from cassava, banana, sweet potatoes, sugar cane, irish potatoes, hibiscus, pineapple.

From the activity you have done you have realized that the plants mentioned reproduce asexually. However different parts of the plants are used to produce new plants. Detailed information about types of asexual reproduction is given in the next section.

Types of asexual reproduction

(a) Binary fission

This is the process whereby an organism divides into two equal parts (Figure 1.1) and each part grows to attain the original size of the parent cell and hence become a separate and independent organism. Organisms which undergo this kind of reproduction are; Amoeba, Paramecium, Euglena, Trypanosoma and Bacteria.

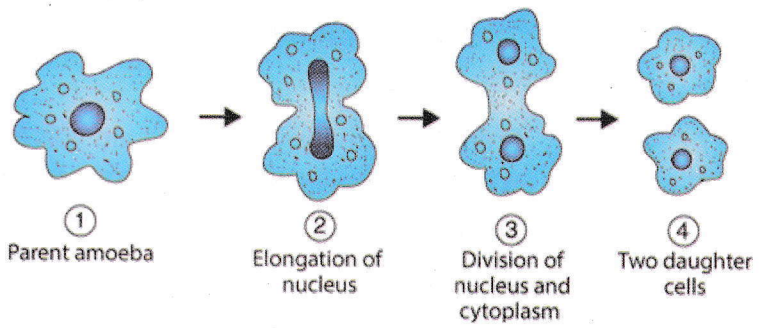


Figure 1.1: Binary fission in Amoeba

(b) Fragmentation

This is the breaking up of the animal's body into two or more parts in which there are no special cells associated with reproduction. The process occurs in organisms like Tapeworms and Planaria.

(c) Spore formation

This is the type of reproduction where organisms reproduce by forming spores. Organisms which reproduce under this method include, bread moulds and mushroom.

Under favourable conditions, each of these spores germinates and grows into a new organism.

(d) Budding

In this type of asexual reproduction, a new organism arises as an outgrowth (bud) on the older organism. The bud finally separates from the parent's body and grows to attain the size of the parent.

An example of organisms which undergo this type of reproduction is yeast shown in Figure 1.2.

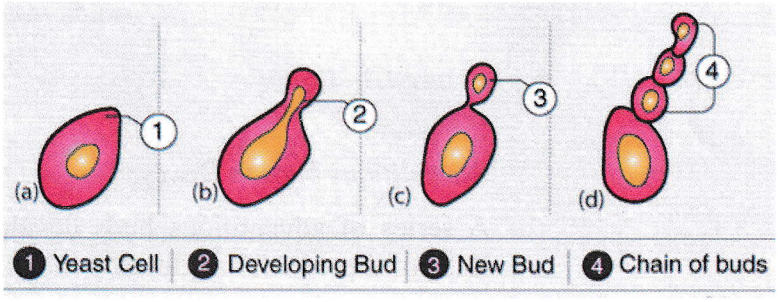


Figure 1.2: Budding in yeast cell

(d) Vegetative Propagation

This is a phenomenon of some plant parts which when detached from the main plant and provided favourable condition they grow into a full plant body. Vegetative propagation is of two types; Natural and artificial propagation.

i. Natural Propagation

In this type of propagation new plant may arise from the part of the plant such as stem, leaves and shoots with no influence of human interventions. Natural propagation may involve the following;

Bulbs

These are condensed underground shoots with fleshy leaves.

Their leaves store food e.g. onions. Hated buds will grow to make a new bulb. Terminal buds of onions can produce flowers and seeds which can develop into new bulb as shown in Figure 1.3.

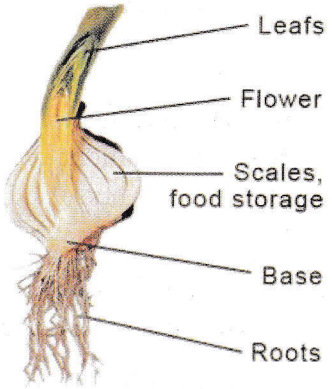


Figure 1.3: Onion

Adventitious buds in leaves

A series of adventitious buds develop on the leaf margin. Each of these buds can develop into a new plant.

Example; Bryophyllum leaves shown in Figure 1.4.

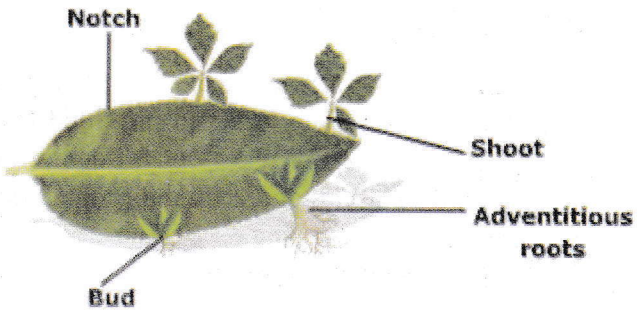


Figure 1.4: Bryophyllum leaf

Bulbils

These are small aerial buds produced in the axils of leaves or branches. The bulbils fall to the ground and grow into new plants, example are bulbils of garlic, sisal and pineapple.

Tubers

A tuber is an underground storage organ formed from a stem or a root.

Stem tubers

These are modified underground stem formed at the tips of lateral branches. Each branch can grow to form swollen tubers. The tubers are capable to give rise to new plants. Examples are Irish potato (Figure 1.5), ginger and sugar cane.

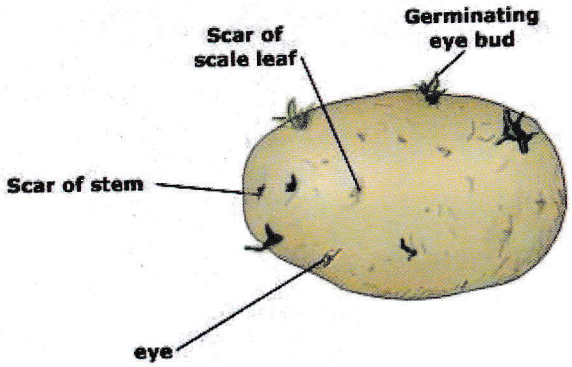


Figure 1.5: Irish potato tuber

Root tubers

These are swollen underground roots. They are modified for storage. Cassava, carrots and sweet potatoes are examples of root tubers. Root tubers in general are not reproductive structures, because most of them do not bear any bud. However, root tubers of sweet potato develop buds which grow into new shoots as shown in Figure 1.6.

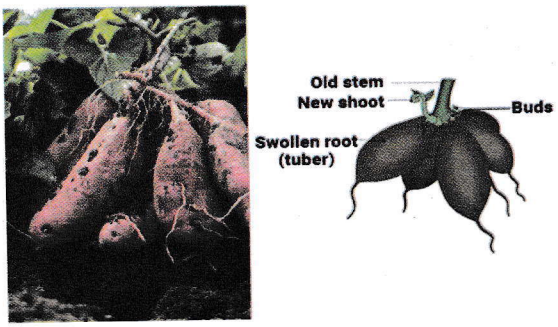
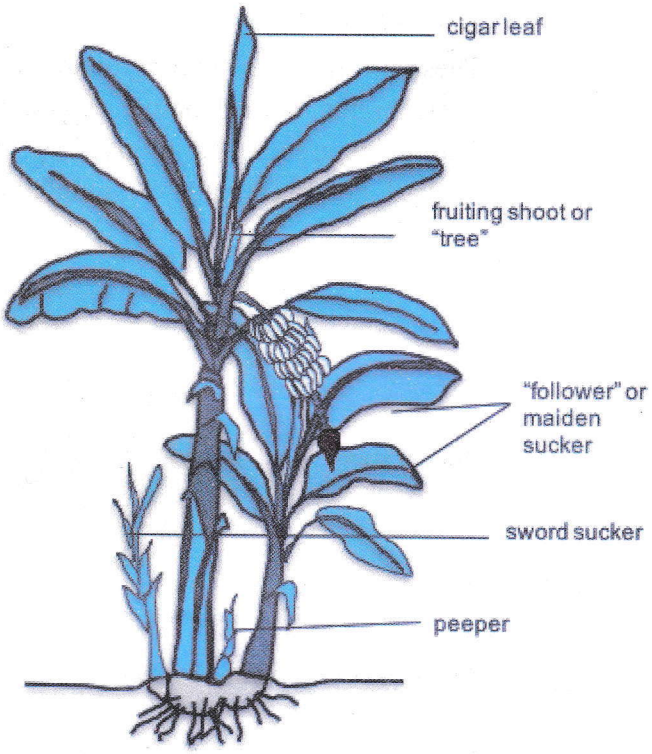
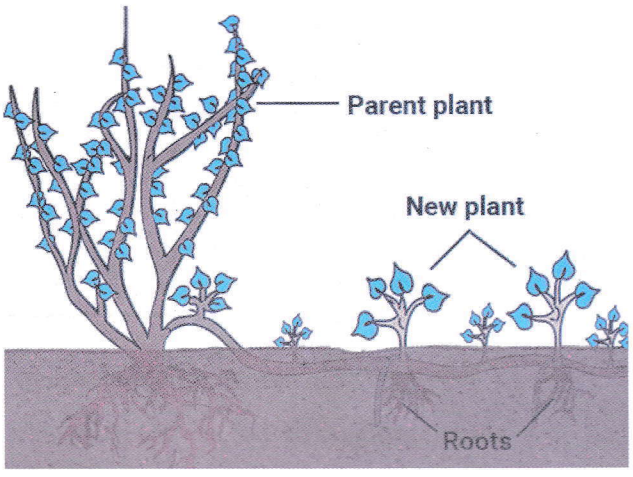


Figure 1.6: Sweet potato runner


cigar leaf
fruiting shoot or "tree"
"follower" or maiden sucker
sword sucker
peeper


Parent plant
New plant
Roots

After sometime, the portion of the branch under the soil develops roots. If this branch is cut off from the main plant it develops into an independent plant. Examples of plants that can be propagated by layering are bougainvillea, jasmine and rose.

Propagation by grafting

You might have seen orange seedlings or plants which result from grafting. These oranges normally grow faster and produce fruits within a short period of time compared to those grown from seed.

Visit a seedling nursery and find out the type of plant on which the oranges are grafted.

Grafting involves the insertion of a part of a plant (scion) to a rooted plant (stock). If grafting is successful, the two plants unite and the grafted piece sprouts. Grafting is carried by plants of the same or related species and is common in orange and lemon (citrus) plants. For grafting to be successful, the xylem and phloem of both plants must be in direct contact to ensure easy movement of materials (water, minerals and food) between the two plants as shown in Figure 1.10.

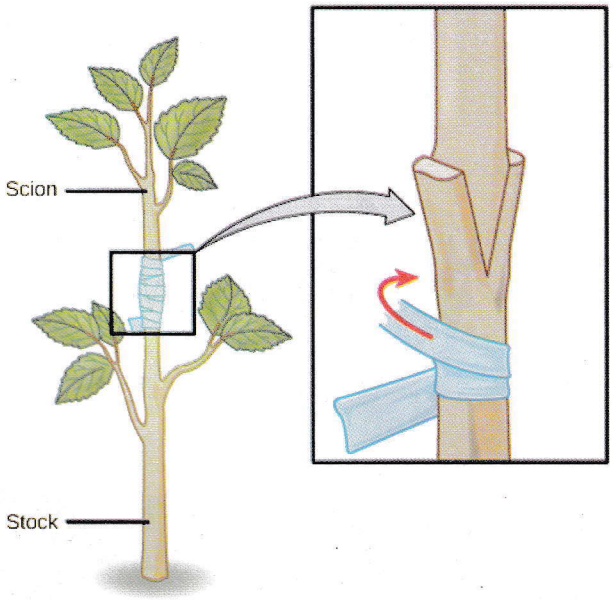


Figure 1.10: Bud grafting

Advantages of asexual reproduction

After going through asexual reproduction can you think of advantages of asexual reproduction as compared to sexual reproduction? Your thinking might be closer to the following.

i. Only one parent is required.

ii. Genetically identical off springs are produced. They are also identical to their parents. Successful combination of genes is present.

iii. Enable rapid dispersal and spread of organisms e.g. natural vegetative propagation.

iv. Results into production of a large number of new organisms within a short period of time e.g. bacteria and bread mould.

v. Rapid growth since no resting period is needed.

vi. Producing offspring is less risky because no mating, pollination and fertilization required.

vii. Food reserve of parent is available for growth of new organisms. The food is limited in seeds and eggs.

viii. The new plants produced mature faster than those produced by sexual means.

