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# DEPARTMENT OF EARLY CHILDHOOD STUDIES

## COURSE CODE: ECD 112

## COURSE TITLE: CHILD DEVELOPMENT I

*Instructional Material for BEd. ECS Distance Learning*

## TABLE OF CONTENTS

## PURPOSE OF THE COURSE

This course will help the learner conceptualize the process of growth and development from conception to early childhood. It will give the learner the required knowledge, skills and attitudes towards expectant mother, infant, toddlers and pre-scholars.

## COURSE DESCRIPTION

This course entails definition of terms related basic concepts in child Development theories of child Development; Piaget theory of cognitive development, Erik Erikson theory of social development, Sigmund theory of psycho sexual development, Kohlberg theory of moral development .Application of theories to early childhood .conception and sex determinants, factors influencing growth and Development labor and the birth process, types of birth and their implication on infant, Birth complications , neo natal Development in various aspects, nurture vs nature controversy .Brain development; parts of the brain, psycho-social stimulation

## TEACHING/LEARNING METHODOLOGIES

This course will be offered and/or undertaken through tutorials, group discussions, group and individual assignments, presentations, interactive questions and answers, micro-teaching lessons, peer teaching and e-learning interactive forums. The learner will be required to go through this training module, make notes based on the objectives of the course and attempt the questions given at the end of every lesson. Tutorial classes will be organized by the university where the lecturer will take the student through the course. The purpose of tutorials is to help the learner conceptualize the course. It is, therefore, important to study the module before attending the tutorials. Further reading in this area of curriculum is encouraged. However all information gathered should be within the course description and objectives.

## COURSE ASSESSMENT AND EVALUATION

Learning will be assessed through sit in Continuous Assessment Tests (CATs), Take Away Assignments and a Main Examination. The CATs will constitute 30% and the Examination 70%

## MODULE ORGANIZATION

This module is organized in form of lessons. In every lesson an introduction is given. The introduction shows what the lesson constitutes. This is followed by the lesson objectives. Then, the learner is taken through the lesson content. The content may be sub-divided into sub-topics depending on the nature of the topic in a lesson. A summary of what has been learnt is given. At the end of the lesson the learner is given activities. These activities are in form of questions and practical. It is good to note that this is not a text book. The content is therefore in form of lecture notes. Further

reading from text books is recommended. A list of books to refer to is given at end of the module.

**COURSE CONTENT**

- Definition of terms like pre-natal stage, infancy, development and growth.
- Nature versus nature controversy.
- History and significance of child development study.
- Theories of child growth and development.
- Pre –natal development and birthing process.
- Environmental influences on pre-natal development.
- Brain development and its function.
- Perceptual and physical development during infancy.
- Language development in infants.
- Social and emotional development during infancy.
- Moral and spiritual development.
- Cognitive development.

**COURSE OBJECTIVES**

a) Define terms like pre-natal stage, infancy, development and growth.
b) Discuss the nature versus nature controversy.
c) Explain the history and significance of child development study.
d) Discuss theories of child growth and development.
e) Describe pre –natal development and birthing process.
f) Explain environmental influences on pre-natal development.
g) Discuss brain development and its function.
h) Explain perceptual and physical development during infancy.
i) Describe language development in infants.
j) Discuss social and emotional development during infancy.
k) Explain moral and spiritual development.
l) Describe Cognitive development.

***Module Author: Terry Kiragu***

## LESSON ONE: INTRODUCTION TO PRENATAL AND INFANCY DEVELOPMENT

***Objectives***

***By the end of this session, you should be able to:***

***a) Explain terms like prenatal stage, infancy, development and growth.***

***b) Describe the nature versus nurture controversy.***

**Contents of the module**

This module is about prenatal and infant development. .

The terms ***growth*** and ***development*** are often used interchangeably. While they remain interrelated, the concept of growth and that of development differ essentially. These two terms represent two concepts that are characteristic of a human being from birth to death. .

Growth refers to the increases in physical size such as changes occurring in height and weight. Between birth and age one, the average baby grows by about 20 centimetres, increasing its overall length by some 40 percent. The infant gains about 7 kilograms, tripling its birth weight while the brain doubles in size. During infancy the facial proportions change from the foetal look of the newborn to the smooth rounded-ness characteristic of the new infant.

Growth also refers to changes in body proportions. If you have observed children growing you may have realized that different parts of the body grow at different rates, at different times, leading to changes in body proportions-. This is why the body proportion of an adult-is different from that of a newborn. For example the newborns head is relatively larger than the adults with respect to the rest of the body. The infant's legs and arms are also proportionately shorter than the other parts of the body when compared to an adult. Such changes in body proportion are a clear indication of growth.

**Development**

Development refers to change in the level of functioning. Human beings go through many types of change and some of these changes are developmental. Development can be defined as the gradual accumulation of relatively permanent age-related changes involving intensity and complexity of

functioning.

Development is gradual. It is not something that takes place right before our eyes. Rather it is observed or measured over a period of months or years. For example if you saw a two year old child everyday you are less likely to notice developmental changes in him or her than a person who sees the child and does not see him or her again until after 3 years. Such a person is likely to comment, For example an infant's creeping movements combine with advances in strength and balance toward the end of the first year to produce walking.

The other characteristic of developmental change is that it is typically irreversible under ordinary circumstances. For example when a child learns to formulate sentences, he/she may not revert to using single word utterances.

**Principles of Growth and Development**

There are two principles of change: ***Continuity*** of change and ***discontinuity*** of change. Continuity principle emphasizes that development involves gradual, cumulative change from conception to death. A child's ability to walk, though seemingly on abrupt event, is the result of months of growth and practice.

Discontinuity of development is the view that development involves distinct stages in the lifespan. In the development of an egg (ovum) into a baby the fertilized egg changes becoming more like a person – this development is continuous. You-and I cannot say at-which point in time the egg changed into a baby. The change is not drastic but gradual. The caterpillar on the other hand changes into a butterfly, a different kind of organism altogether. An example of such a change is the emergence of the ability to think abstractly about the world from not being able to do so. This is a qualitative, discontinuous developmental change.

The module addresses development in prenatal and infancy stages of a child's life. There are two stages of a child's life that are presented in this module.

**The Prenatal period**

The prenatal period refers to the period of time from conception to birth. It is a time of tremendous growth and development beginning from the moment the sperm cell from the male unites with the egg cell (ovum) from the female to form a single cell which develops in to a complete organism complete with a brain and behavioural capabilities in approximately 9 months (gestation period) at which time the period ends. At this point the organism is born. After birth the organism gets to the next stage, infancy.

**Infancy**

Infancy is the developmental period that extends from birth to about 2 years. It is a time of extreme dependence on adults. Many changes take place in the child during this and later stages. These changes occur in different "arrears" or ***domains.***

**Domains of change**

These are the arrears in which growth and development occur. They include

Cognitive domain which includes thinking, understanding and language.

Physical domain which includes physical features like appearance, size and weight as well as motor abilities

Social emotional domain

Significant changes occur in all these arrears. .

**Determinants of Growth and Development**

Changes that occur in human beings do not take place in a vacuum. Rather they are the product of certain factors and processes. The question of what brings about these changes has been a subject of much debate. One evidence of this is a debate referred to as the ***nature- nurture controversy.***

**Nature-Nurture Controversy**

It is one of the oldest controversies in the history of philosophy and human department is the nature - nurture controversy. It is all about whether behaviour is primarily determined by biological or genetic factors within the organism (nature) or by experience in the external world (nurture). This issue can be traced to the arguments of ancient Greek philosophers like Plato and Aristotle. The debate continued on and off throughout the centuries. In the modern research, the nature side was presented by maturation theorists. The nurture side was a advocated by the behavioural theorists. By 1950's, it was realized that neither side could offer a complete explanation of human behaviour. Behaviour was found to be a product of the interaction between maturation and experience. This interaction is not a simple additive process. Hence we cannot easily determine the percentage contribution by each to the overall process of development. This interaction is complex with the contribution of each element continuously influencing and being influenced by the contributions of the other.

For example, many adults have had the experience of trying to calm a crying baby. You find that the more the baby cries, the more tense the person holding him/her becomes and the more tense the adult becomes, the more the baby cries. Can we determine how much of the infant's distress was caused by the adult and how much was caused by the baby? Certainly no. We can only conclude that both the adult and the baby

continue to influence and to be influenced by each other. Both heredity and environment combine in such an interactive fashion to influence behaviour.

**Definition of terms**

**Continuity of development:** The view that development is gradual and cumulative.

**Development:** Changes in the level of functioning.

**Discontinuity of development:** the view that development involves distinct stages in the lifespan.

**Domain:** Arrears in which changes in growth and development Occur

**Nature:** Biological or genetic factors within the organism.

**Nurture:** Experience in the external world.

**Growth:** Changes in size and body proportions.

***Activity***

***With reference to the infancy period of 1-2 years.***

1. ***Write down major changes that are likely to occur from birth.***
2. ***What are the implications of these in later life of the child?***
3. ***What impact might it have in a child's education later?***
4. ***State ways in which heredity and environmental factors influences behaviour and development.***

**Summary**

The session addressed issues of growth and development.

It also dealt with the issue of nature and nurture controversy.

**References.**


i) Bee, H. (1995) The growing child, Harper Collins Publishers new York.

ii) Black J.K & Puckett, M.B 1992.The young Child; Development from Pre birth through age eight

## LESSON TWO: HISTORY AND SIGNIFICANCE OF CHILD DEVELOPMENT STUDY

***Objectives***

***By the end of this session you should be able to:***

***a) Explain the importance of child development study.***

***b) Describe the significance of child development to parents and teachers.***

***c) By the end of this session you should be able to:***

***d) Explain the importance of child development study***

***e) Describe the significance of child development to parents and teachers***

**Important of the study child development**

There are many myths about child development for example you have heard parents and others comment on how today's children are growing up. For example today's kids have it all, if you do that, this will happen, a child is retarded because of a curse from God e.t.c.

Sometimes we believe some of these statements. However, research sometimes shows a different picture. It gives us a proven knowledge about children. The study of child development furthers our understanding about the nature of the child. It also helps us to understand the nature of the adult. The experiences of infancy and childhood contribute to adult personality and behaviour. Understanding the child helps us to understand who we are, why we are who we are and how we became that way.

Studying children can also lead to ways of enhancing their development and improving their life. For example, when we study the determinants of development, we are able to know how we can enhance it.

The study of child development can help you in a career e.g. as a teacher, caregiver, pediatrician or a judge who handles children or custody cases. Knowledge about children is a key to the success in any child-related field. Whatever your reason, you will find the study of children intriguing and full of useful information.

**History of the study of Child Development**

Scholars and philosophers throughout all ages have suggested ways to rear and educate children. Their views continue to influence child psychology and education. The modern era of research began in the late

1880's. This is when the study of children began to take shape as a scientific endeavour. However, interest in the nature of children has ancient roots. Some of the ancient philosophers whose views have had a profound impact on child development include John Locke, Rousseau and Charles Darwin.

**John Locke (1632-1704)**

He was an English Philosopher. He saw a child as an incomplete adult; governed by strong urges and desires that need to be controlled. He believed that the environment played a crucial role in the child's growth and development. He advocated constant supervision in order to appropriately mould the child's development. He thus believed that people are capable of influencing the child.

At Locke's time, most scholars held that heredity largely determined the differences between human beings that is what we become is determined by our genetic make up. In contrast, Locke believed that education and experience were fundamental determinants of development. He proposed that at birth, the child's mind was a ***"tabula rasa"***, or blank slate ready to be written by the environment (Krogh, 1994). It is receptive to all kinds of learning hence guidance and education was essential during childhood.

The goal of education according to Locke was to enhance self discipline and self control Locke therefore advised parents and educators to teach self discipline as early as possible so children would learn to deny themselves the satisfaction of their own desires.

**Jean - Jacques Rousseau (1912 - 1778)**

He was a French philosopher. He wrote almost a century after Locke. According to Rousseau the environment was a critical determinant of development. He argued that children did not need strict supervision. Rousseau saw a child as a "noble being" that possesses intuitive knowledge of right and wrong but encounters pitfalls because of restrictions imposed by the society. Rousseau suggested that children be allowed to explore the world and use the environment to suit their needs and interests. In contrast to Lockes "tabula rasa" notion, Rousseau regarded children as having abilities and interests which change as they grow and as they learn about the world. The role of the adult is therefore to provide children with opportunities to explore and learn.

As we have seen, Rousseau and Locke held different views about the nature of the child and the role of education. These views brought about a fundamental division among researchers referred to as the nature - nurture controversy. That is, the debate about whether human traits are genetically endowed or wholly shaped by experience.

**Conclusion**

Locke and Rousseau contributed to our understanding of children and encouraged the study of childhood although their ideas were based on speculation and philosophical beliefs rather than on scientific study.

**Charles Darwin**

He came up with a scientific approach to the study of children. His works on natural selection and evolution development of human beings sparked interest in the study of human beings. The publication of his "Origin of Species" (1859) is considered the most important force in establishing child study as a scientific endeavour.

Darwin brought about the notion of the evolutionary process. He argued that human beings are not set apart from other species. Transmission of traits occurs through heredity. His writings sparked an interest in the study of any possible link between the human being and such species as apes and the biological make up of adults and children Darwin argued that just like the origin of man could be traced from that of apes, the origin of adults could also be traced from his origins, which are in the nature of the child. Scientists began to see children as interesting objects to study. This was the beginning of the study of child development as a scientific endeavour.

**Early Observational Studies (Baby Biographies)**

Observation was one of the first methods used to study children. Carefully recorded observations were compiled into day-to-day accounts of children's development known as baby biographies. Darwin in particular used this method to study his own son. Darwin son's baby biography was written in 1840-1841 and published in 1877. Several other baby biographies were written, compiled and published. They paved way for later discoveries in child development.

**Stanley Hall and Early Experimental Studies**

With time an interest in children as objects of scientific study grew. Child development studies became more objective and scientific. With time, researchers studied large groups of children. G. Stanley Hall (1846-1924) was one of the most notable scientists in child development study. He began experimental research on child development. Hall investigated the child's mind in order to understand the mind of the adult. He developed a tool called a "questionnaire" which is still in use today.

***Activity***

***a. Explain the significance of child growth and development***

***b. State three importance of the study of child growth and development***

**Summary**

The session covered:

1. The importance of child development study.
2. The history of child development.

## LESSON THREE: THEORIES OF CHILD GROWTH AND DEVELOPMENT

***Objectives***

***By the end of the session you should be able to:***

a) ***Explain a number of child development theories.***
b) ***Differentiate the given theories.***
c) ***State the implications of these theories in the learning process.***

### Introduction

Theories of learning and research on child development have inspired and helped us to understand better and appreciate infants' and young children's growth. They are based on patterns according to age, and some of their habits are formed at a tender age.

### Piaget's Cognitive Theory

According to this theory, two complementary cognitive processes play a major role in promoting change and increasing children's cognitive understanding of their world. Children use their current knowledge of how the world works as a framework for the **assimilation** of new experiences. Assimilation is the attempt to fit new interaction into the existing cognitive structures.

They also modify their existing knowledge base by incorporating new information into its schemas or mental structures. Schemas are organized patterns of behaviour where a child incorporates new experiences from the environment. Through the process of **accommodation**, they modify these frameworks in response to these inputs from their environment. Accommodation is the changing of an existing structure to cope with new information. Piaget identified the following stages of cognitive development.

### Sensory-motor Stage (birth – 2 years)

This period is characterized by the child's reflex activity when he is involved in systematic natural reflex activities to assist him in learning the environment. The environment is mainly maternal nipples in the first month after birth. Between one and four months, the child is involved in **circular reactions**; a form of self-exploration which is aimed at assisting him adapt to the environment. Circular reactions consist of the child's first stumbling upon some experience as a consequence of some act and secondly, trying to recapture the experience by re-enacting the original movements repeatedly in a kind of rhythmic circle. Circular reactions are good for intellectual development. There are three types of circular reactions;

primary, secondary and tertiary.

- **Primary Circular Reactions:** In these reactions, a child performs repetitive acts like suckling thumbs, clapping hands or grabbing a foot. In this stage infants look only at objects that are directly in front of them.

- **Secondary Circular Reactions:** It deals with the exploration of the outside world where the child manipulates toys and objects in the environment. One major observation during the sensory-motor stage is that, the child has not acquired the concept of object permanence. At this stage, infants do not comprehend that objects have existence of their own. When a toy vanishes, they don't look for it. When a young infant does not perceive an object, he behaves as though it does not exist.

  At about four months of age, the infant shows some awareness of the permanence of objects. A child is moiré likely to search visually for an object if its loss is associated with interruption of their own movements than if another person has hidden it. The child will now anticipate the path of a moving object and look at the location where it can be expected to appear. She will search for a partially visible object, but not a covered one, and even if he/she watches as an object is being covered, he/she will not attempt to retrieve it. For example, if an adult hides a desired toy under a blanket, the infant will not search for it, even though he/she saw it being hidden.

  Most people find it difficult to conceive of a world in which objects that are not within their perception cease to exist. Even though we can no longer see, hear or touch an object, we generally assume that it continues to exist, that is, we accept the idea of object permanence. **Object permanence** is the belief that an object exists or is present at the place it was previously seen even if it is invisible to the child. Young children do not have a conception of the permanence of objects. For a very young child, when their mother goes out of the room or when a favourite toy drops over the edge of the bed, it is not only "out of sight" and "out of mind" but also "out of existence". Between 18 –24 months, the child has fully developed a full sense of object permanence. This is the result internalizing new experiences in the schema through secondary circular reactions and problem solving.

- **Tertiary Circular Reactions:** This stage ranges from 12 – 24 months. The infant's curiosity begins and novel stimuli are important. The infant experiments with the environment and is also systematic with trial and error. Problem solving begins and the infant begins to develop insight

and can think without action. This is achieved by invention of new means through mental combinations.

**Pre-operational Stage (2 – 7 years)**

At this stage, the child has not developed logical or operational thinking although his language has developed. Between 2 – 4 years, which is the pre-operational period, the most important characteristic is that the child's thinking is based on animistic thinking where inanimate objects are perceived as being alive and possessing human characteristics. Between 4 – 7 years which is referred to as intuitive stage, 2 characteristics emerge: conservation and reversibility, whose rules the child is unable to know.

In **conservation**; for instance, if the child is given 2 glasses with equal amounts of milk, then the milk from one glass is poured into a plate and he is asked to indicate which one contains more milk; the glass or the plate, the child will respond that the glass has more milk because the glass is taller than the plate. **Reversibility** is another area a child at intuitive level of pre-operational stage has difficulties with reversing actions. If the child is asked to determine whether the milk in the glass will remain the same amount when poured into a plate, he will say no.

Pre-operational children share with adults the ability to represent reality to themselves by means of signs and symbols. A young child's thought process is internal. Pre-operational thought is unsystematic, inconsistent, illogical and incorrect; for example, a child might reason that because a dog has four legs and horses too, then dogs are horses. The conclusion is illogical and incorrect. The pre-operational child exhibits **animism** in thinking. Because the child has life, thoughts and feelings, then the child sees all things as having life.

Pre-operational thought is perceptually bond. This means that children judge the world by the way it looks to them. For example, two halves of a cookie look more than a whole cookie; so the child prefers the halves to the whole.

**SIGMUND FREUD'S PSYCHOSEXUAL THEORY**

Particular interest was taken in personality development during the first 5 years of a child's life.

**Oral Stage (0 – 2 years)**

This is the period young infant's needs are met through the gratification of its oral needs. His mouth is the source of pleasure; food, sensual sucking, gumming and biting. Feeding is their main source of pleasure as it stimulates the mouth, lips and tongue. Infants enjoy nipples, fingers and anything they can put into their mouths. At first, they suck and swallow, but when their teeth begin to erupt, biting and chewing

become important. This stage has 2 sub-stages:

- Oral sucking stage (0 – 7 months)
- Oral biting stage (8 – 18 months)

Infants, whose oral needs are not met, may become fixated in the oral stage. Because they have not adequately resolved this stage, they will continue trying to meet their oral needs throughout life. Infants who receive so much gratification at the oral stage that they do not want to abandon this pleasure may also become fixated. They may become compulsive eaters, smokers, nail biters, tongue suckers, thumb suckers, over-dependent, and will chew a lot later in life.

**Anal Stage (2 – 4 years)**

This is pleasure in developing cleaning habits. The child is beginning to face the pleasures of reality and at the same time, the ego is beginning to differentiate itself from the id. The child's mode of expressing pleasure is experienced in emptying of the bowels which produces a great relief and pleasure. A battle between his will and that of his parents begins to occur. Parents begin to potty train their child. If methods of potty training and attitudes towards it are too strict and threatening, the child may retaliate by holding back faeces or by releasing them at inappropriate times. A fixated child may develop the following habits later: bed-wetting, butt-swinging, excessive cleanliness and orderliness or clumsiness.

Sigmund Freud believed that personality consists of 3 stages: the id, the ego and the super-ego.

**The id:** This consists of instincts. It is unconscious and it represents the deep and the unacceptable part of personality that has no conscience of reality with the external world. It does not reason at all and so produces awkward behaviours. It is the most primitive behaviour and its aim is immediate gratification of issues or wishes. The id tries to satisfy wishes immediately they are encountered and it cannot tolerate discomforts brought about by tensions in our bodies. Its aim is to make sure that an individual is comfortable at all times. It is self-centred, seeks immediate pleasure, satisfaction and avoids pain.

**The ego:** Freud came up with the second stage, ego, when he realized that the id could not explain behaviour satisfactorily. This is the conscious part that deals with the demands of reality. It makes rational decisions and abides by the principles of reality. The ego is more organized with rational system of personality, that is, it thinks. What makes the ego different form the id, is that the ego is reality-oriented whereas the id is pleasure-oriented.

The ego operates within the norms of the society. It controls reasoning, problem solving and decision making. It operates on reality principle where it delays gratification of a person's urge until a suitable

method is found. The process of gratification will involve several things:

- *Perception.* This looks at the need in relation to the situation.
- *Learning.* Previous learning experiences are used to find out the realities of achieving objectives.
- *Memory and reality testing of the consequences of a particular urge.* It looks at the possible action and finds out its applicability in a given situation.

The ego operates by way of secondary processes which involve realistic thinking and also planning using higher mental processes. In most cases, the ego will completely satisfy the need. It will always delay gratification until an appropriate object is found. In addition, it will not consider social and moral values; instead, it will go for the object that will satisfy the urge.

**Super-ego:** This is the moral branch of personality which considers whether something is right or wrong. It is the highest mode of thinking and unlike the ego; it represents the ideals and values of the society. It does not only try to satisfy the need but it also considers ethics. The ideals and values of a society are learnt through socialization. Children will observe their parents and imitate their actions through direct teaching. These ideals are fostered through reinforcement, where desirable behaviour is rewarded and undesirable behaviour punished. As this occurs, the super-ego will register punished behaviour in a part called conscience and rewarded behaviour will be registered in a part called the ego ideal. As the behaviours are registered in respective parts of the super-ego, the conscience starts serving the purpose of punishing the individual by making him feel guilty or worthless, while the ego ideal serves the role of rewarding the individual by conveying a sense of pride or personal value.

These 3 components of personality i.e. the id, the ego and the super-ego work together and are tied to one another. Every time id tries to seek pleasure, the ego tries to test reality and the super-ego seeks perfection. These 3 structures of personality try to adjust to one another and it is this adjustment that results in human personality. The adjustment will differ from one person to another and that is why we have varying degrees of personality.

**Erik-Erikson's Psychosocial Theory**

Erik believed that Freud's theory underestimated the influence of personality. His theory traces personality across a lifetime and according to him the person goes through a number of crises. During the crises, the society and culture have an important part to play. In each stage, there is a conflict, and if it is not resolved, the person struggles with the crises that affect the development of healthy ego, and resolution in each stage lays foundations for resolving crises of later stages. He emphasized that one's

personality continues to develop even after childhood and throughout the entire life span.

According to Erikson, personality development is affected by the influences of the society and other events in the environment. He concluded that culture, society and historical events have events which are more important in the development of one's personality than biological development during childhood. Successful resolutions involve balancing a negative trait with a positive trait in development of a virtue.

The following are some of the stages he identified:

- **Trust versus mistrust (birth to one year):** During this stage, the child is completely dependent on adults for survival. He learns to trust the environment if his bodily needs are met, has comfort, love and does not live in fear or apprehension about the future. However, if his needs are not met, then he learns to mistrust. With time, the mistrust is extended to other people in the environment. The mistrustful infant will also lack confidence in itself as a person worth of attention. In Erikson's theory, a healthy resolution of the trust versus mistrust conflict is represented by an infant learning to trust himself and others in the world. A certain amount of mistrust, however, is seen as healthy since the child has discovered that not everyone or everything responds in a predictable manner. Overall, the child's basic trust encourages continued interaction with people and surroundings.

- **Autonomy versus shame and doubt (1 – 3 years):** Autonomy means that the child is basically able to do something for himself/herself; for example, pulling or pushing objects, walking, dressing and going to the toilet among others. When a child is able to perform such tasks, he feels autonomous. Children are also able to carry out basic communication and to exercise their minds over the environmental issues. When a child is ridiculed or criticized excessively, he loses his confidence and develops shame and doubt.

***Activity***

1. ***Explain what the parents and caregivers can do to ensure that infants develop a healthy development of attachment in Erik Erikson's stage of basic trust and Anatomy.***
2. ***Explain how behaviour can be conditioned using classical conditioning by Ivan Pavlov's theory, operant conditioning of B.F Skinner, and social learning theory of Albert Bandura.***
3. ***Describe the four stages of Piaget's stage of cognitive development.***
4. ***What is the implication of these stages to teaching and learning?***

**Summary**

This session addressed various theories of child development.