Disadvantages of Asexual Reproduction

Although asexual reproductions have advantages but it also has disadvantages, can you think of some of them. Your thinking might be close to the following;

i) There is no genetic variation among the offspring, no diversification and they may carry undesired qualities.

ii) There is no improvement of quality as all offspring are identical to parents.

iii) Many spores fail to find a suitable place for germination and therefore energy and materials used to manufacture them are wasted as they end up dying.

iv) If an organism spreads in one area, it may result in overcrowding and exhaustion of nutrients.

v) Any disease in the parent organisms will be automatically passed to the offspring.

vi) Reduction in vigour and strength in succeeding generations.

vii) Organisms are unable to adapt to changing environment because of lack of variation.

Advantages of Sexual Reproduction

i) Brings about genetic variation resulting from contribution of genetic materials from the parents.

ii) Offspring are being better adapted for the changing environment.

iii) Due to the combination factor, the organisms may develop resistance to diseases which reduce the chance of wiping the whole population.

Disadvantages of Sexual Reproduction

i) There is a dependence on external agents such as wind, insects and water for pollination. This makes pollination more dependent on chance.

ii) Two individuals are required to produce the offspring.

iii) It may produce individuals with undesired qualities.

Dear learner, discuss with your friends about the asexual and sexual reproduction then write down the differences between sexual and asexual reproduction. Compare your ideas with the one tabulated in Table 1.1

Table 1.1: The Difference between Asexual Reproduction and Sexual Reproduction

Asexual Rreproduction	Sexual Reproduction
i) Only one parent is involved.	i) Usually, two parents are involved.
ii) No gametes produced.	ii) Gametes are produced.
iii) Depends on mitosis.	iii) Depends on meiosis.
iv) Offspring are identical to parents.	iv) Offspring are not identical to parents.
v) Rapid increase in number of offspring.	v) Less increase in number of offspring.
vi) Commonly occurs in plants and simple microorganisms.	vi) Occurs in almost all plants and animal species.

Terminologies to be familiar with

i. *Haploid:* having a single set of unpaired chromosomes in each cell.
ii. *Diploid:* having two sets of paired chromosomes in each cell.
iii. *Mitosis:* cell division which produces two genetically identical cells.

Meiosis (Reduction Division)

Dear learner, *Meiosis* is the reduction division which produces four haploid reproductive cells. As you learnt earlier that a nucleus contains chromosomes, so in this section you will learn how the organisms can maintain the same number of chromosomes (thread-like structures).

Dear learner, for organisms to maintain the same number of chromosomes their diploid (2n) number of chromosomes has to divide into half haploid number (n). During fertilization the sperm which is haploid fuses with the ovum which is also haploid to form a zygote that is diploid. In this way the number of chromosomes in each specie is maintained constantly. Otherwise, if there was no meiosis, during fertilization diploid male gametes (2n) could fuse with another diploid female gamete (2n) to form a zygote which is 4n. This could be another species of organisms.

Meiosis does not occur in one step but there are several stages through which the sex cells undergo before it forms gametes. Both meiosis I and II go through the stages of prophase, metaphase, anaphase and telophase. Before commencement of meiosis I, the cell enters a stage called Interphase.

Interphase

This is a phase prior to the beginning of meiosis. During this phase, the chromosomes appear to be tin chromatin threads within the nucleus of the cell. Replication of cell organelles such as mitochondria and centrioles occur. See the Figure 1.11.

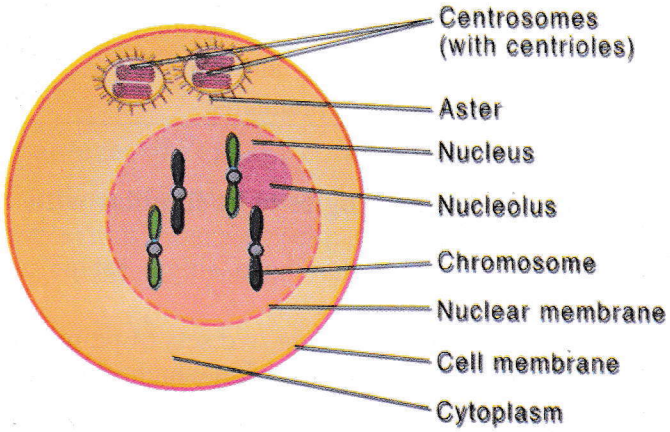


Figure 1.11: Interphase

Meiosis I (Reduction stage)

This is the first division which involves duplication of the chromosomes and separation of the homologous chromosomes.

Homologous pairs consist of one chromosome from the haploid set derived from one parent and similar chromosome from the other parental haploid set. Both chromosomes in a pair contain the same genes.

Stages of Meiosis I

Prophase I

At this stage chromosomes become shorter, thicker and visible. Nuclear membrane disintegrate and nucleolus

disappear. The pair of centrioles moves towards opposite poles while homologous chromosomes pair up to form bivalent. Adjacent chromatids in the bivalent cross over to the point known as **chiasmata**. This is a point where exchange of genetic materials occurs. At each chiasma the homologous chromatids exchange hereditary materials a process known as **crossing over** as shown in Figure 1.12.

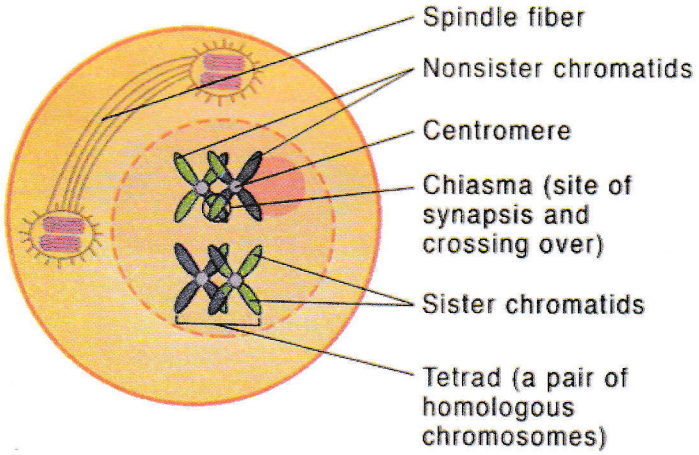


Figure 1.12: Prophase I

Metaphase I

Bivalents becomes arranged around the equator of the spindle while attached by their centromere as shown in Figure 1.13.

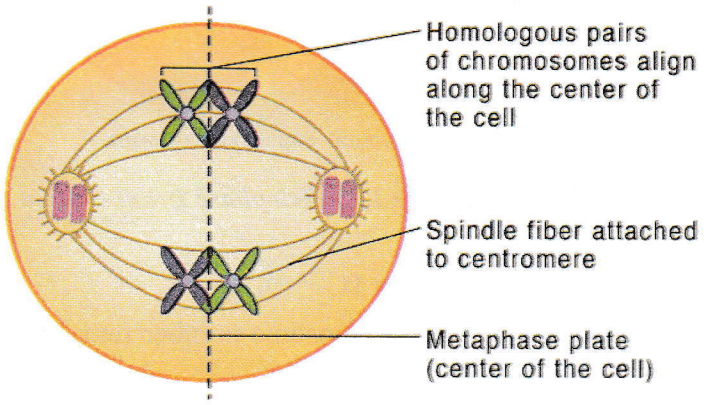


Figure 1.13: Metaphase 1

Anaphase 1

Spindle fibres contract and pull homologous chromosome towards opposite poles. Chromosomes separate into two haploid sets. One set at each end of the spindle as shown in Figure 1.14.

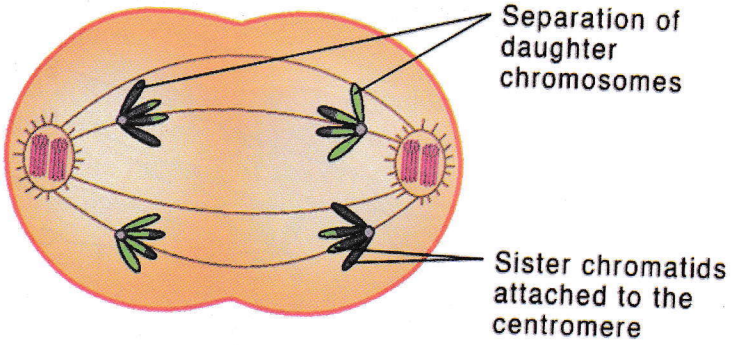


Figure 1.14: Anaphase 1

Telophase 1

Homologous chromosomes arrive at opposite poles (end of meiosis 1). Chromosomes halved but still composed of two chromatids. (Beginning of meiosis II) as shown in Figure 1.15.

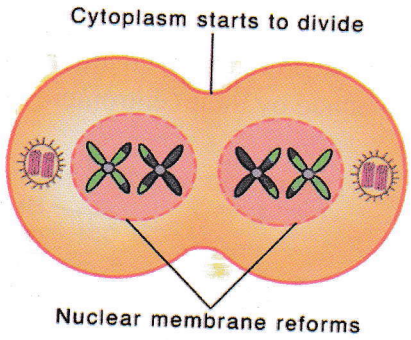


Figure 1.15: Telophase 1

Meiosis II

The chromosome number remains the same; the cells divide and result in four cells. Meiosis II is similar to mitosis except that there is no duplication of Deoxyribonucleic Acid (DNA).

Prophase II

The nucleoli and nuclear envelopes disappear and the chromatids shorten and thicken. Centrioles if present, move to opposite poles of the cells, followed by formation of spindle fibres as shown in Figure 1.16.

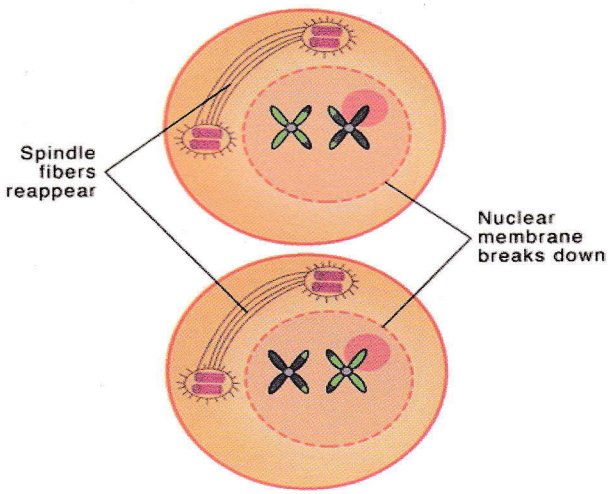


Figure 1.16: Prophase II

Metaphase II

Chromosomes align separately along the equator. Spindle fibres form and attach to each centromere, extending from one pole to the other as shown in Figure 1.17.

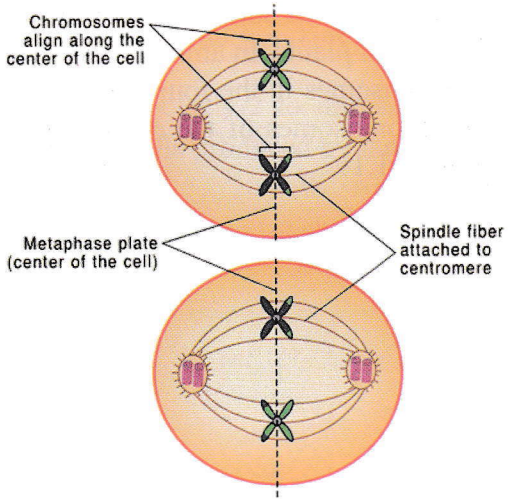


Figure 1.17: Metaphase II

Anaphase II

The centromeres divide and spindle fibres pull the chromatids to opposite poles, centromeres first. Refer Figure 1.18.

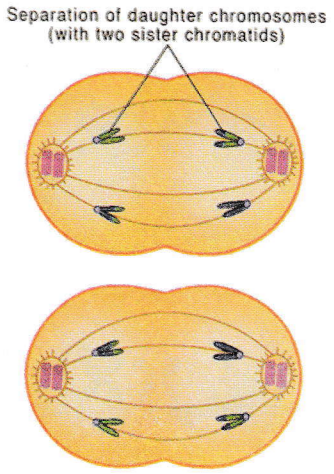


Figure 1.18: Anaphase II

Telophase II

Chromosomes uncoil, become longer and thinner. Nuclear envelopes and nucleoli reform around each set of chromosomes/nucleus.

New cell walls form between the four sets of chromosomes in case of plants. In animal cells, cleavage occurs. Each set of chromosomes in the four new cells, has exactly half number of chromosomes of the original parent cell (haploid). Refer Figure 1.19.

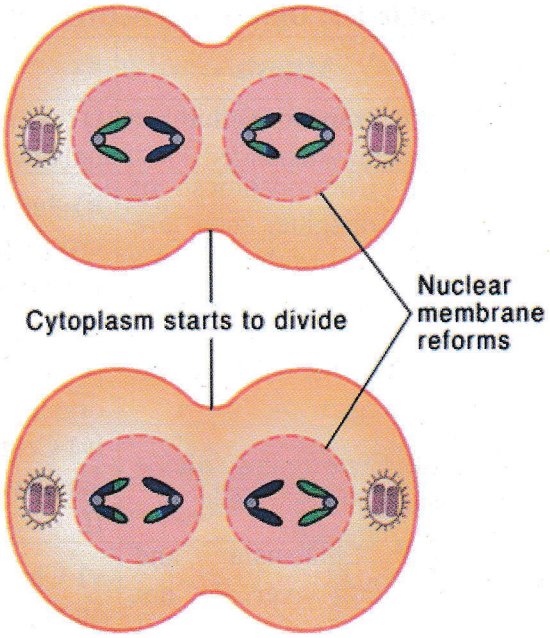


Figure 1.19: Anaphase II

Significance of Meiosis

i) Causes formation of gametes/sex cells for sexual reproduction.

ii) Maintains diploid number (2n) of chromosome in successful generations.

iii) Brings about genetic variation in the offspring produced by fusion of the gametes. Variation is due to crossing over in meiosis 1 and independent assortment of chromosomes.

Compare meiosis 2 to mitosis, what are the differences of daughter cells produced by the two processes?

Dear learner, Table 1.2 shows the differences between Mitosis and Meiosis.

Table 1.2: Differences between Meiosis and Mitosis

Mitosis	Meiosis
i) Chromosome number remain unchanged.	i) Chromosome number is halved.
ii) Chromosomes of the daughter cell are identical to those of the parent cell.	ii) Independent assortment and crossing over produce new chromosome combinations.
iii) Occurs in many cells' types throughout the organism.	iii) Occurs only in gamete producing mature reproductive organ.
iv) Centromeres divide at anaphase.	iv) Centromeres do not divide at anaphase I but divide at anaphase II.
v) Chiasmata and crossing over do not occur.	v) Chiasmata and crossing over occurs.
vi) Causes no variation in the daughter cells.	vi) Variation occurs due to combination of genes.
vii) Two daughter cells are produced.	vii) Four daughter cells are produced.
viii) Mitosis involves only one phase.	viii) Meiosis involves two phases called Meiosis I and II.

Reproduction in Flowering Plants

Dear learner, flowering plants uses flowers as their reproductive part. A flower is constructed in a way to enable sexual reproduction to occur in plants. A flower can be defined as a modified part of the plant stem in which sexual reproduction occurs.

Parts of the Flower

Dear learner, make a thoroughly observation on the flower plant especially hibiscus flower, then identify the parts of the

flower you observe. Can you mention that parts? How does each part look like? Anyway, if you look at the flower externally you may find that, there are four main parts of flower such as stamen, pistil/carpel, petal and sepal. Please observe Figure 1.20 carefully and thereafter join the discussions that follows.

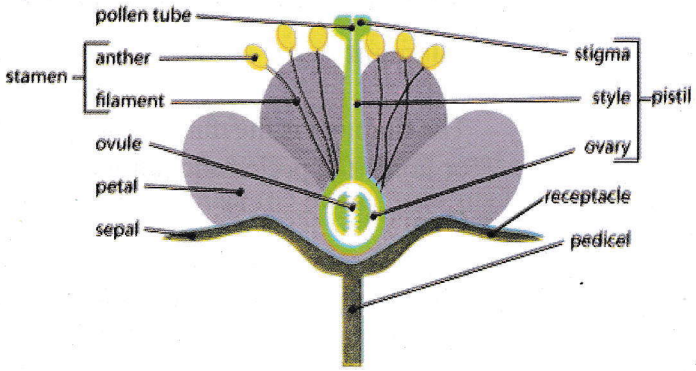


Figure 1.20: Structure of flowers

i. Stamen

The stamen is the male reproductive part of the flower. Each stamen contains two parts namely; anther and filament. The filament is the long cylindrical tendril part of the stamen while the anther is a sac that found at the top of the filament. The function of the stamen is to produce pollen and make it available for pollinators to allow reproduction.

ii. Pistil/Carpel

The pistil which is also sometimes called the carpel is the female reproductive part of the flower. It is made up of stigma, style and ovary.

iii. Petal

Petals are the part of the flower often large and brightly coloured to attract insect. The petals together form what is known as the corolla of the plant.

iv. Sepal

The sepals are the external parts of a flower that are typically green and leaf-like, as they are modified leaves. They are forming at the uppermost end of a stem. Their function is to protect the flower and prevent it from drying out.

Now let us discuss the other parts of the flower

- **Filament**

The filament is the thin tubular part of the stamen that supports or holds the pollen sac (anther).

- **Ovary**

The ovary produces and contains unfertilized seed and ovules. It founds centrally inside the flower at the base of the carpel. Once fertilized, it is the ovary that develops into the fruit of the plant.

- **Ovule**

Ovules are contained within the ovary, which develop into seeds of the fruits when fertilized

- **Anther**

The anther is part of the flower that found at the top of the filament of a stamen. It is part where the pollen is produced. Each anther contains many grains of pollen that each have the male reproductive cells present in them.

- **Style**

The style is the elongated part of a carpel that joins the ovary to the stigma. It is the tube through which pollen is delivered to the ovary.

- **Stigma**

The stigma is the part that found at the top of the carpel and its function is to capture pollen. It is often sticky in texture or contains tiny hair- like structures to help pollen adhere to its surface.

- **Receptacle**

  A receptacle is found at the top of a stalk underneath the main portion of the flower. it is often enlarged to support the weight of the flower or fruits when it develops. Its main function is to both connect the stalk to the flower and to support the flower.

- **Pedicel**

  A pedicel is the secondary stalk from which flowers grow off the main stem.

- **Calyx**

  The calyx is the group of sepals, leaf like structures that surround and protect the bud as it forms into a flower.

Dear learner, flowers can be described in terms of bisexual flowers (hermaphrodite) and unisexual flowers. **Bisexual flower** is a flower which has both female and male organs. Examples are hibiscus flower, sunflower and tomato. **Unisexual flower** is a flower which has either male or female organs. Examples are maize and some pawpaw flowers. A flower with only male organs is called staminate flower while a flower with only female organ is called pistillate.

Note:

- If both male and female flowers are found on the same plants, it is said to be monoecious plants.
- If the male or female flowers are born on separate plants, it is said to be dioecious plants.

Make a visit to a garden and pick some flowers, observe them:

1. How many parts of the flowers can be identified?
2. What is the colour of the outermost part of the flower?
3. What is the structure of the inner most part of the flower?
4. What is the function of the inner most part of the flower?
5. Choose one flower e.g. hibiscus from many flowers you have collected. Draw it and show its different parts. Give functions of each part.
6. From the structure you have drawn above, can you suggest male part and female part of a flower?

Pollination

In the previous activities you have discovered that some flowers are coloured while others are less coloured. Compare hibiscuss flower and a maize flower. What did you discover on their male and female parts?

If you work on them, you will come out with fact that male gamete must be moved to female part.

Dear learner, this process of moving mature pollen grain (male gamete) to mature stigma (female part) is known as pollination.

Types of Pollination

a) Self-pollination

This is the transfer of pollen grains from a mature anther to a mature stigma of the same flower or a flower on the same plant e.g. beans, peas, tomato, cotton. It involves just one plant.

b) Cross pollination

Have you seen flowers which are male alone or female alone? I am sure you know pawpaw plant. Is self-pollination possible within a pawpaw or maize plant?

Cross pollination is the transfer of pollen from a mature anther of one plant to a mature stigma of another plant. It involves two plants.

Carry out the following activity:

Walkout around different flower gardens. Observe those flowers. Are they coloured? How their shapes look like? Observe their stigma, are they hairy, sticky or long hanging. How about smell does all flowers produce good smell? Do grasses produce the same smell? Compare your findings with what discussed here below;

Pollinating Agents

There are two main agents of pollination; namely wind and insects.

i. Wind Pollination

This is the common agent in most monocotyledonous plants. eg. Maize

Characteristics of Wind Pollinated Flowers

i. Flower is usually small and develops before foliage.
ii. Have dull coloured petals that do not attract insects.
iii. Have large anthers which produce large quantity of pollen grains.
iv. Pollen grains are small, dry and light for easy transportation by wind.
v. Their stigmas are large, feathery and sticky to trap pollen grains.
vi. Have a long hairy style so as to expose the stigma to wind.

ii. Insects Pollination

Bees and adult butterfly are the main pollinating agents in most of the dicotyledonous plants.

Characteristics of Entomophilous Flowers (insects' pollinated flowers)

i. Flowers are usually large and brightly coloured. This is important in that; they give attraction to the pollinators.
ii. Have nectar - food for pollination.
iii. Flowers have scent – a substance which gives attraction through smelling
iv. Have large, sticky and spiny pollen grains. The sticky and spiny. Pollen grains enable grain to adhere on the insect's body.
v. Anthers are small in size and produce few but large pollen grains.
vi. The stigma and anther are held firmly to ensure that it is not broken when insects land on.

Advantages of cross pollination

Increases the chances of genetic variation, because of out breeding.

Disadvantages of cross pollination

i) The process relies on external agents only e.g. wind, insects

ii) Much pollen is lost by wind.

Fertilization in flowering plants

Dear learner, why do you think it is important to transfer pollen grains to a mature sugary and expanded stigma of a certain flower? What happens to the pollen grain once on the stigma?

Once a pollen grain has landed on the stigma of a compatible species, it absorbs the sugary fluid secreted by the stigma and increases in volume. The exine wall of the pollen bursts open and the intine grows out into a long narrow tube called pollen tube as shown in Figure 1.21. This process is known as germination

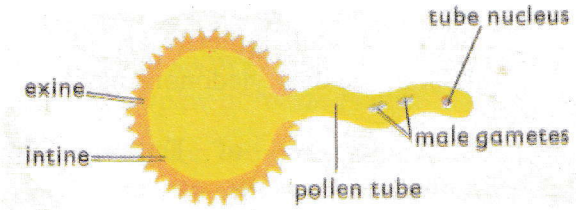


Figure 1.21: Germinating pollen grain

The pollen tube penetrates the stigma and grows down through the tissues of the style. During the growth of the pollen tube, the haploid (n) generative nucleus of the pollen grain is divided by mitosis to produce two male nuclei that represent the male gametes. The pollen tube is responsible for conveying these gametes to the embryo sac of the ovary which contain the female gamete.

The pollen tube enters the ovule through the micropyle. The tube nucleus degenerates and tips of the tube burst, releasing the male gametes near the embryo sac, which they enter.

One male nucleus fuse with the nucleus of the female gamete (egg cell) forming a zygote and the other one fuse with the two haploid nuclei forming the primary endosperm nucleus. The fusion of the nucleus of the male gamete and that of the female gamete to form a zygote is known as fertilization. Figure 1.22 shows how fertilization takes place in flowering plant.