These include:

- Sigmund Freud's Psychoanalytic theory.
- Erik Erikson's Psychosocial theory.
- Charles Darwin's maturation theory
- Ivan Pavlov's classical condition

**LESSON FOUR: PRENATAL DEVELOPMENT AND BIRTH.**

***Objectives.***

***By the end of the module you should be able to:***

a) ***State importance of studying child growth and development.***
b) ***Explain theories of child development.***
c) ***Describe stages of development in prenatal and infancy periods.***
d) ***Explain various factors that influence development during prenatal and infancy stages***

In this session, the biological beginnings of the human beings from conception to birth, will be examined

**Conception**

The first step in the development of a human being is that moment of conception when a single sperm cell from the male pierces the wall of the ovum (egg cell) from the female. Ordinarily a woman produces one ovum (egg cell) per month from one of her two ovaries. When a man ejaculates during sexual intercourse he deposits 300,000 - 500,000 sperm cells in the woman's vagina and only 1 will permeates the wall of the ovum. Others die off in the 3-4 day journey through the acid fluid of the vagina and uterus to the fallopian tubes. With the union of sperm and egg cells, a new human being is formed. Assuming that both partners are fertile and that sperms are introduced into the woman's body at the optimal point in the woman's monthly cycle, the chances are excellent that the woman will become pregnant.

**Prenatal Development**

Approximately 266 days, or 38 weeks, elapse from the date of fertilization to the birth of the baby. This period of time is referred to as prenatal stage of development. Although growth and development during this time is highly continuous, scientists have divided prenatal development into three time periods: period of the zygote (or germinal period), period of the embryo, and period of the foetus. An alternative approach divides this time into three successive trimesters or three-month periods.

**Zygote Period**

The first two weeks following fertilization the period of the zygote. This is also referred to as the germinal period. During the first three days of this period, the zygote (fertilized egg) will remain in the

fallopian tube. The original cell divides into two cells after 36 hours, followed by other several divisions. After 2 days, the second division to 4 cells occurs. Successive cell divisions occurs more rapidly. After 4 days there are about 60-70 cells. By 72 hours zygote has developed into a ball of cells, which is transported along the fallopian tube toward the uterus. The ball of cells will continue to enlarge through cell division as it approaches and enters the uterus. Once in the uterus, it will continue to grow while it floats for another three to four days.

By the beginning of the second week, the hollow, fluid-filled ball of cells is referred to as the **blastocyst**. Seven to nine days after fertilization, the blastocyst embeds itself into the lining of the uterus (endomentrium). This process is called implantation. Once the blastocyst is embedded in the endomentrium, *the placenta* rapidly begins to form. The placenta is an organ that sustains the foetus by allowing oxygen and nutrients from the mother's blood across a semi-permeable membrane to the foetus and by returning waste product from the foetus to the mother. The two blood supplies do not actually mix. The placenta is attached to the foetus by the umbilical cord, a tube containing two arteries and one vein that is pressurized to prevent tangling. After implantation, the period of the zygote ends and the embryonic period begins.

**Embryo Period**

By the fourteenth day, the growing ball of cells begins to differentiate into three distinct layers of cells, each of which is destined to form specific organ systems. The outermost layer, called the ***ectoderm***, develops into the brain, the spinal cord, the nerves, and the skin. The intermediate layer, the ***mesoderm***, forms the skeletal system, muscles, heart, and kidneys. The innermost layer, or ***endoderm***, becomes the digestive tract, the respiratory system, pancreas, and liver. The developing organism is now referred to as an embryo.

The Period of the Embryo extends from the beginning of the third week to the end of the eighth week of pregnancy. During these critical six weeks, the structure of all the major organ systems (except the genitals) is established, a process known as ***organogenesis***. Each organ is formed at a particular time. The time when an organ is developing most rapidly is its ***critical period***. The heart, for example, begins to emerge in the middle of the third week and is structurally complete by the end of the eighth week.

By the end of the end of the embryonic period, the organism takes on a distinctly human form and many of its systems have begun to function. For example by the end of the fourth week, the ectoderm has folded over to form the neural tube (rudimentary brain/spinal cord), and a primitive heart begins to circulate blood through a crude but functional circulatory system. By the end of the eight week, the nervous

system, heart, kidneys and liver have begun to function. All of this has been accomplished in an organism that is approximately 3 centimetres long and weighs about one-fifth of a kilogram.

**How does growth and development proceed?**

Two principles have been used to describe physical development during the period of the embryo. First, the ***cephalocaudal*** principle describes a growth trend from head to toe, with growth of the head proceeding more rapidly than the lower parts of the body. This is reflected in the disproportionately large sized head early in this period.

The ***proximodistal*** principle describes a second trend in which development proceeds from the center (or proximal) regions of the body out toward the extremities (or distal parts). Thus, arm buds and leg buds appear early in this period, followed progressively by the upper arms and finally by the development of the forearm and lower legs. Webbed fingers and toes appear toward the sixth week. The embryonic period ends at the eighth week. The next period is the period of the foetus.

**Period of the Foetus.**

The final and longest stage of prenatal development, the period of the foetus, extends from the beginning of the ninth week to birth. The major organ systems continue to develop in size and function throughout this period. The size of the foetus is multiplied by a factor of 10. Body movements increase steadily in both intensity and variety between 10 and 16 weeks and by 16 weeks the mother usually begins to feel the ***quickening***, the sensation of the foetus kicking against her abdomen. By 18 weeks, this movement slows as a result of advances in regulatory functions of the higher centers of the foetal brain.

By 26 weeks, the foetus has reached the age of viability, the age at which it would have a reasonable chance of survival if born prematurely. Despite modern advances in medical care, survival with an earlier birth date is impossible because of the immaturity of the lungs and nervous system prior to week 24 or 25 as shown in the following table.

| **12 Weeks** | **16 Weeks** |
|---|---|
| The foetus weighs about 1 ounce and measures about 3 inches. The head is still \|quite large in relation to the body. The eyes have formed but they remain fused shut. The ovaries and tests have formed within the body, but the external genitalia are still indistinguishable. The foetus is quite active in the roomy environment of the uterus: kicking, | At 4 ounces and 6 inches in length, the foetus now takes on a distinctly human form. The face has been formed with the eyes large in relation to other features such as the chin. The fingers and toes are completely separated and the foetus' sex can be determined by external features. The body is now covered with downy hair or lanugo. The mother may detect the first movements |

| | |
|---|---|
| clenching its fists, and making facial expressions | |
| **20 weeks**<br>The foetus now weighs 8 ounces and is 10 inches long. All of the nerve cells that the individual will have throughout life are now formed. The foetus now shows many reflex reactions and can suck its thumb | **24 weeks**<br>Now I pound and 13 inches long, the wrinkled skin is covered with *vernix,* a waxy coating that protects the skin in the liquid environment. The foetus reacts to loud sounds and music. The immature lungs, kidneys, and liver cannot yet sustain life out-side the womb. If born, some infants may survive but only with the best of intensive care. |
| **28 weeks**<br>At 2 pounds, fatty deposits beneath the skin begin to smooth out the skin. The foetus begins to produce sufactant, a substance that prevents the collapse of the lungs between breaths. Babies born prematurely have 60 - 70% chances of survival. Foetal movements can be seen through the mother's abdomen as the uterine environment becomes crowded. The eyes open for the first time and the foetus may hiccup as it swallows amniotic fluid. | **32 weeks**<br>At 4 pounds, 3 ounces and 16 inches in length, the lungs produce enough surfactant to give the foetus an excellent chance of survival if born prematurely. The foetus's movements can be quite vigorous, sometimes causing the mother to gasp for breath. The brain develops deep folds in its surface. |
| **36 weeks**<br>The lungs are now mature, and the kidneys and liver are beginning to process waste products. Most foetuses (96%) will turn head down and many will "engage" the head into the mother’s pelvic during the last prenatal month | |

**LESSON FIVE: THE BIRTHING PROCESS**

***Objectives***

***By the end of this session you should be able to:-***

***i. What happens in the birthing process***

***ii. Explain types of birth complications***

**Introduction**

For 9 months, heredity and environment factors have interacted to shape a new life. At 38 weeks the foetus is now ready to leave the comfort of the mother's womb to join others in its next world. By this time the foetus has a strong chance of survival. The question that many ask is how this transition finally takes place. Like many other reproductive issues, many children find it a tricky puzzle. Questions like: How is a child born? Does the baby need to bite his way out? or Does the doctor cut through mummies tummy to access the baby? are not uncommon. In this unit I will describe the process of birth and its implications.

By the end of this session you should be able to:

Explain the importance of child development study.

Describe the significance of child development to parents and teachers

**What Happens To The Baby Just Before Birth?**

During the last month of pregnancy, the head of the baby turns down toward the mother's pelvis and the uterus descends into the pelvic cavity. The ideal position for the baby's head is down and facing the mother's back. This position allows the baby to move most easily through the cervix and birth canal.

**What Are The Signs Of Labor?**

Labor is the process by which a woman gives birth to her baby. The onset of true labor is marked by the appearance of any one or combination of three signs: (1) Labor pains-these are rhythmic contractions of the uterus. These contractions are perceived to come from the lower back. They occur at regular intervals but as labor progresses the intervals shorten and the intensity of the contractions increases. (2) The Show-this is a small blood-spotted mucus plug that is discharged from the Cervical canal as a result of the dilation of the cervix and (3) Discharge of the amniotic fluid. This discharge occurs when the amniotic sac ruptures.

When any or a combination of these signs occur the mother is said to be in labor, a process which occurs in three stages. Let us look at each of these stages now.

Birth Process Model - Anatomical Model

**Stages of Labour:**

The process of labour unfolds in a series of three well-defined stages.

**The First Stage: Dilation**:

This stage begins spontaneously approximately 266 days after conception with a series of contractions that dilate or open the cervix to allow the baby to pass through. The muscular walls of the uterus contract pushing the baby against the cervix. The first contractions are relatively short and painless. However, they gradually become longer, stronger and more frequent. As the cervix approaches its widest aperture, the pain can reach extraordinary levels of intensity. Complete dilation to 10 centimetres takes between 2 to 20 hours for the first pregnancy and less for later pregnancies. The first stage is divided into three phases.

The early phase lasts until dilation reaches 4 centimetres, roughly the width of two fingers. The amniotic sac (bag of waters) may break, releasing a trickle or possibly a gush of liquid through the vagina. The active phase of labor lasts from two to six hours for first-time mothers. The transition phase is marked by the dilation of the cervix from 8 to 10 centimetres. This phase typically lasts about one hour. Bee (1995) likens this stage labor to putting on a sweater with a neck that is too tight. You have to pull and stretch the neck of the sweater with your head in order to get it on. Eventually the neck is stretched wide enough so that the widest part of your head can pass through. When dilation is complete, the baby" head moves through the cervix and begins to descend into the vagina, or birth canal. Contractions have increased to maximum intensity, lasting about two minutes each and occurring in rapid succession, often without a lapse between them. In a conventional hospital delivery, the mother is now moved into the delivery bed.

**The Second Stage: Descent and Birth:**

At the end of the transition phase, the mother will normally have the urge to push the baby out. The second stage of labor begins when the cervix is fully dilated and ends when the baby is born. The baby descends down the birth canal. The descent of the baby can take from a few minutes up to three hours. This depends on the relative size of the baby, the resistance of the vagina and the strength of the contractions. The descent is gradual and intermittent. When the top of the baby s head appears through the vaginal opening, the opening of the vagina is stretched to its limit Many women feel more clearheaded and have a renewed sense of optimism when pushing begins since the baby is almost born. Just before the

baby is born a mother may feel a burning, stinging, stretching sensation at the vaginal opening- a sure sign that you're almost there! As the head crowns, mother relaxes and the head moves out through the vaginal opening. As the baby s head emerges it turns to one side to allow the shoulders to align, then with next push shoulder's and the rest of the baby's body slips out. The birth attendant may assist in turning foetus to facilitate this process.

If the opening is not adequate to accommodate the size of the head, the physician may administer a local anaesthetic and perform an ***episiotomy.*** This is a surgical incision that widens the opening to allow the head to pass. The episiotomy reduces the risk to the baby and prevents injury that would result from a tea of the skin between the vagina and the anus. The last few contractions expel baby out of the mother's body. The baby takes the first breath and the umbilical cord is clamped and severed.

**The Third Stage:**

The third stage of labour involves the expulsion of the placenta and umbilical cord or afterbirth, through the cervix. There are mild contractions that expel the placenta and the now-useless foetal membranes out of the mother's body.

This stage consists of the expulsion of the placenta. It generally takes 5 to 10 minutes and the stage also includes after birth recovery of the mother.

Should the placenta not easily come out, tugging or pulling should not be performed. Gentle uterine massage may be utilized to assist in the release The placenta should always be examined to be sure no parts remain within the uterus This can become detrimental to the mother causing haemorrhage and/or death.

During the after birth recovery phase, a mother is monitored to be sure no uterine bleeding or other complications occur.

**Birth Complications**

The labor and birth process may be complicated by lack of sufficient power or by inappropriate presentation of the baby

**Delivery Presentations**

Delivery presentation refers to the orientation or the position of the baby as it presents itself for the birth

process. It is often called by different names including "foetal attitude' and "foetal lie". The preferred foetal delivery presentation is "cephalic presentation. This is a head down presentation with the topmost part of the head emerging first and the face downward in the direction of mothers back and back of head upward in the direction of the mothers' front.