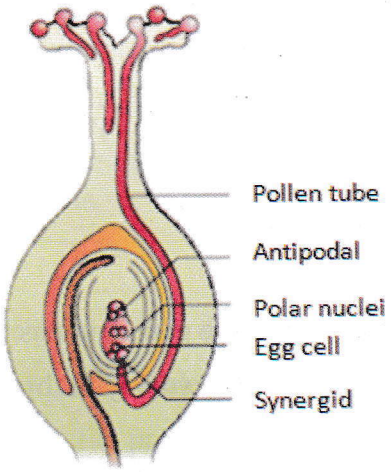


Figure 1.22: Fertilization in flowering plant

Flowering plants exhibit double fertilization, a unique feature to flowering plants. The first fertilization involves the fusion of the male and female nuclei of their gametes to form a zygote and the second fertilization involves the fusion of the second male gamete with the definitive or diploid nucleus to form a triploid primary endosperm nucleus, hence double fertilization.

Events after Fertilization

i. The zygote grows by mitotic divisions to become a multicellular embryo which consists of the radicle (first root) plumule (first shoot) and either one or two seed leaves called cotyledons.

ii. The triploid primary endosperm nucleus grows to form the endosperm. (In some seeds, this remains as the food store as in cereals like maize, rice and wheat).

iii. Some cotyledons may store food e.g. legumes such as beans, soya.

iv. Nucleus break down to supply nutrients for growth in early stages of growth.

v. Integument layers fuse to form a thin tough protective layer called the seed coat or testa.

vi. The micropyle remains as a small pore in the testa for gaseous exchange and entry of water when the seed germinates.

vii. The ovule becomes the seed and ovary turn into fruit.

viii. The remaining flower parts; calyx, corolla, stamens style and stigma, wither and die. Calyx may help to hold the fruit in position.

Unit Reflection

1. How the knowledge gained in this unit can help the society?
2. What benefits did you gain by learning reproduction in flowering plants?
3. Which part of the unit did you find to be most interesting?

Unit Assignment

1. Differentiate between asexual and sexual reproduction (use four points).
2. Explain the term artificial vegetative propagation and write down three importance of this type of reproduction.
3. Explain any 3 (three) significances of meiosis.
4. (a) Collect hibiscus flower or any flower resembling it. Cut it longitudinally with a sharp razor blade observe one half. Draw and label it.

   (b) With reasons suggest type of pollination of the flower in 4(a) above.
5. Describe the processes of fertilization in maize plant.

Unit 2

Describing Reproduction Process in Mammals

Introduction

Dear learner, welcome to unit two of this module. If you remember in unit one, you learnt how plants reproduce. I hope you enjoyed and you can mention the types of reproduction that takes place in plants. What are the merits and demerits of each type? Can you mention the reproductive parts of the flower? In this unit you will learn all about reproduction in mammals.

Learning Outcomes

Upon completion of this Unit, you should be able to: -

- Describe the male and female reproductive system;
- Outline the process of gamete formation and fertilization in mammals;
- Explain the process of pregnancy development, complication, child birth and maternal and child care;
- Outline factors which hinder fertilization;
- Explain the concept of artificial insemination and its importance; and
- Explain the types, causes and effects of the reproductive system, disorders and possible control measure.

Reproduction in Human

You might have seen a bull and cow, male and female dogs mating. What type of reproduction is it? What does it involve? What will be the result? From such an observation you may come out with answers which matches with those discussed below:

Sexual reproduction in mammals involves the fusion of gametes. The fusion of two gametes is called fertilization, and the resulting cell which grows into the new individual is

called a zygote. Each gamete contributes half of the genetic material present in the zygote, hence in the new individual. Half of the genetic material is provided by the mother and half by the father.

Mammalian Reproductive System

The male reproduction system

Dear learner, human beings are either males or females. You are also a human being probably male or female. Can you list down the features or organs which make somebody to be male? What is the role of each feature or organ you have mentioned? Below is some information about a male reproductive system.

A male reproductive system shown in Figure 2.1 has two major functions:

i. Production of sperms

ii. Production of Hormone

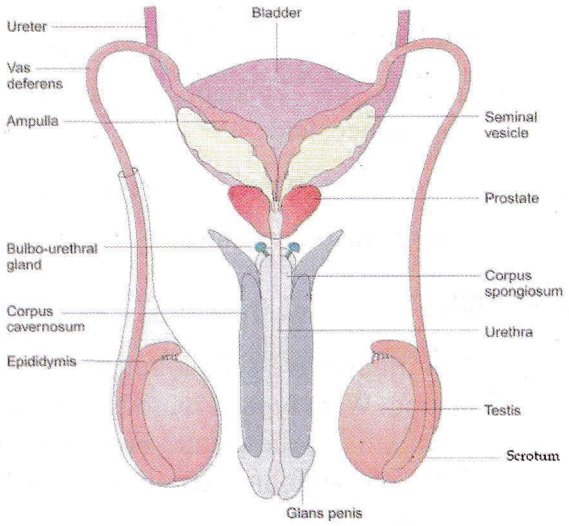


Figure 2.1: Male reproductive organ

Make a thoroughly observation on the diagrams above; what did you observe? Identify the parts and give the functions of each part.

Scrotal sac: (Singular Scrotum)
This is the skin sac situated outside the abdomen cavity in which testes are found. This is important because sperm cell develops well at a temperature (2 – 3) ^{0}C lower than the main body temperature.

Testes (Singular: Testis)

These are two organs suspended from the body cavity.

Functions

i. Is the site where the male gametes or sperm, are made.

ii. Produces the male sex hormone called testosterone.

Seminiferous tubules

These are long tubules that compose testes. The walls of tubules produce the sperms.

Vas efferentia (singular vas efferens)

These collect sperm inside the testis and transfer them to the epididymis.

Epididymis

This is a much-coiled tube, pressed against the testis.

Functions

i. It is for temporary storage of sperms.

ii. Chemicals produced by the lining of the tube are essential for maturation of the sperms.

Vas deferens: Is a tube which carries sperm from the epididymis to the urethra.

Urethra: Is a tube which carries sperm from the vas deferens as well as urine from the bladder to the outside.

Penis: Is an organ for copulation and passage of semen.

Seminal vesicles: Are two structures found below the urinary bladder. They secrete fluid containing sugar fructose and other nutrients that aid sperm functioning.

Prostate gland: This gland produces an alkaline fluid that helps to neutralize the acidity of the vagina making the sperm more active.

Cowper's gland (Bulbo-urethral gland): This gland secretes mucus and alkaline fluid into the urethra. The alkaline fluid neutralizes the acidity of any remaining urine.

The Female Reproductive System

The responsibility of the female mammal for successful reproduction is considerably greater than that of the male because in the female uterus, the zygote grows into a full being at the expense of the mother. The mother then gives birth to the baby lactating it after birth and other parental care activities.

Observe Figure 2.2 Careful and identify parts of the organ. Write the function of each part identified. Redraw the diagram of the female reproductive organ.

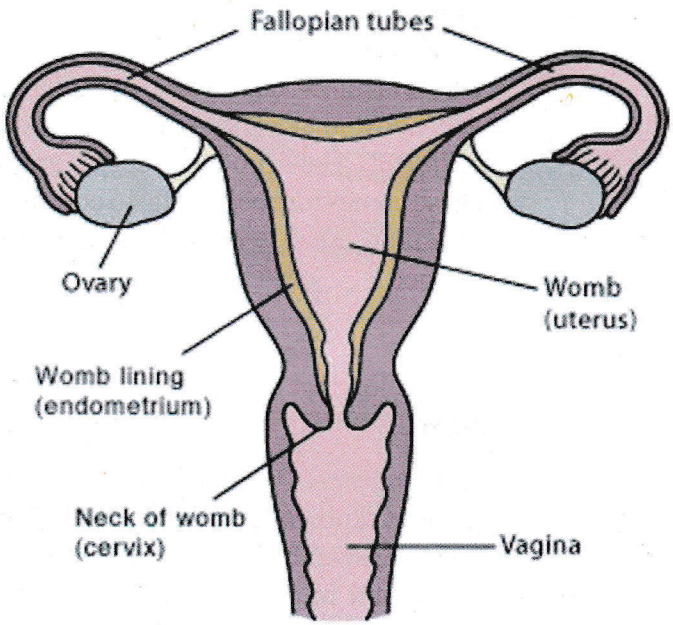


Figure 2.2: Female reproductive organ

Ovaries: Are structures situated near each kidney. Ovaries produce eggs or ova and secrete the female sex hormones.

Fallopian tube or oviduct: Is a tube with a funnel shaped opening. The tube carries eggs from the ovary to the uterus. It is in this tube that ova or eggs are shed and fertilized.

Uterus: Is a structure that lies behind the bladder. If fertilization has taken place, the embryo implants in the wall of the uterus and grows until birth.

Cervix: Is the narrow entrance to the uterus from the vagina. It is normally blocked by a plug of mucus and a ring of muscle that prevents the developing foetus from coming out before the right time for delivery. It also allows the baby to pass through during birth.

Vagina: Is a posterior part of the female reproductive duct connecting the uterus with the exterior.

Functions

i. It is the region where sperms are deposited.

ii. It stretches during childbirth to allow passage of the baby.

Gamete Formation and Fertilization

You remember that human cells have 46 chromosomes. You also know that in sexual reproduction, two individuals are involved. Male produces sperm and female produces ovum. These come from cells with 46 chromosomes. Can you suggest how they break so that half of number of chromosomes is attained?

The following explanation will tell you how gametes are formed.

Gametogenesis is the production of gametes. These are male gametes known as sperms and female gametes know as eggs. Production of sperms is called *spermatogenesis* and production of eggs is called *oogenesis*. Both processes take place in the gonads, namely the testes in males and the ovaries in females. In the gonads there are primordial germ cells which divide repeatedly by mitosis to produce daughter cells. These daughter cells grow and divide by meiosis to produce gametes. Which each contains half number of chromosomes (23) in human.

Spermatogenesis

The production of sperms is called spermatogenesis. This process takes place in seminiferous tubule of testis. The seminiferous tubule has a wall with an outer layer of germinal epithelial cells and layers of cells produced by repeated cell divisions of this layer.

The first divisions of the germinal epithelial cells give rise to many spermatogonia which increase in size to form primary spermatocytes. These undergo the first and second meiotic division to form spermatids, the spermatids differentiate into sperms.

Activity

Observe Figure 2.3 carefully. How does it look like? Does it move? Where is found in the human body? Identify the functions of the parts located in head neck region, middle piece and the tail.

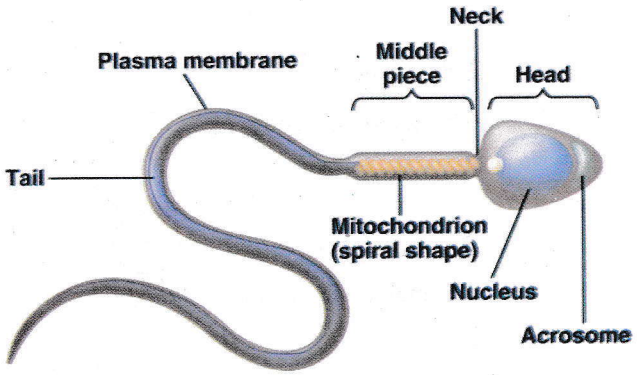


Figure 2.3: Structure of a mature human sperm

The head: The head consists of an acrosome and nucleus.

Acrosome: Produces enzymes which help the penetration of the sperm into the egg (ovum) by digesting the ovum membrane.

Nucleus: Controls the activities of the sperm cell.

Neck: Possess centrioles to assist in division of the zygote.

Middle piece: Consists of many mitochondria: Mitochondria is a site for respiration. It gives sperm energy for moving in the female reproductive tract.

Tail: Helps to propel the sperm towards the oviduct and to orient the sperm ready to enter the ovum.

Oogenesis

You might have heard that females begin to form eggs before birth. The process of its formation is called Oogenesis, this involve a primordial germ cell of the ovary which divide repeatedly by mitosis to produce oogonia which are diploid cells. Oogonia divide mitotically to produce diploid primary oocytes. After meiotic division each primary oocyte yields one ovum and three polar bodies which are haploid as shown in Figure 2.4.