If the child is not in the face down head down position, the delivery presentation is referred to as a **mal-presentation.** There are various types of mal-presentations:

- **Upside Down Presentation:** This is a presentation where the baby presents in an "upside down" or "sunny side up" position. If the baby does not turn to the proper position or turns late, the newborn will generally develop "cone head". This position also produces what is known as "back labour". This can be significantly reduced in women who receive regular chiropractic care during their pregnancy. The upside down presentation occurs in approximately 13% of births.
- **Breech Presentation**: In a breech presentation, the feet or buttocks present first as opposed to the head. This presentation occurs in about 1 out of every 40 births. The possible complications of this presentation can be serious and include:
    i. intracramal bleeding
    ii. neck dislocation
    iii. shoulder dislocation
    iv. hip dislocation
    v. clavicle fracture
    vi. internal organ disruption
    vii. premature placental rupture
    viii. prolapsed cord
    ix. uterine rupture

- **Face Presentation:** In this presentation, the baby presents face first with the neck in extension. Causes this kind of presentation includes a lax uterus, flat pelvis, multiple foetus, or- neck spasms of the foetus. This is stressful on the cervical spine. Chiropractic care by a chiropractor trained in adjusting newborns is crucial for the continued proper growth of the spine. Face presentations occur approximately every 3,000 births.

- **Shoulder Presentation:** The shoulder presentation is one where the shoulder emerges first. This delivery presentation occurs in every 200-300 births.

- **Transverse Presentation:** The tail area is presented first with legs and head at opposite sides, Efforts are usually made to turn the baby in utero through massage, exercise or position of mother. If the baby's position does not change a caesarean operation maybe needed to safely remove the baby.

**Insufficient Power**

Sufficient power and coordinated contractions are essential for a smooth uncomplicated labour. When the contractions are weak or the pattern of contractions disorganized, the mother is more likely to become exhausted. This can cause foetal distress resulting in foetal harm. A caesarean section may be necessary in such a situation.

**Passage Obstruction**

Passage way obstructions in the uterus, pelvis, or cervix can cause serious complications in the birthing process. Causes of such complications may include:

i. tumours
ii. cysts
iii. fractures
iv. flat male-like pelvis (android)
v. physiological changes due to degenerative joint disease, tuberculosis, rickets or osteomalacia.

**Dealing with Labour Complications**:

The natural process of labour is subject to a number of problems, some of which place the mother and/or the infant at risk. When serious problems arise, medical mterventions are necessary to reduce the risk to mother and infant. Commonly used procedures include inducing and speeding up labour, assistance through mechanical means and caesarean delivery.

**Inducing and Speeding Up Labour** .

A variety of medical circumstances may recommend that labour be initiated artificially in a process called induction. If the pregnancy is at or beyond the forty-second week, induction is recommended. If the amniotic sac has not yet ruptured, the physician can • induce labour by purposely breaking the ammotic sac. This procedure is called the ***Artificial Rupture of Membranes*** (AROM). If AROM fails, a hormone can be given intravenously to induce or speed up labour. The dose can be varied to regulate the rate and intensity of contractions throughout labour. If it is medically advisable tor the labour to be induced and the procedure fails, a caesarean delivery is the only reasonable alternative.

Artificially induced labour can cause very strong and painful contractions, thereby increasing the need for pain medication. The equipment necessary to administer the drug restricts the mother's movement, adding to her discomfort.

**Assisting Delivery through Mechanical Means**

In some instances, after the baby's head has passed into the vagina, the contractions weaken and the baby stops or dramatically slows its descent. If procedures to induce or speed up labour have failed or are inappropriate, one remaining option is to assist the descent by mechanical means. The first procedure involves the use of forceps, a tong like instrument that is inserted into the vagina around the baby's head. The physician pulls if the mother pushes with each contraction. Forceps typically require the use of anaesthesia and an episiotomy. The forceps introduce the risk of injury to the mother and the baby.

A second mechanical procedure for assisting the descent of the baby is vacuum extraction 4 plastic suction cup, connected by a tube to a vacuum device, is placed on the top of the baby's head. Handles on the tube allow the physician to pull on the head as the mother pushes with each contraction. Compared to the use of forceps, vacuum extraction is less likely to damage the vagina, and can be applied higher in the birth canal.

**Caesarean Delivery**

If the baby or mother is thought to be at risk for instance if there is foetal stress and other techniques are either unsuccessful or inappropriate, the baby may be delivered surgically by caesarean section. Another common reason for doing a caesarean delivery is breech birth This complication occurs when a part of the body usually the buttocks, feet, or umbilical cord- other than the head is positioned to emerge first from the cervix. It the mother's pelvic bone is too small to accommodate the birth of a large baby. A caesarean delivery may also be performed. In this procedure, anaesthesia is administered. An incision is made in the abdomen and uterus and the baby is removed.

Even when a caesarean is clearly indicated, there are risks. This procedure is considered a major surgery and it prolongs the recovery of the mother. There is a higher rate of postpatum infection and a prolonged period of healing in the mother. It is important to use it only when necessary for the well being of the mother and the baby.

**Summary:** In this unit we have looked at the process of birth, we have seen that labour progresses through three stages. The first stage involves contractions of the uterus which cause the cervix to dilate until the baby moves out of the cervix. In the second stage, further uterine contractions push the baby

down the vagina until out of the mother's body. The placenta and the umbilical cords are expelled out of the mother's body by mild contractions a few minutes after the baby is born. We have also looked at some mechanical interventions that become sometimes necessary to reduce the risks of the baby and the mother.

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**Definition of terms**

**Anoxia:** Prolonged period of oxygen deprivation to the foetus.

**Caesarean delivery:** Birth of the baby through an incision through the abdomen and uterus

**Episiotomy:** A surgical incision that widens the vaginal opening to allow the foetus to

***Activity***

1. ***Discuss the implications of home births***
2. ***What leads to birth complication?***
3. ***What impact does complication in delivery have on a child?***

**Summary**

The session covered the three stages of birthing until the baby is born, it also highlighted different types of delivery and mechanical intervention necessary to reduce the risk of mother and child

## LESSON SIX: ENVIRONMENTAL INFLUENCES ON PRENATAL DEVELOPMENT.

### Introduction

For a long time, it was commonly believed that the uteais and the tissues surrounding the embryo and foetus offered more than adequate protection to prenatal development. It was believed that the placenta provided an impenetrable barrier to the invasion of harmful substances. (Krantz, 1994). It is now known that some diseases, drugs, and other potentially harmful chemicals can be transmitted from the mother to the embryo. At best, the placenta may play a role in slowing down the transfer of some harmful substances and slightly reducing their concentration. However the organism is still vulnerable to environment influences.

### Teratogens

As earlier discussed, the placenta provides a semi permeable membrane for the exchange of substances between mother and the embryo foetus. As such, it can restrict some substances in the maternal blood supply (for instance, larger proteins and the mother's blood cells) from entering the blood supply of the embryo. This has some benefits: The mother's antibodies, which protect against disease, are transmitted to the embryo and provide some degree of immunity to certain forms of infection. However, many other substances - including chemical agents, viruses and bacteria are capable of crossing the placenta and entering the embryo or foetus. Agents that enter into the biological system of the embryo or foetus and negatively influence development are called teratogens. This term comes from the Greek word *"teras"* meaning monster. The key elements determining the effects of teratogens are dosage, timing in relation to^ organ development, the embryos own resilience, and protective factors in the mother. There are various teratogenic agents: Let us go through the main teratogenic agents and have a look at their likely effects on the developing organism.

### Effects of drugs and medication on the developing foetus

Although medication is at times essential for the pregnant mother, it is true that some drugs do affect the development of the foetus. They are teratogenic. The teratogenic effects differ from one drug to the other and depend on the time they are taken. This sometimes causes damage on the foetus leading to deformed babies.

### Drugs effects on prenatal development

Some pregnant mothers take drugs and medication without thinking about the possible effects on the

foetus. Some smoke tobacco and bhang and other hard drugs or drink alcohol while others buy curative drugs over-the- counter without consulting a physician.

**The most harmful medication**

Thalidomide is the most harmful drug ever known. It is a tranquilizer that has the ability to alleviate morning sickness suffered by many mothers in their early stages of pregnancy.

**Effects of thalidomide**

In 1961, some 7,000 babies were born with severe physical deformities, most notably small, flipper like appendages in place of arms or legs. The birth defects were traced to the mother's use of the over-the-counter sedative thalidomide (Lenz, 1966). Although thalidomide was apparently highly effective in reducing a pregnant mother's feelings of nausea, its effects on the embryo were devastating. The effects depended on when it was taken. If the ears were in their critical period, the baby was born without ears. If the alimentary tract was in its critical period, severe deformity resulted in various locations along the tract. Defects of the heart, liver, and kidneys were also common (Krantz, 1994). Thalidomide is no longer available for pregnant women.

**Are there other teratogenic medication?**

Yes, there are other medications that may cause harm to the developing embryo and foetus. A good example is the synthetic sex hormones (oestrogen and progestin) commonly used in birth control pills. The pill works by suppressing ovulation and by artificially creating cervical hostility — but it is not always successful. In cases where a woman is unaware of the pill's failure, she will continue using the pill through the early weeks of her pregnancy, exposing the embryo to abnormally high levels of sex hormones. This may result in abnormalities of the baby's genitalia.

Synthetic hormones have also been prescribed to correct hormone imbalances that might otherwise result in miscarriage. Between 1948 and l969, for instance, the synthetic oestrogen diethylstilbestrol (DES) was routinely prescribed to prevent miscarriages in up to 2 million pregnant women. Babies born to the DES mothers appeared normal at birth but at adolescence, some girls developed a rare form of vaginal cancer. Approximately 59 percent show abnormalities of vaginal tissue and/or the cervix (Elliott, 1979). Moreover, when DES babies grow to adulthood and become pregnant, they are more likely to miscarry than other women. Male offspring, although less severely affected by DES, have been shown to have genital abnormalities and an increased risk of testicular cancer (Stillman, 1982). The DES example illustrates that some of the negative effects of apparently safe drugs introduced today may not show up for many years. We know almost nothing about possible long-term teratogenic effects of thousands of drugs that are commonly prescribed by physicians and many others sold over-the-counter. For some potential

teratogenic medications, prescriptions are accompanied by appropriate warnings against use by pregnant women. Despite these precautions, however, there are many, instances, where mothers may take the medications because they are unaware they are pregnant.

In our society adults take medication for virtually every ailment, discomfort or irregularity. Many women continue this behaviour into their pregnancy, placing the embryo and foetus at risk.

**Other teratogenic drugs**

These include cigarettes, alcohol, narcotics and other street drugs.

**Cigarettes effect on the developing foetus**

Women who smoke cigarettes continue to smoke throughout their pregnancy. These mothers place their babies at a high risk for this indulgence. Babies born of smoking mothers have been found to have low birth weight. Smoking during pregnancy is also associated with a significant increase in the rate of miscarriages, stillbirths and death of babies soon after birth (Naeye, 1978). Foetal oxygen deprivation is associated with abnormalities of both the brain and the heart. The damage to the foetus is directly correlated with the number of cigarettes smoked per day. It also seems to be associated with the period of pregnancy when the mother smokes. Recent research shows that cigarette smoking can lead to asthmatic babies.

**Alcohol affect the developing foetus**

Women who drink heavily during pregnancy have a high risk of giving birth to a baby with ***Foetal Alcohol Syndrome*** (FAS). FAS is characterized by mental retardation as well as a combination of deformities of the face, brain, heart, genitals, bones and joints, and growth retardation. The head may be abnormally small with inadequate development of the brain. Alcohol ranks third after Down syndrome and fragile X chromosome abnormality as a cause of mental retardation (Milunsky, 1989). FAS baby usually have widely spaced eyes, a flat nose, and underdeveloped jaws. The period of greatest vulnerability to alcohol is in the first trimester (the first three months of pregnancy).The critical period is when the heads is forming, during the third and fourth weeks of gestation. At this stage the mother is unlikely to know that she is pregnant and is therefore unlikely to take precautions, particularly if she is an alcoholic.

Prenatal growth retardation and damage to the foetal brain have enduring effects on a child. The child's

growth remains stunted. Hyperactivity, distractibility, short attention span, and delay in perceptual and emotional development persist into childhood for children of alcoholic mothers (Krantz, 1994).There is no safe level of alcohol consumption for pregnant women. Even moderate use of alcohol does place the embryo and foetus at risk.

**What are the effects of narcotics and other street drugs?**

When a pregnant mother takes a psychoactive drug, the drug crosses the placenta and enters the bloodstream of the foetus within minutes. The foetus cannot metabolize drugs as efficiently as the mother can, so the effects of drugs stay with the foetus long after they have worn off the mother.

When a mother who is addicted to **heroin** or **methadone** (a potent narcotic used in drug rehabilitation) gives birth, her baby too will be addicted to the drug and will soon experience withdrawal. The withdrawal symptoms are severe, including tremors, vomiting, and fever. The newborn may die if not given the drug immediately. The addiction can be eliminated by gradual reduction of the drug. (Krantz, 1994)

Infants of narcotic-addicted mothers are very likely to be born preterm and at low-birth weight. Addicted newborns are highly-irritable-and engage in a characteristic high-pitched cry that cannot be soothed, even by the mother. Although the infant can be treated successfully for the addiction, this highly irritable behaviour pattern typically presents an overwhelming challenge, especially for a mother who is still addicted and is likely to have limited coping strategies. Consequently, such mothers and their children remain in an intense state of risk.

**Cocaine** poses greater threat than heroin. Cocaine is a highly addictive drug with pervasive teratogenic effects. Its widespread use by young women in some societies greatly expands its risk level.

Research has shown that pregnant mothers who use cocaine significantly increase the likelihood of spontaneous abortion and stillbirth. Babies who do survive are likely to be born preterm, at lower birth weight, and with abnormally small head circumference and other malformations. Cocaine-exposed newborns are irritable, easily over stimulated, and disorganized in their interaction with caregivers (Krantz, 1994)

A mother who stops using cocaine early in her pregnancy substantially reduces her baby's risk of preterm delivery and low birth weight. Cocaine causes a reduced head circumference, an indication of inadequate brain development. Cocaine-exposed children continue to have learning and cognitive difficulties into the

preschool years.

While prenatal exposure to cocaine has multiple negative effects on children's development, the problem is often exaggerated by the mother's continued involvement in a drug-related lifestyle after the child is born. Cocaine-addicted mothers are likely to physically and emotional neglect their infants and preschool children. Addicted mothers are likely to be chaotic and unable to provide for their children's needs. In comparison to non-addicted mothers, their children are likely to develop more slowly. They are less likely to succeed. Thus, children who are born to cocaine-addicted mothers will be exposed to multiple forms of risk to their development.

A woman is more likely to have sex, less likely to use birth control, and thus more likely to become pregnant when she is high on alcohol or drugs. Before she even knows that she is pregnant, she will be bathing her baby in these substances. They enter the baby's bloodstream just a few minutes after they enter the mother's. So when she gets high, the baby gets high. The baby's liver and kidneys are immature and far less efficient than the mother's organs are at breaking down the chemicals and cleansing the bloodstream. So the baby suffers more and is in much greater peril than the mother is.

**Diseases harmful to Expectant Mothers**

Not all diseases suffered by a pregnant mother are harmful to the foetus. However there are several common diseases that have teratogenic effects. Let us have a look at some of these diseases now.

**Rubella**

Rubella or German measles is an infection that causes mild cold symptoms and a rash in adults. If a mother contracts rubella during the first trimester of her pregnancy, the foetus is likely to be affected. ***Foetal rubella syndrome*** may-result in spontaneous abortion or stillbirth; if the foetus survives, its problems may include mental retardation as well as deafness or malformation of the eyes, ears, and/or heart, depending on the period of pregnancy during which the disease is contracted. The rate of malformation is approximately 50 percent for mothers infected during the first trimester. There are reduced likelihood of effects from second-and third-trimester illness. Approximately 10 to 20 percent of infected infants die before age one (Bergsma, 1979).

Women who intend to become pregnant should have their immune status checked and updated at least six months before trying to conceive.

**Herpes**

Two forms of herpes virus are epidemic. Both forms have severe effects on the foetus.

Herpes simplex 2 (HSV) is a very common sexually transmitted disease that causes painful genital sores in adults. HSV is transmissible only when sores are present. If the mother has HSV, the foetus is most likely to contract it at delivery through exposure to maternal secretions. There is a 50-percent infection rate for vaginal deliveries. Although infection at the time of birth can often be avoided by Caesarean Section, there are possibilities that the foetus can be infected before birth. Regardless of the mode infection, the effects on the foetus are catastrophic. Most infected babies die within the first few months of life.

If a mother has been infected with herpes at any time in her life, she is still infected, even if she shows no symptom. The following precautions must be taken to avoid damaging the baby:

- If she is not yet pregnant but is sexually active, she should keep in mind that the only effective drug for the control of herpes (acyclovir) is a suspected teratogen. She should discuss this with a physician.
- When the mother becomes pregnant, she should inform her obstetrician immediately. Her pregnancy must be monitored closely. A caesarean delivery will be required to prevent possible infection of the baby during vaginal delivery.

A second common form of herpes vims, Cytomegalovitus or CMV is a highly, infectious disease with symptoms resembling a mild cold Unfortunately, the virus is not always accompanied by symptoms and CMV can hide in the mother's system for some time and affect the foetus when the mother becomes pregnant. Blood tests are available to determine the mother's vulnerability to the disease Since no vaccine or cure is presently available for CMV pregnant women-particularly those who have daily contact with young children should avoid exposure to others with the disease.

**Acquired Immunodeficiency Syndrome (AIDS)**

AIDS is a progressive weakening of the immune system by the Human Immunodeficiency Virus (HIV). In infected adults, the weakened immune system creates extreme vulnerability to infection and certain types of cancer. Children get AIDS in a variety of ways but the primary mode of transmission is from an infected mother to the foetus in uterus or at birth. A few newborns have been infected from their mothers' breast milk, and about 17 percent of known cases children resulted from receiving blood or blood products.

Infected infants suffer from frequent infection and diarrhea. They fail to thrive or gain weight. Brain damage is typical. In contrast to adults susceptibility to opportunistic infections - including cancer and pneumonia- infants fall prey to common bacterial infections. The prognosis for these infants is almost certain death within a few months. There is no cure for AIDS at any age.

The only way to prevent transmission of HIV to the foetus is for infected women to avoid pregnancy. The risk of HIV - positive mother infecting her foetus is approximately 30 to 40 percent. There is simply no safe way for an infected woman to bear a child. If she gives birth and her baby does not test positive, breast-feeding should be avoided. The virus can be transmitted to the baby by breast milk.

**Syphilis**

Syphilis is a common sexually transmitted disease. If contacted in the first months of pregnancy, the organisms that produce this disease cannot cross the placenta, so syphilis can be cured with antibiotics before the foetus is affected.
However later in the pregnancy, the foetus is susceptible to bone, liver and brain damage or even death.

**Maternal diabetes**

This disease involves higher than normal amounts of blood sugar in the mother's blood. It causes babies to be large and mature looking at birth, but they are immature in their functioning.

**Toxemia**

This is a condition caused by toxic substances in the blood, causing swelling of the mother's limbs, sometimes malfunctioning of the kidneys and circulation systems. Toxemia causes cerebral palsy, epilepsy, mental retardation, and reading disability. The cause of this disease is unknown but it is thought to be due to malnutrition. If untreated toxemia may lead to a mother's death and can even lead to brain damage in the foetus due to lack of oxygen supply to the brain

**Are There other Teratogenic Maternal Conditions?**

Yes there are several other conditions of the pregnant mother that have been found to affect the developing foetus. These include genetic factors (Rhesus factor), maternal stress, nutrition and exercises during pregnancy, mother's emotions and the mother's age.

**What Is Rhesus (Rh) Factor and what is its Effect?**

Incompatibility between mother's blood and the infant's is another hazardous problem. If the mother has Rh-negative blood and the baby has inherited Rh-positive blood from the father, a reaction can occur in

the mother and eventually in the foetus leading to miscarriage, or the baby may be born mentally retarded. Antibodies build up in the mother's blood stream and these antibodies fight the foetus as if it were foreign to the mother's system. This has a toxic effect on the foetus.

The first baby is not affected but subsequent babies can be damaged. A physician who detects the Rhesus-negative blood characteristic can prevent subsequent problems through injections of Rh immune globulin.

**Maternal Stress and emotions During Pregnancy**

Several factors can cause stress in the pregnant mother, for instance, mental conflicts, economic pressures, illness etc. Stress increases heart rate, blood pressure, respiration, and muscle tension. (Krantz, 1994). Mother's emotions also affect the foetus. A high a mount of psychological stress can affect the foetus leading to premature birth, prolonged pregnancy or restlessness in the newborn.

There are four compelling reasons to expect that maternal stress would have a negative impact on the foetus and/or on the birth process. Emotional reactions like extreme stress result in increase in the level of adrenaline and other hormones in the bloodstream. These substances pass through the placenta and affect the foetus.

Stress hormones released into the bloodstream also increase blood flow to the muscles and brain and decrease blood flow to the uterus, reducing the supply of oxygen to the foetus. Stress can also have negative effects on the mother's approach to prenatal care, diet, and exercise. These in turn affect the foetus.

Stress can promote substance abuse. Stress may result in the mother's increased use of alcohol, drugs, and cigarettes, all of which have been shown to harm the foetus.

Stress may also affect mother's feeding habits leading to a low birth weight infant.

**Maternal Nutrition**

Mother's nutrition and diet play a significant role in the growth and development of her foetus. The mother needs adequate diet during pregnancy to support the foetus developing body. Malnourished mothers give birth to premature or low-birth weight babies.

Malnutrition also affects brain development. Lack of sufficient vitamins in mother's diet also affects the development of the baby's nervous system multivitamins and neural tube defects. A recent landmark study (Mulusry et al., 1989) discovered that mothers who take Multivitamins during the early stages of

pregnancy sharply reduce the risk of having a baby with neural tube defects. Such defects, occurring at about the sixth week after conception can cause paralysis and even death.

It is a common belief that pregnant mothers should eat more food than they do normally. Although there is some truth in this, it does not mean that she should simply double her normal intake of food. Their nutritional needs change. For example, although the mother's energy requirements increase by only 15 percent, her need for protein increases 60 percent and her need for iron may increase up to 300 percent. Individual women differ, so each woman should consult with a certified dietician as an essential aspect of prenatal care

Unfortunately, many low-income mothers cannot afford to maintain adequate nutrition during their pregnancy, increasing the likelihood of low birth weight babies.

**Exercise during Pregnancy:**

Many women who are concerned about physical fitness ask whether they can continue to exercise during their pregnancy. What effects does the mother's exercise have on the pregnancy and on the foetus? There has been very little research on the effects of exercise on pregnancy. In on study, researchers examined the effects of vigorous bicycle peddling on foetal heart rate in the second trimester. Foetal heart rate declined only when mothers exhausted themselves; it then returned to normal within a half hour after the exercise was terminated (Carpenter et al., 1988). More research is needed on this important aspect of prenatal care.

The limited research available suggests that physically fit women in low-risk pregnancies may continue moderate exercise into the first six months, but only under the guidance of a physician. However, pregnancy is not the time for the pregnant woman to begin to get in shape, nor the time for her to take on new challenges even if she is already in good shape.

**Mother's Age:**

Mortality rates and incidences of retardation are higher in children born to mothers under 20. This can be explained by social, economical and physical factors. Most teenage mothers are not socially and economically stable hence they are likely not to feed well and afford other facilities necessary for proper development in pregnancy. Physically, the young mother is not adequately developed and this may introduce problems during birth process.

Women who delay childbearing until they are over 35 years have higher risks of premature, low-birth weight babies, and stillbirths. They have a higher risk of contacting diseases such as high blood pressure

and rapture of placenta. Older women also have higher risks of giving birth to children suffering from a genetic disease called Down's syndrome (mongolism).

**What about Environmental Hazards?**

Massive doses of radiation from the atmosphere cause congenital problems. Evidence of this comes from the results of the atom-bomb explosion in Hiroshima and Nagasaki in 1945. All serving pregnant mothers within a mile of the centre of explosion had still births.75 percent of pregnant women within 1-4 miles had spontaneous abortions, still born babies and severely handicapped infants.

Use of x-rays (especially during the first trimester) increases the risk of Leukemia during childhood.

Another form of environmental hazard is pollution. Exposure to several pollutants can be teratogenic. For example carbon monoxide, lead and mercury can lead to low birth weight and slow neurological development. Carbon monoxide can easily lead to death.

**Maternal Prenatal Care:**

It is important that the expectant mother seek prenatal care as soon as she suspects she is pregnant. Signs of pregnancy include one or several of the following symptoms: a missed period, a need for more rest, nausea and swollen sensitive breasts. As mentioned earlier, the first eight weeks of pregnancy are critical to the developing foetus, since this is the time that all major organ systems develop. Early detection of problems is important in ensuring the development of a healthy baby.

During prenatal visits examination by the medical personnel provide basic information about the overall health of the mother and the foetus. Blood test are taken to determine if the mother is anaemic, has diseases such as syphilis, or has had rubella or if there could be Rh blood incompatibility. Questions are asked about the mother's and father's past medical history, family history, and personal health habits.

Expectant mothers are usually counseled about the importance of proper diet and the things they need to avoid. It is important for the mothers to have constant medical checkups at regular intervals throughout pregnancy.

**Conclusion.**

After the long journey of prenatal development, birth has to take place. Once the 38 weeks of gestation are over, the foetus is ready to be born, an event that holds some anxiety as well as a lot of joy for most parents. I will look at this event in the next unit.