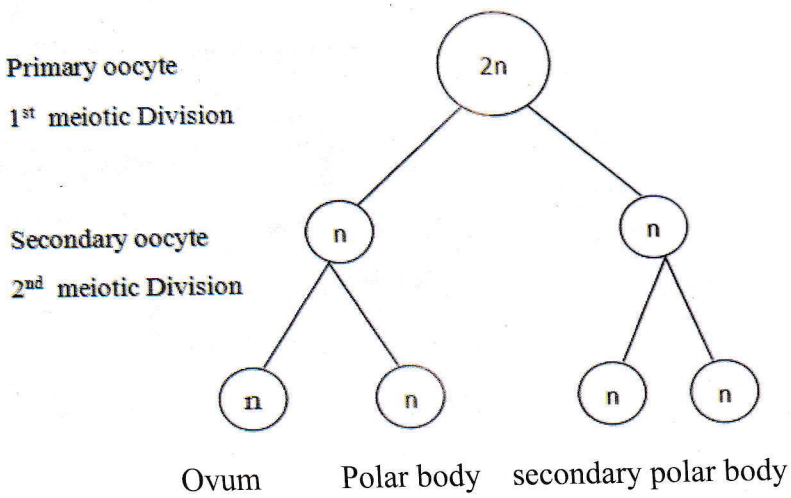


Figure 2.4: Development of Ovum (Oogenesis)

Menstrual cycle

You learnt about different hormones and their functions in the previous modules. Do you remember the roles of oestrogen and progesterone? Are there any other reproductive hormones which take part in females' body? Do you remember that if their concentration is altered, they behave differently? In females, alternations of hormones especially those concerned with reproduction set up a cycle known as menstrual cycle. The following information will give you more details about menstrual cycle. In the females, hormones are not constantly secreted but are secreted in cycles which last for about 28 days.

Events occurring during menstrual cycle

- The anterior pituitary gland secretes follicle stimulating hormones (FSH) into blood. Blood transports it to the ovaries.
- The FSH stimulate the development of several follicles; only one of which will have a complete development.
- Cells of developing follicles start to produce the female sex hormone called oestrogen. Oestrogen has two targets:
  - Uterus: stimulates the repair and development of the lining of the uterus ready to receive the embryo (implantation) if pregnancy occurs. The embryo normally implants in the endometrium layer of the uterus.

- Anterior pituitary: Oestrogen inhibits the pituitary gland not to secrete any FSH. This ensures that, only one egg (ovum) is produced at a time.

- At the midpoint of the cycle, oestrogen levels have built up to a high level which triggers the secretion of luteinizing hormone (LH).
- The target of LH is the ovary where it stimulates ovulation. Ovulation refers to the release of secondary oocyte (mistaken as ovum) from the Graafian follicle. Normally only one oocyte is released each month by one of the ovaries so that ovulation alternates between the pair of ovaries.
- The remaining part of the Graafian follicle is stimulated by LH so that it develops into Corpus luteum (yellow body).
- The corpus luteum continues to secrete oestrogen, as well as another hormone called progesterone.
- Progesterone stimulates the uterus to maintain its thickening and stimulates grandular activity. The release of progesterone is associated with a rise in body temperature of the female just after ovulation.
- If fertilization does not take place, the corpus luteum degenerates and the level of oestrogen and progesterone hormones drops. This causes the constriction of blood vessels within the thickened portion of the uterus. Endometrium breaks down, causing menstruation. Its epithelial cells, mucus and a small amounts blood are discharged out through the vagina. This period is called *menstruation* and the discharge is called the menstrual flow. Menstruation usually occurs after 28 days and it lasts for 3 – 5 days. However, the duration of menstruation varies among the females, see Fig. 2.5.

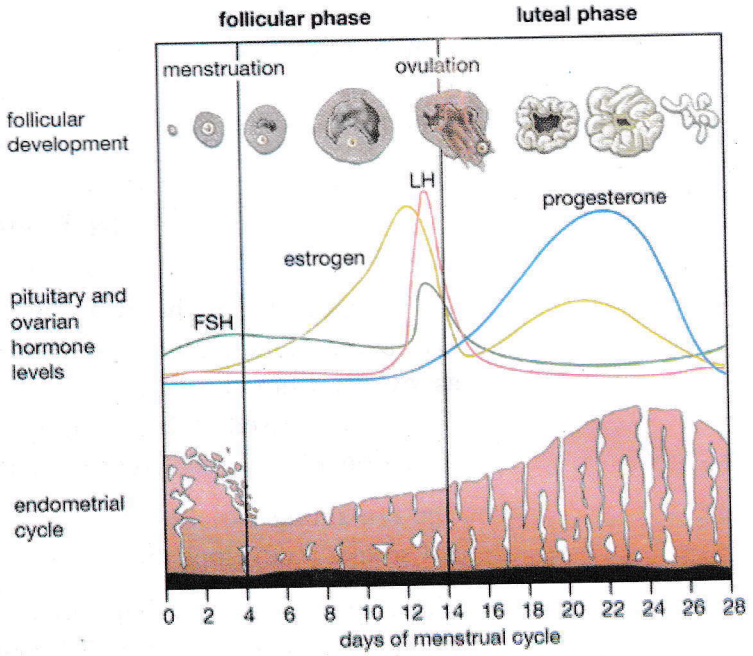


Figure 2.5: Menstrual cycle in human being

You might have come across with the following terms like sexual intercourse, copulation, erectile penis and gestation. Explain these terms and give their roles in human reproduction.

Copulation

In the previous section you learnt how gametes (male) are deposited in the female. Do you know what happens to the gametes? In this section we are going to learn how they contribute in forming a new organism.

For fertilization to occur, sperms must be deposited in the vagina within a few days before or a day or two after ovulation. Sperms transfer is accomplished by copulation. Sexual excitation dilates the arterioles supplying blood to the penis. Blood accumulates in three cylindrical spongy sinuses that run lengthwise through the penis. The resulting pressure causes the penis to enlarge and erect and thus able to penetrate the vagina. Movement of the penis back and forth within

the vagina causes sexual tension to increase to the point of ejaculation. Contraction of the walls of each Vas deferens propels the sperms along. A fluid is added to the sperm by the seminal vesicles, Cowper's glands, and the prostate gland. These fluids provide a source of energy (fructose) and perhaps in other ways provide an optimum chemical environment for the sperms.

The mixture of sperm and accessory glands' fluids is called *semen*. It passes through the urethra and is expelled into the vagina.

Fertilization and human development

In unit 1 you learnt how fertilization take place in flowering plants. In human, fertilization occurs when the fusion of sperm and egg nuclei take place in the oviduct. Sperm travel from the vagina through uterus to the oviduct. Sperms travel this distance by using energy from Adenosine Triphosphate (ATP) which bring about beating movement of the tail. Only one sperm fertilizes the egg.

One sperm fuse with receptors on the surface of the secondary oocyte, triggering a series of chemical changes in the outer oocyte membrane that prevents any other sperms from entering the oocyte. The entry of the sperm initiates meiosis II in the oocyte. Fusion of the egg and sperm nuclei forms the diploid zygote.

Pregnancy

Implantation

You might have come across the word implantation. What do you think implantation is? What happens soon after fertilization?

Implantation occurs when the embryo reaches the uterine cavity and attached itself to the wall of the uterus.

The embryo (Figure 2.6) become firmly attached to the uterus within four to five days and two enveloping membranes are formed. These include the inner membrane called amnion and the outer called chorion. The amniotic cavity is filled with a liquid called, **amniotic fluid**. The functions of amniotic fluid include;

- Act as a shock absorber.
- Protects the embryo from physical injuries.
- Nourish the foetus.

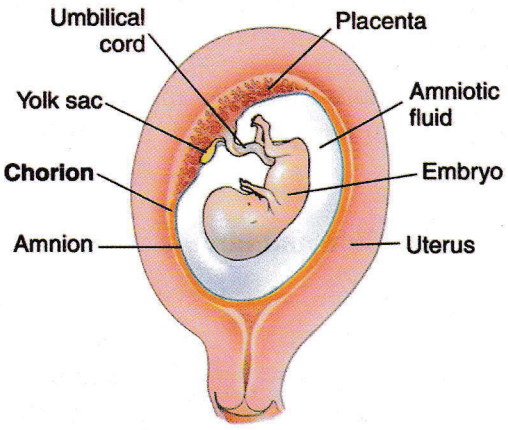


Figure 2.6: Embryo and its placenta

1. Visit your nearby hospital or health center and collect the information from doctors on;

- How foetus feed in their mother's womb.
- Changes occurs during their development in the womb.
- Time taken to birth.
- Importance of lactation.

2. Find the gestation period of mammals like dogs, cows, elephants, guinea pigs and goats.

It is clear that you will get enough and good points and the same illustrations as those given in Fig. 2.6.

The Placenta

Placenta is a spongy organ rich in blood vessels by which the developing embryo receives nutrients from mother and waste products from the developing embryo are removed.

Functions of Placenta

i. Placenta allows the exchange of materials between the mother and the foetus. These includes;

a) *Water*, this crosses the placenta by osmosis.

b) *Nutrients,* placenta allows the passage of nutrients such as glucose, amino acids, lipids, mineral salt and vitamins from the mother to the foetus.

c) *Respirarory gases,* oxygen diffuse from mother to the foetus for aerobic respiration whereas carbon dioxide which is waste product of aerobic respiration diffuse from the foetal blood to the maternal blood.

d) *Excretory products*, these includes nitrogenous wastes mainly urea which diffuse from foetus to mother.

e) *Antibodies,* placenta allows the passage of antibodies from mother to the foetus protecting the foetus from some diseases, thus providing passive immunity.

ii. Placenta as endocrine gland: Placenta function as endocrine gland from the third month of pregnancy. Placenta takes over the function of corpus luteum. It secretes a group of hormones commonly called chorionic gonadotrophic hormone, which are mainly oestrogen and progesterone. Chorionic gonadotrophic hormone maintain pregnancy and continue preventing oogenesis.

Adaptation of Placenta to its Function

i) Presence of blood vessels. These are for quick transportation of materials exchanged.

ii) Presence of villi. These increase surface area for exchange of substances by diffusion. Diffusion of gases oxygen in and carbon dioxide out.

iii) Presence of many mitochondria provide energy for active transport of ions.

iv) Ability to secrete gonadotrophin hormone. These prevent formation of ovum during pregnancy and maintain pregnancy.

Child Birth

Birth is the process where by a fully developed foetus is delivered after the gestation period is completed. **Gestation period**, *is the duration between fertilization and birth. The maternal posterior hypothalamus is allowed to release oxytocin*

hormone. The oxytocin hormone causes the contraction of the myometrium (uterine muscles) accompanied with pain commonly called *labour pain*.

The uterine muscles contract about every half hour. As time goes, the contraction gets faster and stronger. The baby's head is pushed through the cervix into the vagina.

The contractions become very strong and the baby moves to a face down position and finally is pushed out of the mother's body. The baby breathes air for the first time.

After a short time, more contractions of the uterine muscles push the placenta and umbilical cord out of the womb. These are termed as *after birth.*

Factors which may Hinder Fertilization

Sometimes fertilization fails to take place in mother's womb. There are different factors which may account for failure in fertilization as discussed below;

i. Low sperm count

Sperm count is the measure of the amount of sperms produced per ejaculation. For fertilization to be successful, at least 20 million sperms should be produced. When there is low sperm count, the chance of fertilization is minimized. Alcohol, drugs, smoking, sexually transmitted disease and hormonal abnormalities can be the causes of low sperm count.

ii. Premature ejaculation

This is a situation where a man reaches orgasm before inserting a penis into a vagina. This prevents fertilization to occur because sperms are not entered in the female reproductive tract.

iii. Use of contraceptives

Some of the contraceptives have the tendency or producing thick mucus in the female reproducing tract that prevent sperm from reaching the ovum, hence preventing fertilization.

iv. Unhealthy gametes

Occasionally, one or both male and female may produce unviable gametes which cannot effect fertilization. Producing unhealthy gametes can be resulted from poor diet or diseases.

v. Blockage of fallopian tubes

Fallopian tubes may sometimes be blocked by factors such as sexually transmitted diseases and some contraceptives. In this situation, sperm find no way to reach the ovum in the oviduct for fertilization.

vi. Hormonal abnormality

Hormonal abnormality in females hinders ovulation. This prevents fertilization process because the ovum is not produced or even mature at all. In males, hormonal abnormality may lead to low sperm count or failure of spermatogenesis.

vii. Impotence

This is the situation in which a man fails to maintain a full erection of penis for long time. It is caused by a number of factors such as anxiety, depression and chronic diseases like diabetes mellitus and prostate cancer.

Dear learner, I hope now you understand the factors which may hinder fertilization to occur. How can you help people who need to have babies but facing difficulties in fertilization? Scientists has developed some technological methods to help people facing a challenge of unsuccessful fertilization as explained below;

Artificial insemination

This is a process whereby sperms are introduced into the vagina by physician. Sperms are introduced during ovulation.

Advantages

i) Women can choose the father of her children by buying stored sperms.

ii) Is helpful if the husband has a low sperm count. The sperms can be collected over a period of time and concentrated so that the sperm count is sufficient to result in fertilization.

iii) Men who are far from their wives can send sperms to their wives and bear children without sexual intercourse.

iv) Sperms can also be stored for future use. Even if a husband dies, a woman can go on bearing children.

Test Tube Babies

Some women have blocked or deformed oviducts. If this happens, fertilization cannot take place. A modern scientific technique known as test tube baby can help them to get babies.

Ripe ova (one or more) are sucked from a woman's ovaries using special syringe inserted into her abdomen. The ova are placed in a dish (or test tube) containing sperms from her partner and kept warm for four hours. Fertilization occurs in the dish or test tube and embryos are formed. One or more embryos is then inserted into the woman's womb where it will be implanted and develop into a baby.

Multiple pregnancies

Multiple pregnancies occur when a woman delivers more than one baby. In human beings, multiple pregnancies are not very common and when they occur, the occasion is considered abnormal.

If a woman has two babies at once; she is said to have twins. If three, these are triplets and if four these are quadruplets. Multiple pregnancies are common in many other animals, for example, cats, dogs, pigs and rats.

Multiple pregnancies occur;

- When two or more egg cells (ova) are released and fertilized
- When the ball of cells which develops from a fertilized cell split into two or more.

Twins

It might have happened in your life to meet a mother with two babies at once or a family having children who were born at once. These babies or children are called twins.

Write short notes on how were formed? Why do they look alike or different? How do they behave? List their features.

Dear learner, you can get some information about the formation of twins in a human being as follows:

Twins occur, when two embryos develop in the uterus.

Types of twins

There are two types of twins:

1. Identical twins.
2. Fraternal twins (non-identical twins).

Identical twins: This occurs when one egg is fertilized and then splits into two cells. Each cell develops into a foetus. They have the same characteristics and sex. It is difficult to distinguish them.

Fraternal twins: Occurs when two eggs are released at the same time from either one or both ovaries and are fertilized. The twins are different in characteristics. They may be of the same or different sex.

Disorders of the Reproductive System

When you plan for a journey, let us say to a National Park, you expect everything to go on well. Sometimes problems may arise, for example car accident, floods or theft. Some of these problems may affect the whole plan and even cause a great and permanent effect like losing part of your body due to an accident. Likewise, in the reproductive system there are some problems that can arise and may have some detrimental effect to the human reproduction.

Here are some of those complications. Some pregnant women

face complications of the reproductive system leading to miscarriage, abortion, still birth and ectopic pregnancies. Such complications have negative effects on women's lives.

Miscarriage

A miscarriage is the loss of a developing embryo before the 28th week of pregnancy. It occurs when the fetus is expelled from the uterus without being induced by any means. One of the first signs that a miscarriage may occur is bleeding from the vagina.

Abortion

This is the intentional termination of pregnancy before the baby is fully grown. Usually, a baby is born after about 36 to 40 weeks of pregnancy. When a baby is born in less than 36 weeks, it is described as a premature birth.

Causes of spontaneous abortion or miscarriage

You might have heard of pregnant mothers facing a problem of abortion. You might even have heard some girls or women have attempted abortion. There are many causes of abortion. The cause may be hormonal uterus, some disease and infections, heavy work, injury to mother's abdomen, misuse of drug or drug abuse, emotional stress, development of deformed embryo and weak placenta.

There are two types of abortions

i. **Induced abortion**

This is the purposeful termination of pregnancy due to medical reasons. The pregnant mother may have intolerable complication such as diabetes mellitus, abnormality in blood pressure and heart disease which may lead a physician to induce abortion.

ii. **Criminal abortion**

This is the termination of pregnancy by destroying the developing embryo or foetus.

Still birth

A pregnant woman has still birth if the baby dies before or during delivery or a few hours after delivery.

Causes of Still Birth

Some of the factors which cause still birth include:

i. Using harmful drugs, such as alcohol and cigarettes.
ii. Accidents or severe falls.
iii. Severe malnutrition.
iv. Anaemia.
v. Physiological factors such as high glucose levels in the blood (diabetes mellitus).
vi. A narrow pelvis that causes difficulties during delivery.
vii. Strangulation of the baby by the umbilical cord during delivery.

Effects of still birth

An individual who gives still birth may experience the following:

i. Psychological suffering due to loss of the baby.
ii. Complications such as blood loss.
iii. Complications such as blood pressure.
iv. Suffers physical health.

Ectopic Pregnancy

This is an implantation of the zygote in a location other than the uterus. In most cases, it takes place in the fallopian tube if the fertilized ovum does not reach the uterus within seven days. Sometimes ectopic pregnancy occurs in the abdominal wall.

Causes of ectopic pregnancy

Ectopic pregnancy can be caused by inflammation of the fallopian tube. The inflammation may be caused by infections and diseases of the reproductive system such as gonorrhoea, syphilis and cancer. These diseases cause semi or total blockage of the fallopian tubes.

Effects of ectopic pregnancy

An individual who has an ectopic pregnancy may experience the following:

i. State of fear on learning that she has ectopic pregnancy and that open operation is a must. This is so because ectopic pregnancy is dangerous and often leads to death if the mother cannot access medical attention and check up regularly.

ii. Pains and later excessive bleeding, which may terminate the life of the mother.

iii. Scare of being pregnant and fear of subsequent pregnancies.

Methods for minimizing abortion, still birth and ectopic pregnancies

In the previous section you learnt on complications of reproductive system. Using knowledge gained suggest methods of minimizing those complications i.e. abortion, still birth and ectopic pregnancies.

Life styles and social cultural factors which may cause complications of the reproductive system

Study carefully different life style and social cultural practiced in your community.

- Identify the life styles and social cultural factors which may cause complications of the reproductive system.
- Write how they bring complication in reproductive system.

Consider the following important points in your work.

- Sexual behaviour that can increase the chance for infections.

- Hygiene of the reproductive system.
- Effect of malnutrition.
- Drug or drug abuse: excessive drinking alcohol.
- Heavy work during pregnancy.
- Punishment to wives.
- Spouse inheritance and spread of HIV/AIDS.

Complications of Reproductive System

Reproductive Tract Infections (RTI's) and Reproductive Tract Diseases RTD's) Diseases

Reproductive tract infections and diseases are infections and diseases that affect the reproductive system. These infectious diseases are non - contagious, non - communicable and therefore cannot be contracted through sexual intercourse or contact.

Types of RTI's

They can be categorized as common and rare ones, sex specific and common to all killers and non-killers. The majority of non – communicable reproductive tract infection which become degenerating diseases are fatal. The common and dangerous are cancers. Cancers are degenerating diseases and cause death. Examples of RTIs which are common are; cancers, fibroids and hydrocoel.

a) Cancer

Cancer is caused by a failure of the mechanism which controls cell division. As a result, cells continue to divide uncontrollably until a mass of cells is produced. This mass of cells is known as a malignant tumour. This kind of tumour constitutes cancer. Cancerous cells normally invade and destroy the normal tissue cells. Cancer occurs in an isolated part of the body. Some of its cells may break off from its' original site and enter the blood system or lymphatic system. When this happens, the cancer cells get a chance of invading

other tissues of the body. When this happens, the cancerous cells establish themselves throughout the body. At this stage the cancer becomes fatal and usually ends up in causing death of the person.

Types of cancers that affect the reproductive system

Cancer of the cervix and uterus

Cervical cancer attacks the neck of the uterus or cervix, whereas uterine cancer attacks the uterus itself. Both cancers are dormant for sometime before spreading into other parts of the reproductive system causing much more danger.

Symptoms of these cancers include:

i) Blood stains discharge.

ii) Vaginal bleeding which is unrelated to menstruation.

iii) Intense pain in the terminal stage.

Cancer of the ovary

It is less common than cervical and uterine cancers. It is not easy to detect during early stage. As it progresses, a swelling on ovary appears which can be detected by x-ray, if untreated, pain will be experienced in the advanced stages. This may lead into sterility when all ovaries are attacked.

Prostate cancer

This is a common type of cancer which affects men in their fifties and beyond. The prostate gland secretes seminal substances which help sperms to move smoothly during ejaculation. The glands are positioned at the base of the urinary bladder and surround the first part of the urethra.

The exact cause is not yet known although ageing seems to be connected with this condition. Early detection and measurement can save man's life since many cases are fatal.

Symptoms include:

i) Swelling of the prostate gland.

ii) Frequent urination with urine coming out slowly.

iii) In advanced stages, it may cause infertility.

Testicular cancer

This is a cancer of the testis. It starts as painless swelling on the testis in early stages.

b) Fibroids

These are tumours of the uterus composed partly of muscle tissue and partly of fibrous connective tissues. Fibroids usually do not occur singly. Several fibroids occur at the same time. They may grow to masses weighing one kilogram. Fibroids are non-malignant. Causes are not known. It may be due to outgrowth of endometrium layer. Hormones encourage growth of endometrial to nourish embryo foetus. Early menstruation may be the cause.

c) Hydrocoel

Clear watery fluid accumulates in the scrotal sac around the testis and epididymis.

This may develop at any stage. Hydrocoeles are usually caused by some mild irritations in the lining of the scrotal sac. As a result of these irritations, fluid is secreted in the scrotum.

Symptoms of this disease are a painless swelling of the testicles. Hydrocoel swell allows light to pass through when a light is shone on it. Hydrocoel cause no pain but those which are very large cause annoyance and discomfort and affect self-esteem and confidence in adolescent boys. Hydrocoel are most prevalent along the coast where filaria worms exist.

Socio Cultural Practices and Life Styles which Favour Prevalence of RTI'S

Most of RTI's and sexual transmitted diseases (STD's) are favourable by some bad socio-cultural practices and life

styles. Using your biology and social knowledge outlines those practices which favour prevalence of STD's and STI's. Suggest ways of minimizing them.

Sexuality and Sexual Health and Responsible Sexual Behavior

Sexuality is a fundamental aspect of life. It has physical, psychological, social, economic, political and culture dimensions. Gender issue is also an aspect of sexuality.

Therefore, human sexuality is a function of the whole personality that begins at birth and ends at death. It includes how you feel about your slay as a person, how you feel about being a women or man. Sexuality entails also how you interact with members of the same sex and opposite sex. Sexuality also includes reproductive process and child baring.

You can therefore realize that what you learnt in this unit on reproduction is part of sexuality.

Effective sexuality education is very important so as to provide young people with age-appropriate culture, relevant and scientifically accurate information. It will also help you as a young person to make correct decision and use various life skills so as to make acceptable choices about your sexual lives.

Effective sexuality education is a very important part of human immune virus (HIV) prevention. It will enable you to access reproductive health services, and HIV prevention, treatment, care and support.

Provision of sexual and reproductive health to young people also enhance social economic developed.

Can you think how sexuality education can enhance social economic development?

Discuss with your friend on the effects of three girls falling a victim of unintended pregnancy and drop out from school. In your answer include the effects to the girl herself, her family, community and government.

You might be living in a community where sexuality issues are not discussed openly. Therefore, you do not receive adequate information and preparation for sexual life. Lack of appropriate knowledge and skills in sexuality can lead to sexual abuse, unplanned pregnancy and sexually transmitted infections including HIV.