**Definition of Terms**

| | |
|---|---|
| **Anoxia :** | Refers to a condition that is caused by the lack of oxygen in the brain of infant during labor and delivery and can cause brain damage. |
| **Cephalocaudal:** | A pattern of development that proceeds from head to tail. |
| **Critical period:** | The time when an organ is developing most rapidly. |
| **Ectoderm:** | The outermost cells of the embryo which develops into the brain, the spinal cord, the nerves, and the skin. |
| **Endoderm:** | The innermost layer of cells in the embryo which becomes the digestive tract, the respiratory system, pancreas and liver |
| **Mesoderm:** | The intermediate layer of cells in the embryo which forms the skeletal systems muscles heart and kidneys. |

***Activity***

1. ***What are teratogens?***
2. ***Explain their impact on unborn baby?***
3. ***What can mothers do to reduce their effects on unborn child?***

**Summary**

The session covered human development from conception to birth it involved the development from zygote to an embryo until foetus stage and the developmental stages until the baby is born. The factors influencing prenatal development were discussed

## LESSON SEVEN: BRAIN DEVELOPMENT AND ITS FUNCTIONS

***Objectives***

***By the end of the session you should be able to:***

***a) Explain parts of the brain and their functions.***

***b) Explain the process of brain development.***

***c) Analyze parental and caregivers contribution towards brain development.***

A newborn's brain is about 25% of its approximate adult weight. By the age of 3, it has grown dramatically by producing billions of cells and hundreds of trillions of synapses between these cells. Much of the increase occurs before the age of 2 years at which time the brain weighs 75% of adult's weight. During the prenatal period and early infancy, the number of brain cells increase rapidly. By the time the child is five years old, the brain has attained 90% of adult's weight and by age 10, it is 95% of adult's weight.

### Parts of the Brain and Their Functions

- **External structures:** They are visible by mere inspection of the brain. They include the cerebellum, brain lobes and hemispheres, cranial nerves, midbrain, medulla, spinal cord, olfactory bulbs and tract.

- **Internal regions of the brain:** They are viewed in a cross-section. They include the forebrain (telecephalon) diencephalons, which includes the hypothalamus, pituitary, and thalamus among others. Other parts of the brain include the midbrain (mesencephalon) which consists of basic brain nuclei fibre tracts and neurons.

- **Medulla:** This is an oblong-shaped area of the hindbrain involved in heartbeat and respiration. The medulla regulates vital functions such as heart rate, blood pressure and respiration. The medulla also plays a role in sleep, sneezing and coughing.

- **Cerebellum:** This means “little brain” in Latin. The 2 hemispheres of the cerebellum are involved in maintaining balance and in controlling motor (muscle) behaviour. Injury to the cerebellum may lead to lack of motor coordination, stumbling and loss of muscle tone.

- **Thalamus:** This is located near the centre of the brain. It consists of 2 joined lobes that have egg or football shapes. The thalamus serves as a relay station for sensory stimulation. Nerve fibres from our sensory systems enter from below; the information carried by them is then transmitted to the cerebral cortex by way of fibres that exist from above. For instance, the thalamus relays sensory input from the eyes to the visual areas of the cerebral cortex. The thalamus is also involved in controlling sleep and attention in coordination with other brain structures, including reticular activating system.

- **Hypothalamus:** This is a tiny collection of nuclei located beneath the thalamus and above the pituitary gland. The hypothalamus is about the size of a pea and weighs only 4 grams yet it is vital in the control of body temperature, the concentration of fluids, the storage of nutrients and various aspects of motivation and emotion.

- **Cerebrum:** The surface of the cerebrum is wrinkled, or convoluted with ridges and valleys. It comprises a large proportion of the brain. The convolutions allow a great deal of surface area to be packed into the brain.

- **Somatic nervous system:** This is the division of the peripheral nervous system that connects the central nervous system with sensory receptors, muscles and the surface of the body. The somatic nervous system consists of our sensory (afferent) and motor (efferent) neurons. It transmits messages about sights, sounds, smells, temperature, posture and so on to the central nervous system. As a result, we can experience the beauties and the horrors of the world, its physical ecstasies and agonies. Messages from the brain and the spinal cord to the somatic nervous system control purposeful body movements, like raising a hand, winking, running, breathing, and movements which we hardly attend to – movements that maintain our posture and balance.

- **Pituitary gland:** The pituitary gland is located below the hypothalamus and it is referred to as the master gland. It circulates hormones that regulate growth metabolism and sexual development. The gland secretes many hormones such as growth hormone which causes growth of muscles, bones and glands; prolactin hormone which stimulates production of milk and inhibits production

of urine; oestrogen hormone which regulates menstrual cycle; progesterone which promotes growth of female reproductive tissues and maintains pregnancy and adrenaline which increases metabolic activities of the heart and respiration rates and blood sugar. These are just but a few of the hormones secreted by the pituitary gland.

**Process of the Brain Development**

- **Myelination:** This is the process by which a fatty substance called myelin forms a sheath around nerve fibres. At the same time, the size of the glial cells that support the nerve cell increases.

- **Lateralization:** The brain is organized into right and left hemispheres. The right hemisphere controls the left body part giving directions to the left eye, hand and leg. The left hemisphere controls the right side of the body giving directions to the right ear, eye, hand and leg. The left hemisphere holds the brain centres responsible for receiving, processing and producing language. The right hemisphere has the centres for spatial information, visual tactile or visual imagery. The functional centres responsible for language skills begin to develop early in life. Their maturation, which takes several years to complete, is associated with mylogenetic cells during which myelination occur to particular functional centres within the brain. The protective myelin sheath that coats the nerve fibres enhances their ability to send and receive signals and impulses.

**Factors that Positively Influence the Brain Development of Children**

- **Parent-child attachment:** Attachment is the desire to stay close to and feel with a specific person, resulting in an internal model of relationships. Research shows that a child's first relationship will have profound long-lasting effects on subsequent development. Secure attachments result from a child's sensibility and responsiveness to the parent's behaviour. Children's behaviour is an understandable, logical adaptation to care during the early months of their lives. Children who are secure are cooperative, persistent, competent, empathic, and well-liked by peers and teachers among others. Parents, who believe their children are responsive to them, are more likely to invest time in effective parenting practices. Those with greater self-efficacy (sense of control and confidence) over their own lives may be more responsive and engaged with their children. Likewise, those with strong support networks are also likely to create secure attachments.

- **Nutrition/diet:** A healthy well balanced diet, especially one containing a lot of proteins, will promote brain development.

- **Early stimulation:** Children, who are talked to, cuddled, clung to, have the company of caregivers, and have objects to play with, will experience better brain development.

- **Health:** Children, who are immunized, have proper environmental sanitation, have personal hygiene and are treated when sick, are likely to have better brain development.

- **Safety/protection:** Young children, who re provided with a safe environment, are protected from accidents that cause injury to the brain or head.

**Factors that Negatively Influence Children's Brain Development**

- Poor nutrition
- Poor health and sanitation
- Disobedience and lack of self-control, triggered by insecurity in children, influence the children's brain development negatively
- Lack of play, interaction and exploration suppress brain development

**Activities Parents and other Caregivers can Carry out to Promote the Brain Development**

There is need for parents and caregivers to provide appropriate activities to facilitate brain development; for example, talking to the infants, providing a variety of coloured safe play and learning materials, encouraging role or make-believe play for older children, exploration and discovery learning. Play is a critical element in early childhood because it provides the context of experiences that are vital for the development of neural pathways.

***Activity***

1. ***Explain factors that contribute towards negative brain development***
2. ***What contributions do mothers and caregivers have on a child's brain development.***

**Summary**

1. Parts of the Brain and Their Functions
2. Process of the Brain Development
3. The chapter analyses factors that positively Influence the Brain Development of children

## LESSON EIGHT: PERCEPTUAL AND PHYSICAL DEVELOPMENT DURING INFANCY

***Objectives***

***By the end of this session, you should be able to:***

1. ***Describe physical characteristics of a newborn***
2. ***Explain physical changes in infancy***
3. ***Explain factors that impact on physical growth and motor development, Perceptual and physical development during infancy***

**INTRODUCTION**.

Many changes take place in a child after infancy causing amazement to those that watch as they grow. This session will discuss the physical and perceptual changes that take place in the child from birth to about 2 years of age.

**Changes in Physical Characteristics**

Physical development follows a predictable and orderly sequence. This is governed by the interaction between genetic and environmental factors. Most infants follow a normal course of physical growth and development. Some are born with physical disability or are identified as disabled shortly after birth. Information on what normal physical growth constitutes helps us to identify children with disabilities and to develop programs to help them.

**Characteristics of the Newborn:**

The newborn has perfect physical features e.g. hands, toes, fingernails etc. He or she is relatively tiny. However there is a perfectly formed human being capable of responding to the environment. The following characteristics are evident.

**Appearance of the Newborn**

Many adults are naturally attracted to a new born. A newborn's appearance surprises many people Some aspects of physical appearance are odd for instance the newborn appears fragile and has a short neck. Sometimes this makes other people hesistant and insecure in caring for them. An oily substance called

***vernix caseosa*** covers the body. This dries a few days after birth. Some have a growth of fine textured hair called ***lanugo*** all over the body. The abdomen appears to be bulging. They have dissapropriately small arms and legs. A large head that may be misshapen and the bones are flexible. Both boys and girls may have swollen breasts and genitals. This is due to maternal hormones that crossed over to their bodies from the mother before birth. The newborn has large eyes, bulging forehead and a small nose.

**Individuality**

Babies vary greatly in size, shape, degree of physical maturity and personality traits They differ in the way they cope with stress, hunger, thirst etcetera. It is not unusual to hear adults saying a baby is cool, irritable, quiet, calm, tense etc. Babies have different patterns of responding to the environment (temperament). Children range from easy to difficult. Some of these temperament traits persist to adulthood.

**Dependence and Competence**

For several months the infant is totally dependent on adult care for instance she must be fed cleaned protected and cared for in every way. The infant on the other hand, is born with remarkable capacities for survival such as he or she is able to eat, eliminate body waste and regulate body temperature etc

Newborns actually cry less of the time than you might think. Crying seems to increase over the first 6 weeks of life and then decreases. Initially, infants cry most in the evening and then shift their crying more toward times just before feedings. The basic function of the child's cry, obviously, is to signal a need. Because babies can't move to someone to get care. They have to bring someone to them, and crying is the main way they have to attract attention. Infants have a whole repertoire of cry sounds, with different cries for pain, anger, or hunger. Infants cry in different ways depending on their needs. So each parent must learn the specific sounds of his or her own baby.

Fifteen to twenty percent of infants develop a pattern called **colic**, which involves daily, intense bouts of crying, totaling 3 or more hours a day. The crying is generally worst in late afternoon or early evening. Colic typically appears at about 2 weeks of age and then disappears spontaneously at 3 or 4 months of age. It is not known why some babies experience colic.

**States of Consciousness**

Researchers have found that there are five states of sleep and wakefulness in the baby. These states and their characteristics are as follows:

- **Deep Sleep**: Eyes closed; there is regular breathing and no movement except occasional startles.
- **Active Sleep**: Eyes are closed, breathing is irregular and there is no gross body movement.

- **Quiet Awake**: Eyes open, no major body movement and there is regular breathing.

**Active Awake**: Eyes are open, with movements of the head, limbs and trunk and irregular breathing.

**Crying and Fussing**: Eyes may be partly or entirely closed. There is vigorous diffuse movement with crying or fussing sounds.These five states tend to occur in cycles.

**Sleeping behaviour**

Newborns sleep about 15 to 16 hours each day, with little day- night rhythm. They sleep equal lengths of time at any time of day or night. By 6 or 8 weeks of age, the total amount of sleep per day drops and the first signs of *circadian rhythm* (day-night rhythm) merge. Babies vary a lot in their sleep patterns with the average hours of sleep ranging from 88 to 22 hours. Marked irregularity of sleep patterns may be a sign of disorder or problem.

Another interesting thing about sleep in newborns is that they show the external signs that signify dreaming in adults and older children. This is seen in the fluttering of eyeballs under closed lids, a characteristic referred to as ***Rapid Eye Movement*** or REM Sleep. It is a recurring sleep stage during which the baby and adults seemingly dream. About one half of the infant's sleep is REM sleep.

**Infants Reflexes**

Nature equips the newborn with reflexes to ensure survival. A reflex is a specific involuntary response to stimuli. A baby is born with a host of reflexes. Many of them disappear after the first 2 or 3 months of life. These reflexes include:

- **Breathing reflex**: Normal newborns take their first breath soon after birth. Breathing is usually irregular for the first few days and reflexive hiccups, sneezes and spit-ups are common as the newborn tries to coordinate breathing, sucking and swallowing.
- **Sucking Reflex**: Newborns suck anything that touches their lips -fingers, toes, blankets and nipples.
- **Rooting Reflex**: Babies turn their heads wherever anything touches their cheeks. This reflex helps them to find the nipple.
- **Swallowing Reflex**: They swallow anything that gets into their mouth.
- **Babinski reflex**: When their toes are stroked, their toes fan upward.
- **Stepping Reflex**: When their feet touch a flat surface, they move as if to walk.
- **Swimming Reflex**: When they are held horizontally on their stomachs, their arms and legs stretch out.
- **Grasping Reflex**: When something touches their palms, their hands grip tightly.

- **Moro Reflex**: When someone bangs on the table they are lying on, they fling their arms outward and then bring them together on their chests as if to hold on to something and they may cry and open their eyes wide.

Most of these reflexes disappear in the first months of life. Preterm babies usually develop and lose these reflexes later than full term babies. These reflexes are useful as signs of normal brain and baby function. Tests of reflexes are used to assess the newborns physical condition.

**Size and Shape**

The average newborn measures about 50 centimetres in length and about 3 kg in weight, (this vanes from infant to infant). In the first days of life, most newborn lose a little of their weight as their bodies adjust to sucking, swallowing, digesting their own food etc.