Social Cultural Factors Influencing Sexual Behavior

The attitude of a person toward sexuality is not determined by the person himself or herself. There are various factors which can cause someone to behave in certain ways. Can you think of some of the factors? Your thinking might be close to the following factors:

a) *Drinking alcohol, taking drugs affect sexual behavior;* If you are drunk, it is not easy to make the correct decision on whether to engage in sex or not. It is more serious when one cannot make a correct decision of doing sex.

b) *Economic motives;* the need of money can force young women and men to have sexual relationship with much older men or women (sing dad's and sugar mammies). These older partners have large number of sexual partners because their wealth enable them to sustain it. This act put the young men and women in risky of HIV infection.

c) *Harmful cultural practices;* Female genital mutilation (FGM) is one of the cultural practices which put female in a risk of HIV infection. In some society young girls are subjected to female genital mutilation without their will and forced to marry and hence engage into sexual practice. This cultural practice is beyond justice because it interferes with the right of women to enjoy sex. FGM can also lead to some complication during birth giving.

d) Young women are sought by older men as second wives because in some society it is culturally accepted for the men to have wives who are younger than they are.

e) *Temporal migration;* The situation when a man has to migrate to places where they can engage into more paying economic activities expose the young men to temporary sexual partners. This led to a risk of HIV infection to the young men and their wives.

f) *Socio culture practices* where boys are allowed to explore and know their bodies while girls are discouraged to explore and to know their bodies. These cause ladies to have a limited knowledge about their bodies by the time of adolescence. This sets the girls into a danger of easily talking into unplanned pregnancies and HIV.

Which regions in Tanzania are early marriages and Female Genital Mutilation (FMG) prominent?

What do you consider to be a better way to avoid these practices?

Responsible behavior

You might have learnt or heard about responsible behavior. What is it? Responsible behavior is a desirable behavior or habit that is accepted by the community and cannot cause harm to oneself or to others. One is said to demonstrate responsible behavior if.

i) Abstains from sex until he or she find a faithful and uninfected partner.

ii) Avoid multiple sexual partners.

iii) Demonstrable empathy for those who are emotionally depressed.

iv) Protect others from sexual abuse or harassment.

v) Avoid all unacceptable behaviour such as prostitution, watching ponography, rape, homosexuality and bisexuality.

Give a brief explanation of irresponsible behavior and ways of eradicating it.

Irresponsible Sexual Behaviour

You can realize that irresponsible behavior is the opposite of responsible behavior. Therefore, irresponsible behavior is the behavior which is not accepted by the community and can cause harm to oneself and others. These may include.

i) Having multiple sexual partners.

ii) Unprotected or unsafe sex.

iii) Sexual harassment and sexual abuse.

iv) Drinking alcohol or drug abuse.

v) Engaging in early sexual intercourse.

Suggest ways of eradicating irresponsible behavior.

Ways of Eradicating Irresponsible Sexual Behaviour or Practices in the Family, School and Community

Dear leaner, behaviour change is a difficult and slow process. Giving information on the negative effect of the behavior alone will not result into change of irresponsible behaviors. Practices which can help in irradiating irresponsible behavior may include:

i) Modeling and mentoring towards a good behavior.

ii) Adhering to one's religions morals and values.

iii) Respecting oneself and others.

iv) Developing and using life skills.

v) Observing one's rights and living responsibly.

vi) Providing supportive environment including family, community etc.

vii) Discussing sexual health issue openly with others.

Family Planning and Contraception

How many are you in your family? Investigate other families around you. What is the interval between one child and another? Why do you think it is important to have reasonable

space between one child and another? Visit a nearby village and choose some families to visit. Those with many children; how do they work like health wise, education and dressing. How about the mother's health? Compare those families with those with few children.

It is clear that there is great difference between the two families from your findings. Using the example of the families you visited explain the meaning of family planning and its importance.

Family planning or birth control can be defined as the act which involves parents to sit together and decide the number of children in their family and the intervals to be left between their children. In the other hand, Contraception is the deliberate effort done to prevent pregnancy.

Methods used in Family Planning

1. Natural family planning methods

All natural methods are based on keen awareness of natural signs and symptoms associated with each phase of the woman's menstrual cycle. Natural methods include the calendar method, basal body temperature, billing method and withdrawal method.

a) Calendar or rhythm method

This method requires charting and recording each menstrual period. By counting back, the first day of woman's menstrual period, a woman can calculate the days in each cycle when an egg is likely to be around and can therefore be fertilized. Sexual intercourse is carried out during the safe period only.

b) The basal body temperature

It involves the charting and recording of the body temperature immediately up on awakening. A very slight but observable drop of basal body temperature usually occurs 12 – 24 hours

before ovulation and equally slight but sustained elevation of basal body temperature always follows ovulation.

c) The billing method

It involves the interpretation of changes in cervical mucus over the course of menstrual cycle. Quality of the mucus is observed i.e. its ability to stretch, its transparency, its stickiness on touch are checked for indication of ovulation. On fertile days cervical mucus is abundant, clear and stretchy.

d) Withdrawal method

The male interrupts intercourse by withdrawing the penis from the vagina just before orgasm, so that the ejaculation of sperm is not delivered into vagina.

Advantages of Natural family planning

i) Increases users' knowledge of reproduction.

ii) Enhances self-awareness and self-reliance.

iii) Involves both partners.

iv) No cost.

Disadvantages

i) Does not provide protection against STDs/HIV/AIDs.

ii) Women must record carefully sign and symptoms for several months before they can rely on this method of contraception.

iii) Menstrual cycles, body temperature and cervical mucus can be affected by factors other than ovulation thereby giving misleading information.

iv) Not effective methods.

v) Both partners' cooperation is essential.

2. Barrier method

Barrier method includes condoms, Intrauterine Contraceptive Devices (IUCDs), Diaphragm and the loop.

a) Condoms

Condom is a thin sheath made of rubber (latex) that is put over the erect penis (male condoms) or put in the vagina (female condoms).

b) Intrauterine Contraceptive Devices (IUCDs)

It is a little soft plastic device inserted in the uterus by a doctor or nurse as shown in Figure 2.7. There are several types of IUCD.

The IUCD device prevents fertilization to occur by:

i. Immobilizing the sperms and interferes with migration of sperm from vagina to fallopian tubes.

ii. Inhibits implantation in the uterus.

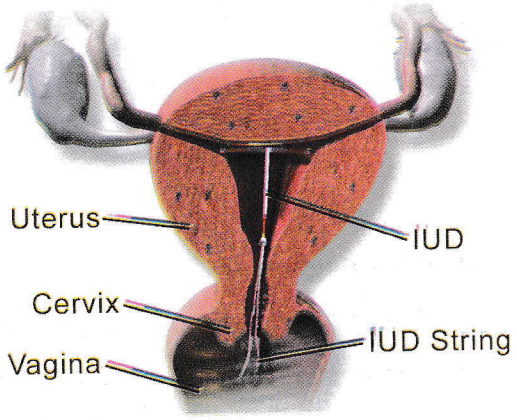


Figure 2.7: Diagram of IUCD

Disadvantages

i) It requires a regular check up by a doctor or physician to see that it is still in place.

ii) Can be expelled unnoticed from the uterus.

iii) Does not protect against STDs or HIV/AIDs.

c) Diaphragm

A diaphragm is a contraceptive made of soft rubber and shaped like a cup to cover the cervix. A diaphragm is placed between the rear wall of the vagina and the upper edge of pubic bone.

It serves as a barrier to prevent sperm from entering the uterus as shown in Figure 2.8.

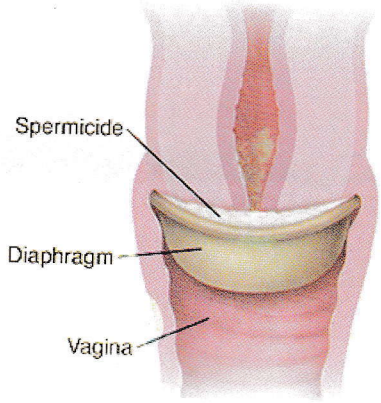


Figure 2.8: Diaphragms

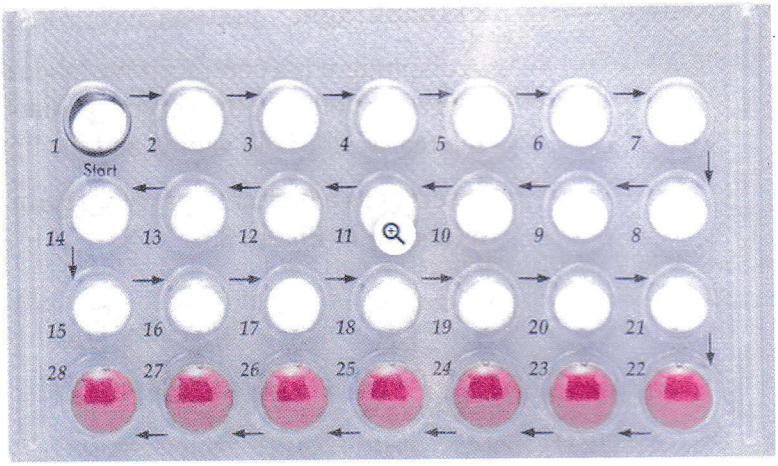
3. Hormonal methods

Hormonal methods include oral contraceptives, depo-provera, norplants and injections for females.

a) Oral contraceptives

Oral contraceptives (Figure 2.9) also known as birth pills are pills containing hormones that prevent ovulation. The pills contain hormones oestrogen and progesterone which interfere with the mechanisms of ovulation. These hormones also:

- Stop the mechanism which transports the ovum in the oviduct to the uterus.
- Prevent the preparation of the inner lining of the uterus for the implantation of the zygote
- Cause a thickening of mucus in the vagina making it sticky and thus preventing sperms from penetrating into the uterus and oviduct.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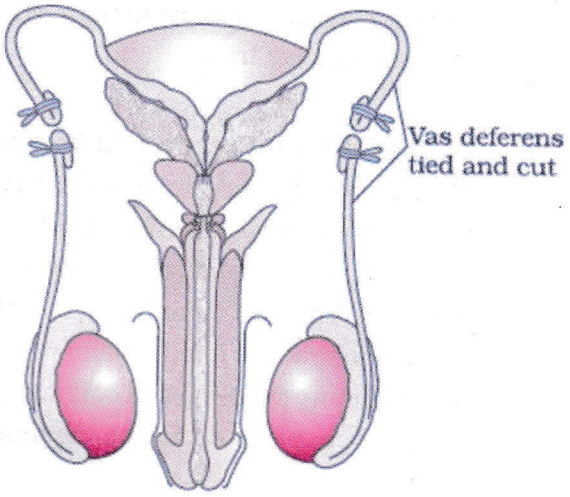
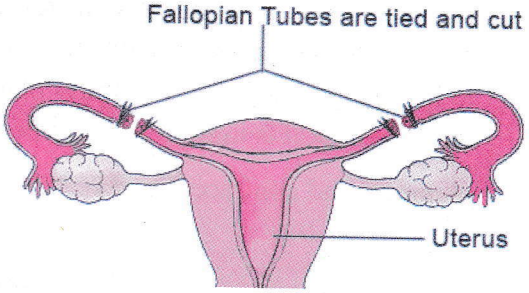

Vas deferens
tied and cut


Fallopian Tubes are tied and cut off
Uterus

Now it is time to see the infections and diseases which affect the reproductive tract.

Social Cultural Practices EnhancingFamily Planning

Dear learner, by making a comparative study to investigate life status between two different families with different number of children, you will realize the importance of practicing family planning. There is a number of social cultural practices which push us to practice family planning. The following are reasons to why family planning and contraception need to be practiced;

i) It allows couple to decide on the time when they want to have a baby.
ii) Allows couple to have a reasonable number of children whom they can take care of.
iii) Gives chance to a mother to engage in other economic activities than caring for pregnancies and babies.
iv) Ensure parents to provide almost all fundamental requirements of the family.
v) Enable the government to have population that it can manage it.

Dear learner, when it comes to a family planning and contraception, it is important for all parents (father and mother) to be involved. However, some men are not willing to be engaged in issues of family planning and contraception. Do you think it is important for males to be involved in family planning and contraception?

Maternal and child care

1. In your life, you might have taken care of your young ones, or seen mothers caring for their children in different ways at home and in different environment.

   a) Why maternal and child care is important?

   b) Is breast feeding important to babies? Why?

   c) At what age a new born child is required to start getting another type of foods to substitute milk?

d) Write the advantages of breast feeding and disadvantages of bottle feeding.

Consider the following points in your work;

- Colostrum and milk are source of antibodies.
- Availability of milk at right time.
- Breast milk ensure development of central nervous system.
- Bottle milk is expensive.
- Germs can be transmitted to babies.

2. Explain the care to be observed by expectant and lactating mothers.
3. Discuss the care and support required to be given to a baby under 2 years.

Unit Reflection

1. What is the importance of this unit in your life and your community? Why?
2. How can you apply the knowledge gained in this unit to your life? Explain
3. What was found to be the most interesting part in this unit?
4. What challenges did you face when learning this unit? Give your suggestion how you solved them?

Unit Assignment

1. Explain the meaning of the following terms of reproduction:
   (a) Gametogenesis
   (b) Fertilization
   (c) Abortion
   (d) Family planning
   (e) Vasectomy
2. Describe the events of menstrual cycle in human.
3. Explain the roles of placenta to ensure the development of the foetus in the mother's womb.

4. Discuss effects of induced abortion.
5. Explain the importance of sexuality education to young people.
6. What are social cultural factors which influence sexual behavior in your community?
7. Explain how you can help the community of which most of its families experience a problem of child spacing.

Unit 3

Describing HIV/AIDS and STIs

Introduction

Dear leaner in module 1 of stage 1 you have leant about HIV/ AIDs infections and prevention measures. In this unit you will learn about the impact of HIV/AIDs and STIs in the community. You will also learn about precautions needed for taking care of people with AIDS. Social culture factor influencing transmission of STIs and irresponsible sexual behavior will also be explained.

Learning Outcomes

Upon completion of this Unit, you should be able to:

- Investigate the impact of HIV/AIDs and STIs in the community;
- Outline ways of managing the country's HIV/AIDs and STIs;
- Mention the life skills and precautions needed for home-based care for People Living with AIDS (PLWA);
- Explain the procedures and significance of Voluntary Counselling and Testing (VCT) in the control and prevention of HIV/AIDs and STIs;
- Mention socio cultural factors influencing irresponsible and responsible sexual behaviour in different age grounds; and
- Mention appropriate life skills to cope with adolescent sexuality and sexual behaviour.

The Relationship between HIV/AIDS and STIs

In your learning process you might have learned or read something about HIV/AIDs and STIs from source of information like books, newspaper, magazines, posters and advertisement or you have learned it in school during your primary education.

To understand better the relationship between HIV/AIDs and STIs do the activity bellow.

Study this worried story then answer the questions.

Petty wasn't feeling well. She had been losing weight. Her neck was swollen and she had a dry cough as well as recurrent fever. She decided to see the doctor to find out what was wrong. The doctor examined her and carried out some tests and asked her to come back in two weeks' time. When she came back, the doctor said to her. Petty the tests I did show that your illnesses are caused by AIDS. AIDS is caused by a virus called HIV. You are likely to have been infected with HIV, because you also seen to be infected with candidiasis.

Now, help Petty who wanted to know what all words meant and how they relate, by completing Table 3.1.

Table 3.1: Abbreviations

Your work on relationship between HIV/AIDS and STIs should consider the following important points:

- Effect of HIV virus to the body immunity.
- Other infections that can easily attack the HIV infected body.
- Symptoms of AIDs.

Ways of managing and controlling HIV/AIDS and STIs

It is important to know how you can avoid STIs and HIV/AIDS. The way you conduct your life in the society may determine the extent to which you are at risk or someone is at risk. Your life style in the society can influence you or some one's behavior.

Activity

1. a) Carefully study the community you live in. Observe the life styles shown by most people. Investigate behaviors that put them at risk of getting HIV/AIDS and STIs. Write those behaviors in your note book.

   Consider behaviors: drug abuse, alcoholism, and improper dressing e.g. wearing on clothes that leave them half naked; smoking, inheriting widows and divorced women and men.

   b) Explain the relationship between HIV and STIs.

2. Discuss with your friend the different ways of controlling HIV/AIDs and STIs. In your discussion consider the following important points:

   Faithfulness, avoiding irresponsible behavior, engaging in different works and games, checking HIV, have a good peer group, and participating in sex education programmes.

The impact of HIV/AIDs and STIs in the Community

When the body is infected with HIV viruses, it lowers the body immunity and the body become vulnerable to many infections' germs and opportunistic diseases. The HIV infected people can get a number of illnesses which make them unhealthy and cannot perform most of their life activities.

Imagine some members of your family or any members from your closely related family have been found to be infected with HIV/AIDS and started to show signs of diseases. How do they look like? Are these members participating actively in productive works? How do they behave in their families and in the society? How are they supported in their daily life?

Your responses to these questions should consider.

- The group which is largely affected (e.g. productive and reproductive group of people).
- Demographic impact (e.g. increase mortality rate).
- Economic impact (e.g. depletion of work force).
- Impact at the family and individual (e.g. emotions, burden for support needs of people with HIV, loss of family members, threaten development aspiration).

Life skills needed for home-based care for HIV/AIDS victims

HIV/AIDS is a serious problem in our society as explained in the previous discussions. Life skills are required at home when handing PLWHA. What life skills needed at home? In order to identify them, it is important to know what life skills are;

Life skills are personal and social skills which give an individual the knowledge and ability to deal confidently with themselves and with other people in everyday life. Life skills needed for home-based care for HIV/AIDS victims include;

i) Self-awareness which gives ability to know and understand potential felling, emotions and weakness of the patient.

ii) Giving encouragement and hope rather than blames

iii) All family members and the whole society have to show good relationship with those PLWHA.

iv) It is very important "to put ourselves in shoes" of PLWHA – "Empathy" so that great care can be given to PLWHA.

v) Guidance and counseling skills; people with HIV need someone who can guide them on how to handle themselves, the type of food to be taken, and health precautions. They also need to be counseled on the prevailing situation. Therefore, people providing care to PLWHA at home must be equipped with guidance and counseling skills.

vi) Knowledge on mode of HIV transmission so that they can take possible precaution to prevent further spread of the disease.

In this way HIV/AIDS can be managed and even controlled because PLWHA will know themselves and feel guilty to spread this disease. Also, those who are not affected will take care of their own life.

In your own words, explain all life skills needed at home-based care for PLWHA.

Precautions to be taken when caring and supporting PLWHA and STIs

Precaution should be taken when caring and supporting PLWHA. HIV can enter once in the body through direct contact with blood or fluid of infected person. In this case when caring or supporting PLWHA we need to observe the following.

i) Do not discriminate or stigmatize PLWHA, this will help you to be on safe side as they cannot infect you or any other member of the society.

ii) It is important to avoid or reduce chances of coming in contact with their urine, saliva or sex (do not attempt sex activity with them).

iii) Make sure that you have no sores.

iv) Wear gloves when washing their clothes or handing them. Try to negotiate with the victim so that she/he will feel good when you wear gloves.

v) Keep the patient's wounds covered to avoid contact with beddings of clothes

vi) Wash your hand after cleaning patient's beddings and clothes

Suggest other precautions to be taken.

Counseling and Voluntary Testing (CVT)

Dear Learner, I hope you're not new to this problem of HIV/AIDS. What do you know about it? Have you ever seen a person with HIV/AIDS or suffering from AIDS? What problems does that person face? How about the society especially his/her family? Is that person happy?

People suffering from AIDS show signs of losing hope and

some fail even to carry out their normal activities. People of these kind need a great help. It is difficult to advise them. Only a counselor can do this. Counseling can offer a great help to a person suffering from HIV/AIDS.

Can you explain what counseling is? Discuss this with your friends. Note down all points.

If you go through different points noted down during the above activity you will realize the following.

Counseling can be explained as a process in which the victim of HIV/AIDS is empowered to make choices and take responsibility for his/her own development. Counseling is an interactive learning relationship. It makes or helps a person to learn more about himself/herself and to use such understanding to become an effective member of the society.

Counseling is a process where a counselor or helper shows a great concern on the victim or HIV/AIDS person or a person with problems so that can facilitate personal growth to the victim. In other words, counseling is a relationship between a helper (counselor) and a one with a need.

HIV counseling consist of three stages; pre-test counseling, post-test counseling and follow up counseling (supportive counseling).

Pre-test counseling is provided to the client before testing one's blood. It is in this stage where the knowledge on HIV/AIDS is provided to the client. It is an important stage as it prepares the client to take the test and accept the results.

Post-test counseling; is the type of counseling given to the client after taking a HIV test. This counseling is provided to the person before his/her results are revealed to him/her so as to prepare him/her to accept results in whatever way they come. It is given regardless whether the person tested positive or negative.

Supportive counseling; is a follow up counseling provided to the infected person on how to live and interact with other people. This counseling intends to identify the needs of the

client. It also aims to help the family and community as well as to take preventive measures.

Voluntary testing

This refers to the willingness act where by people check their health status (HIV status) to find out whether one is affected or not. In doing this, people visit specified places (Voluntary Test Centers) where they are counseled before testing their health status.

Significance of CVT in the control and prevention of HIV/ AIDS and STIs

i) Counseling helps to prepare the client before taking the test.

ii) Counseling helps in controlling the rate of transmission of diseases.

iii) Counseling helps to provide continuous support to the people living with HIV/AIDS and STIs.

iv) Counseling helps to guide the infected people on how to cope with the situation.

v) Voluntary testing helps people to know their health status and hence protecting them from infections.

vi) Voluntary testing helps people to plan and commit to their life goals.

vii) Voluntary testing and counseling increases HIV/AIDS awareness in the community.

Dear leaner can you explain why HIV/AIDS infected people need counseling? What advantages will they get in this procure? What steps do you think HIV/AIDS victim will take after counseling? Do you think that counseling is for all or for victims only?

Where counseling is successful one step forwards positive attitude to HIV/AID victim is testing, even healthy counseled people need to check their HIV status. Counseling aim to prepare one's mind to accept the problem and take action

to serve him/herself and the society. Counseling should be voluntary so that proper actions will be taken by the victim and the society.

The government must build or prepare an area with qualities of counseling to enable people voluntarily visit those areas.

1. What are the advantages of voluntary testing?
2. Why many people do not like to test for HIV status?

Procedures and Techniques of CVT for HIV/AIDS

Dear learner, have you visited a CVT before? How did the counselor welcome you? Before the act of counseling and testing, normally the following procedures are observed by the counselor;

i) The counselor welcomes the client with great empathy.

ii) The counselor may stand to open the door and give chair to the client.

iii) The client's name and other details are taken before counseling.

iv) The counselor asks politely the questions on what he/she can help to the client.

v) The counselor assures the client with confidentiality.

vi) The counselor gives an opportunity to the client to express what brought him/her to CVT.

vii) The counsellor analyses the information provided by the client and asks questions to get more details.

viii) Finally, the client is prepared to take the test.

ix) After testing, the post test is done to prepare the client to receive the results.

x) The counselor asks the client whether she/he is ready to receive the results.

xi) The counselor advices the client on further infections and guide him/her on how to escape infections disease.

Figure 3.1 shows how counselling CVT for HIV/AIDS should be done.

Figure 3.1: Counseling CVT for HIV/AIDS

Unit Reflection

1. What problems did you face when learning this unit? Explain how you solved those problems?
2. Explain how can you apply the knowledge and skills you gained from this unit.
   (a) At home.
   (b) In your peer group.
   (c) At community in which you live.

Unit Assignment

Attempt the questions given below. Your answers should be kept in your portfolio.

3. What is the relationship between HIV/AIDS and STIs?
4. Explain how HIV/AIDS and STIs bring impacts to individual, family and in the community.
5. Suppose you're a counselor what steps would you follow to counsel a HIV/AIDS victim?
6. From the knowledge gained in home-based life skills on care for PLWHA, discuss techniques for counseling and voluntary testing.

7. Explain the importance of sexuality education to young people.

8. What are social cultural factors which influence sexual behavior in your community?

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Institute of Adult Education
P.O. Box 20679,
Dar es Salaam
Tel: +255 22 2150836
E-mail: info@iae.ac.tz,
Website: www.iae.ac.tz

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