Once they have made these adjustments, they grow rapidly, doubling their weight by the $4^{th}$ month and tripling it by the end of their first year. "They increase by about 2.5 centimetres in height every year for the first 12 months. Growth in the second year proceeds at a slower rate. Boys by the end of the end year are slightly heavier and taller than girls. By the end of the second year the child is about one fifth of the adult weight and half their adult height. Much of the weight gained in the first months of life is fat providing both insulation and energy that can be drawn on in case of teething or other problems..

**Brain Growth and Maturation**:

The newborn's skull is relatively large. This is because it must accommodate the brain. The brain is about 25% it's adult weight at birth. By the age of 2 years, the infants brain is about 75% of its adult weight.

**Neurons and Their Function**

There are significant changes in the maturing nervous system (which consists of the brain, spinal cord and the nerves). The nervous system is made up of long thin, nerve cells called neurons. At birth it contains most of or perhaps all the neurons it will ever have.

Further development consists of the growth and branching of these cells into increasingly dense networks that transmit messages in form of electrical impulses between the brain and the rest of the body. As the nervous system matures the neurons become coated with a fatty insulating substance called myelin. This helps to transmit messages faster and more efficiently. This process is called ***myelination*** and the process continues until adolescence. The development of the nervous system allows children to gain increasing control over their motor functions and to experience refined perceptual abilities.

Axons are covered with a fatty coating of cells called myelin. It insulates the axon and helps it transmit

electrical impulses faster and more efficiently. When myelmation occurs in certain regions of the brain, the child gains specific forms of motor skill and muscle control that are associated with those regions. Consequently the timing of an infant's milestones - the visually directed grasp, rolling over, sitting up, standing, and walking etcetera are directly related to developments in that child's nervous system. Anything that interferes with myelination affects motor development.

**Structure of the Brain**

Different regions of the brain develop at different rates before and after birth. The motor regions, which control gross body movements, develop first. The sensory regions, which receive information from the sense organs (nose, eyes, ears, mouth, and skin) develop next. These are the only areas of the brain that function at birth. The sensory and motor regions continue to mature up until the eighth month of life. The association regions, which mediate thought, are the last to develop and their growth continues well into adulthood (Suomi, 1982).

**Sensation and Perception**

How does a newborn know that her mother's skin is soft rather than rough? How does she know the smell of her mother's milk? Infants know these things because of their senses. All information comes to the infant through senses. These senses include: sight (vision), hearing, touch, taste and smell. Sensation occurs when information contacts the sensory receptors-the eyes, ears, skin, tongue and nostrils.

Perception is the interpretation of what is sensed. For example sounds that are received by the ears may be interpreted as musical sounds or the sound of a human being,

At birth sensation and perception, are apparently present. Neonates (infants) see, hear, smell and taste. Newborn perception is very selective. They pay attention to certain things and not others. For example they pay attention to bright lights, loud noises and objects within a foot of their eyes and they almost screen out everything.

**Vision**

At birth, vision is the least developed of the senses. Newborns focus both eyes on the same spot focusing well on objects that are about 8 inches away (Bee 19995).It not easy to tell whether they perceive these objects or whether they just stare at whatever they see. Within a few weeks the baby can at least roughly follow a moving object with his eyes.

By the age of 3 months, babies recognize the mother's facial expressions and they can recognize their mother's photograph. Newborns do not use their eyes together but by age 4 months they are able to use

both eyes together. This makes them better observers since they can differentiate the photos of men from those of women. They show preference for happy faces over sad or angry ones.

**Hearing**

Unborn babies can respond to loud noises even 4 months before birth. At birth the newborn's auditory canals are filled with anmiotic fluid. Thus for the first day or two after birth, they have difficulty hearing. As soon as the fluid left in the ears is discharged or absorbed, their hearing improves and they can hear relatively well, Newborns can *localize* sounds that is detect the direction of a sound. They are especially sensitive to high pitched sounds. Sudden noises startle babies and make them cry, While awake they turn their heads to the direction of a noise and pay attention to the sound of a conversation. By the end of first month, the baby prefers the mother's voice to other voices. By 4 months, the baby can identify the voices of most familiar people in their lives. Infants are born with the ability to respond to all speech sounds. However, they eventually tailor their speech perception (attention) to the speech sounds they hear.

**Touch and pain**

Newborns are sensitive to touch (this is evident in their reflexive response. We can soothe a baby by holding or picking them up. Research shows that the experience of being touched has a direct effect on the infant's growth and development. Premature infants who are massaged gain more weight than those who are not massaged but given the same calorie intake.

Infants respond to pressure on the skin by certain reflexive behaviours; If you press their palm with your finger, they will respond by grasping it, and if you stroke the sole of their foot, they curl their toes outward. The mouth shows considerable touch sensitivity during early infancy (Kislevsky & Muir, 1984), followed by increasing sensitivity in the extremities (arms, hands, and legs). We also know that infants feel pain. During the neonatal period babies respond to injections by fussing and crying,

**Taste and Smell**

There is considerable evidence that sensitivity to taste is present soon after birth (Haith 1986). Newborns have been found to suck harder and longer to obtain sweetened liquids than clear water (Crook, 1978). This innate preference for the sweet taste attracts the infant to breast milk, thereby promoting the bond between mother and child.

The sense of taste develops quite rapidly during the first month. It's easy to tell which tastes infants prefer by observing their facial expressions. Neonates display a slight smile and sucking movements to sweet substances. They purse the lips, wrinkle the nose, and blink to sour substances and they spit up and choke

on bitter substances (Steiner.)

Infants continue to enjoy sweet substances and, after four months, they show interest in salty liquids (Beauchamp & Cowart, 1985). Infants' preferences and parents approaches to food selection ma y have long-term effects on food preferences later in childhood. For example, infants who had been regularly fed with sugar water in the first year showed stronger preference for sweet liquids at age two than infants who had not had sugar water (Beauchampo & Moran, 1985). Moreover, infants who experienced a greater variety of foods developed more diverse food preferences than infants who experienced less variety (Frietas, 1984).

**Infants perception of faces**

The human face is perhaps the most important visual pattern for infants to perceive. At about 4 weeks the infant, is fascinated with the eyes. At 2 months and older, the infant begins to differentiate facial features; the mouth is noticed and movements of the mouth draw attention to it. By 6 months of age the infant distinguishes familiar faces. For example he or she can distinguish mother from stranger, masks from real faces and so on.

**Infants depth perception**

Another question about what babies see and know is whether they have depth perception, that is, the ability to tell how tar away something is in terms of depth. In one study (Gibson & Walk. 1960) placed 6 to 14 months old infants on a special surface that appeared "shallow" on one side and "deep" on the other side. The deep side was covered with glass so babies could crawl across it just as they had crawled the shallow side. Their mothers stood on the far side and encouraged them to crawl across them. The babies in this study could not crawl across the deep side even after they felt the glass. This study shows that these infants were somehow aware of depth. However it is known exactly when depth perception is acquired.

**Motor Development**

Motor development deals with control of movement of various parts of the body. At birth the baby is a dependent creature who stays in one spot when laid down. As the primary motor area of the brain matures the motor skills emerge. The sequence of motor skills is generally the same. At the beginning the motor abilities follow the same cephalocaudal aad proximodistal patterns as in physical growth e.g. the infant lifts the head, then their shoulders, before they can sit up. They sit up before they can stand.

**Hand Skills**

The specifics of arm, hand and finger control follow the proximodistal pattern. At birth infants have a reflexive grasp, but they have no control of it. Then they start moving their arms and hands when they see dangling objects -but they can't hit them until they are about 3 months old, They still cannot grab the object because they close their hands too soon or too late. By 6 months, most babies can reach, grab and hold on to dangling objects. They still have a new problem –they can't let go. A toy seems stuck in their hands until interest is lost in it then their hands relax and the toy drops out, letting go is mastered by about 7 months. Another activity to be mastered is picking about small objects by fingers. At first babies use their whole hand usually the palm and slowly they learn to hold with fingers by about one year of age.

**Locomotion:** Most babies first learn to move from place to place by lying on their stomachs and pulling themselves ahead with their arms. Later they learn to crawl on hands and knees at around 7 to 8 months. Some babies do not crawl at all.

On average a child can stand with support at 7 months, can walk with support at 9 months and can walk unassisted at 12 months. In recognition of their walking accomplishment, the babies at this age are called toddlers. This is because of the way they use their legs toddling from side to side. Since their heads and stomachs are relatively heavy and large, they spread out their little legs for stability.

One-year olds cannot run and they fall frequently. By age 2 years, most children can walk and run quite well still placing feet wide apart.

Note that although healthy infants develop the same motor skills in the same sequence there are - variations in timing. The age at which these skills are acquired varies from infant to infant.

**Can Motor Control in Infants be facilitated?**

Research has shown that training will facilitate the development of motor skills.

**Changes in Bones and Muscles**

Changes in the nervous system are paralleled by changes in other body structures, including bones and muscles. However, changes in bones and muscles occur gradually from infancy through adolescence.

**Bones**

The hand, wrist, ankle and foot ail have fewer bones at birth than they will have at full maturity. For

example, in an adult's wrist there are nine separate bones. In the one-year old, there are only three. The remaining six develop over the period of childhood, with complete growth by adolescence.

The skull of a newborn is made up of several bones separated by spaces, called **fontanels.** Fontanels allow the head to be compressed without injury during the birth process, and they also give the brain room to grow. In most children, the fontanels are filled in by hone by 12 to 18 months, creating a single connected skull bone.

All of the infant's bones are also softer, with higher water content, than adults' bones. The process of bone hardening is called **ossification**. It occurs steadily from birth through puberty, with bones in different parts of the body hardening in a sequence that follows the typical proximodistal and cephalocaudal patterns. For example, bones of the band and wrist harden before those in the feet.

Bone hardening has some direct practical relevance. Soft bones are clearly needed if the foetus is going to have enough flexibility to fit into the cramped space of the uterus. But because of this flexibility the newborn human is relatively helpless, Newborns cannot even hold their own heads up, let alone sit or walk, As the bones stiffen, the baby is able to manipulate his body and this increases the range of movements making him much more independent.

**Muscles:** Muscle fibers are initially small and watery, becoming longer, and less watery at a fairly steady rate until adolescence. The sequence is again both proximodistal and cephalocaudal. So the baby gains muscle strength in the neck fairly early, but does not have enough muscle strength in the legs to support walking until some months later.

**Nutrition.**

Adequate nutrition is a pre-requisite for the changes and mastery of skills. At first infants are unable to eat or digest food, but their rooting, sucking, swallowing and breathing reflexes enable them to consume the quantities of liquid for nourishment they need.

Appropriate nutrition and feeding habits help to ensure healthy development of the infant. Infant's nutrient needs differ from those of adults in both quantity and proportion.

**Breast Milk important**

Breast milk alone will meet the infant's needs during the first 4 to 6 months. In early months breast milk is

the most ideal infant food. It has several advantages which include:

- It is sterile, that is, not contaminated.
- It's at body temperature. It is not too c old or too hot. Thus it doesn't need to be healed or cooled for consumption,
- It contains proper nutrients needed by the growing baby for instance contains more iron, vitamin C and vitamin A than cow's 'milk
- It contains antibodies that provide the infant some protection against disease that the mother herself has had, or has been inoculated against such as chickenpox, smallpox, tetanus etc.
- It's more digestible than cow's milk or formula - hence breast babies have fewer allergies and digestive upsets than bottle fed babies.

**Weaning**

Parents often want to know when to introduce new types of food. In the second half of the year breast milk continues to be the infant & primary nutritional source, in order to thrive during the first two years infants need about 50 calories per day per pound of body weight. These calories can not be supplied from breast milk alone. By 5 months or so babies need solid food. Hence solid foods should gradually be added to the diet. For example, cereals for iron & fruits for vitamins A & C, By the lime the infant is one year old, the diet should include all the nutritious foods the rest of the family consumes, The process of giving up one method of feeding for another is called ***weaning.***

**Malnutrition**

During the first year of life, severe protein- calorie deficiency causes ***Marasmus,*** growth stops, body tissues waste away and can lead to infant death. During toddler hood (from 1 year on to 2 years} protein calorie deficiency is 05t)re likely to cause ***Kwashiorkor.*** A condition in which the child's face, Legs and abdomen swell with water - the child may appear well fed to anyone who does not know the real cause of the bloating. In this condition, the essential body organs take the available nutrients at tile expense of other it. Child's hair become thin, brittle and colourless (may appear brown for the African child).

The primary cause of malnutrition in developing countries is early cessation of breastfeeding. Malnutrition can lead to diseases or death. Malnourished infants who survive carry handicaps that sometimes remain throughout their life span- e.g. seriously intellectual inferiority is due to slower brain development caused by lack of essential nutrients. Malnourished infants may become sickly and hence fail to explore the environment adequately. Most motor skills are developing during the first two years- and these can be affected by serious malnutrition.

Both mother and baby need to be properly fed with a proper diet to avoid serious malnutrition in the baby.

**Factors that impact physical growth & motor development.**

**Genetics**

Family hereditary factors contribute to:

- Rates and range (genotype and phenotype) of size and weight.
- Specific learning styles, types of intelligences, and learning disabilities.
- Development of physical diseases and allergies.

**Nutrition**

Amount and types of foods intakes impact and growth.

- Excessive caloric intake leads to obesity: baby formulas.
- Improper diet results in malnutrition and reduced health with underweight wasting and stunting and underdevelopment of individual brain cells and thus brain's functioning capacity.
- Chemicals in specific foods may enhance concentration and memory in brain (choline in egg yolk, meat, fish, cereals and legumes): high carbohydrate diet increases serotonin levels and tryptophan, an eurotrasnsmitter actives when we sleep)
- Absence of specific minerals and vitamins relate to development of specific diseases (Example iodine: goiter)

**Emotions**

High stress impacts ability of body to produce growth hormone (somnetropine) during sleep so growth is retarded (failure to thrive)

**Stimulation**

Environmental stimulation enhances genetic predispositions to encourage early and stronger physical capacities, including enhanced muscle development and coordination (Practice makes perfect)

**Gender**

Boys tend to be heavier and longer at birth and have less dense (cartilage) at birth.

Both boys and girls grow at very similar rates, but boys initial growth in first few months is just slightly slower than girls so by the end of first three years they are approximately the same height and weights all other things being equal.

***Activity***

1. ***Briefly describe the perceptual process in an infant.***
2. ***What physical changes occur in an infant?***

**Summary**

1. The session covered the perceptual and physical development during infancy
2. It explained the characteristics of new born, states of consciousness, neurons and their functions, infants' level of fine senses.
3. It also dwelt on the physical growth and motor development.

**LESSON NINE: LANGUAGE DEVELOPMENT IN INFANTS**

***Objectives***

***By the end of this session you should be able to:-***

***a) Describe the process of language development during infancy***

***b) Explain adults' role in language acquisition.***

**INTRODUCTION**

Crying represents the infant's earliest vocalization. There are different varieties of cries. Each type of cry usually has a meaning and mothers usually learn to distinguish among the different varieties. Crying is not a language but it represents a type of communication, as it is the means by which infants convey their basic needs. During the first six to eight weeks of life, variations of the cry are the only vocalization that take place. Adults through experience learn to recognize the various types of cries.

Probably you have heard mothers comment about to infants cries. For example, "she cries this way when she wants to sleep" and indeed the baby sleeps almost immediately- This is evidence that adults are able to recognize an infants specific need by their cries. This enables them to respond to the child in appropriate ways.

**Cooing and Babbling**

Cooing emerges from the second month, it consists of a repetition of vowels .For example, "aaaah" or "ooooo". Cooing though not language is a form of communication because it generally indicates that the infant is pleased happy or excited. It is expressed alter a certain degree of maturation is attained. It requires muscular movements of the **tongue** that were not possible at birth. Cooing occurs m both normal and deaf children- It diminishes at approximately 8 months of age.

Babbling emerges at about 6 months, It consists of a repetition of a combination of consonants and vowel sounds, for instance dadada, mainama, bababa etc. Infants babble in a similar way irrespective of their linguistic background- Babbling is important because it gives the infant an opportunity to exercise their vocal organs and enables them to hear the range of sounds that they are capable of making. Babbling is the tint vocalization with resemblance to speech. Infants also begin to vary the intonation of their vocalizations during the second hall of their first year For example, they sometimes babbles with a raised or lowered pitch. These intonation patterns correspond to the signals older children and adults use for asking a question versus making a statement (Schwkedanz, Hansen & Forsvth WO). Variations in intonation increase during the second year( Bruner 1975). Babbling is accompanied by excitment and

motor movement e.g they swing their hands and legs, move head etcetera.
Infants make sounds that arouse their interest. Often they lie quietly while listening to sounds other times they babble in response to the verbal stimulation around them.

**Holophrase stage (12 to 18 months)**

This is the emergence of the first word. Children usually learn words related to food, toys, animals and people. These words are usually concrete nouns. The child does not understand all the words learnt. Most words are acquired through imitation hence the child may not know what they represent. Words may not be properly pronounced.

**Two-word stage**

By approximately 18 months children start using two word expression. There are usually utterances consisting of two single words. For example, “mama milk”, “me go” etcetera

**Telegraphic sentences**

These are short and simple sentences consisting mainly of nouns and verbs. They are referred to as telegraphic because the sentences lack some words, tense endings, plural endings on nouns and other grammatical omissions e.g. “*mama me milk*” meaning mama give me milk and “*soup hot"*- meaning this soup is hot.. These sentences can be likened to the messages we send by telegram which are usually shortened and grammatically incorrect in order to reduce posting costs. There is a considerable progress in sentence structure by the age of 3 years. Children's vocabulary increase. Their knowledge of syntax {knowledge of grammatical rules) and semantics (understanding of word meanings) also increase daily as they continue using and listening to language. By the age of 3-years they can participate in conversations.

*As* young children learn words, they often use them differently than adults do. Sometimes they do not use words us broadly as an adult do. This is called **under extension**. For example a young child might use the word "bag" only to refer to the mother's bag because it was in this context that she first learned the word. In this case she has under extended the word's meaning. Other times they **over extend** the meaning of a word. An urban child might call his grandmother's goat a dog because it has four legs and a tail like a dog. In this case the child has overextended the meaning of a word.

**Milestones in Receptive Language**

The other side of children's language behaviour is the receptive side. This involves the child's ability to understand the meaning of individual words. This is also called language perception.. Together with human speech sounds, children hear all kinds of sounds; the moving vehicles, the sound of cows, the

burking of dogs, the cracking of the chicken for instance. However the human sounds have special significance for the baby. (Schickedanz, Hansen & Forsyth 1994). According to a study by Wolff (1969), by the second week of life, a crying infant is quieted by a voice more effectively than by other sounds.

Children develop language perception before they are able to produce words. That is children understand before they can speak. They understand quite several words when they can only say only two or three words.

**Socio cultural and environmental influence on children's language development.**

According to Snow(1989), early exposure to language is necessary for acquisition of competent language skills. As a result of this exposure, children acquire their native language without explicit training or teaching. However, there are factors that provide facilitative effects. Santrock (1996) discusses some social supports that enhance language development.

**Social supports for language**

During these early stages of development, children need the benefit of adult language social supports. Such support improves the development of language. Children therefore need to hear speech around them. The adult speech reinforces the child's vocalization. Parents provide support to their children in different ways. The unique communication style among adults is known as **motherese.** It's so called because it's observed more frequently among mothers of infants. Motherese is simple redundant language. In motherese, adults often raise their voice and use brief sentences. This mode of communication is designed to teach babies to talk.

Other than motherese there are strategies that adults use to enhance the child's acquisition of language. These include recasting, echoing, expanding and labeling. **Recasting** involves phrasing the same or a similar meaning of a sentence in a different way like for instance turning it in to a question. For example, if a child says "mama- me-milk", the adult can respond by asking, "who wants milk?" **Echoing** refers to repeating what the child says to you. **Expanding** involves restating what the child has said in a linguistically sophisticated form. In the above example, a mother can respond by saying "mama give me my milk" **labeling** is giving the names of objects.

**FACTORS THAT IMPACT ON LANGUAGE ACQUISITION.**

**Exposure to Language**

The more a child is exposed to good language models and to each of the four areas of language the more proficient the child becomes in that language. The opposite is also true. So the two most important aspects

of exposure are; the quantity of time of exposure and the quality of language models. Since learning a language take time for mastery the child can't learn a language if he/she doesn't hear it spoken or see it written or if the langue model whom they are to imitate is not proficient in the language.

**Stimulation to Motivate Learning.**

***Cognitive Stimulation*** enhances the probability of children developing concepts that they want to communicate about. Hence, they want the label that they will obtain from those around them.

***Linguistic Stimulation*** is the use of language by those around the child. In hearing the language being used by significant persons in their lives, children hear the sounds/grammar and meaningful language units that can be used in all of its potential functions and forms, the more easily and rapidly they are able to learn the language.

If caregivers use motherese it simplifies the process of language learning for the child. **Motherese** is a simplified version of a language that has shorter sentence structures (grammar) and simpler words (vocabularly lexicon) . Used within a language learner to assist in communication and learning of the language.

***Positive Emotional Stimulation*** ensures that the children feel loved and secure so that they are able to learn freely without anxiety. Providing love and nurturing care (meeting all of their physical needs quickly) provides this needed emotional security.

**Health (and Nutrition) Status of the child.**

If children are sick and malnourished they are less likely to be able to attend the language around them or have the motivation to learn to communicate in that language. Consequently, the children are less likely to learn the language.

***Physical Health*** includes the status of the child's health physically in terms of presence of illness or brain damage caused during birthing or by illness or accidents. If the child is physically well, he or she is highly motivated and able to learn the languages of important people in their lives (significant others) such as the primary caregiver and immediate family members. When a child suffers from severe malnutrition there is energy depletion and learning is retarded. The same applies to illness especially severe illness. Usually after nutritional and health status improves there is a period of **catch up growth spurt** that in this case applies to the language usage.

Brain damage to the areas of language learning that occurs at these young ages causes the brain to adapt to other areas nearby or those in the other hemisphere (side of the brain) to language learning. Thus, language learning is only shortly delayed unless the damage is severe. The brain is very placid (flexible) at these ages and is somewhat flexible as to where language (and other capabilities) are processed.

***Psychological Health*** refers to the development of positive emotional states and social relationships so that the child fees secure and capable. When children are exposed to excessive negative stimulation (excessive yelling, physical abuse etc) the front part of the brain is excessively stimulated and appears to interfere with the stimulation to other area needed for learning. This explains why children in abusive households appear jittery, withdrawn and very cautious even if they have never been abused themselves.

**Individuals Capacity and Individual Differences.**

Children are not the same and there are differences in capacity and learning characteristics that impact their ability to learn languages.

***Rate of learning*** varies from child to child depending upon genetic codes. Some biological learn very quickly, while others learn moderately fast and others more slowly. This could be generally in reference to learning anything or specific to language learning.

***Type of Intelligence*** also impact. Children who have high Linguistic Intelligence tone of the multiple intelligences identified by Howard Gardner they are more likely to learn language(s) more rapidly and with less effort.

***Level of Overall Intelligence*** also contributes to language learning. Children with low overall intelligence (low Intelligence Quotient or IQ) require many more language experiences and opportunities to learn. They require more time and many more experiences with motherese forms of language. They will learn but at a different rate. The more serious the deficit in intelligence, the slower the rate of learning and the lower complexity of the language will be learned.

***Gender***

Boys tend to learn language slower than girls. This appears to biological due to brain differences.

**Multiple Language or Single Language Learning.**

The more language a child is exposed to impacts the rate of language learning. There is naturally some cross learning but the brain is capable of identifying the different language structures and forms if it is

exposed to adequate language models for some time. Any “mistakes” in language learning at this age should not be considered as errors but as evidence of the breadth and depth of the languages being learned and the status of the language learning.

***Activity***

***a) Explain ways you would use to help a child develop language***

***b) Which mistakes would an adult avoid that can hamper language development.***

**Summary**

The session dealt with the development of language in a child during infancy. Children need social interaction with adults to facilitate development of language.

## LESSON TEN: SOCIAL AND EMOTIONAL DEVELOPMENT IN INFANCY

***Objectives***

***By the end of this session you should be able to***

1. ***Explain the theories of infant attachment***
2. ***Discuss whether a half year old have any peer interaction***
3. ***Explain the role of caregivers in attachment process.***
4. ***State the factors that influence emotional development.***

### WHAT IS SOCIAL AND EMOTIONAL DEVELOPMENT?

**Social Development:** This refers to changes in a person's capacity to relate interpersonally with others. After the child is born he/she finds him/herself in a social context. The infant begins to relate with other people they grow they learn to interact with other people in the environment.

**Emotional Development:** Changes in a person's capacity to control and express feelings. As an infant grows, he makes adjustment in the way be expresses his/her emotions. There are also changes in the variety of emotions that children express as they grow and develop.

**Attachment:** Attachment is the strong emotional tie that babies and their mothers (or other primary caregiver) develop for each other. The quality of attachment is a crucial factor in his social and emotional development. When a child interacts with his mother, he learns patterns of interacting with others. From the way he feels about her, he learns ways of feeling about him/herself and others.
There are many theories about how and why an emotional tie develops between parent and child.

### Theories of infant attachment

**The Psychoanalytical Explanations:** Both psychoanalytical and behavioural theories purpose that babies become attached to adults who satisfy their basic needs, especially hunger. Traditional Freudian psychoanalytic theory is based on this notion of **drive reduction.** According to this theory, inner needs (hunger) create tension, which in turn generates a drive to reduce the tension. The individual seeks to reduce the drive by satisfying the need (by eating, for example). The adult who gratifies a baby's needs becomes associated with the pleasurable sensations that result. Psychoanalytical theory also assumes that each person has a limited amount of mental energy for attachments, so the child comes to identify with

the parent of the same sex, but only after having worked through conflicts associated with his first emotional tie with the mother.

The first relationship with the mother is also assumed to be extremely important for personality development and as a model for later love relationships. According to Freud, the mother and father continues to be present in the individual's mind as objects of love, admiration and fear long after the actual parent child relationship is over.

**Behaviouoral Explanation**

Early behavioural also explained attachment in terms of drive reduction. The adult who feels a baby becomes a *secondary reinforce.* Babies become attached to their mothers because they associate them with being fed.

Unlike psychoanalytic theory, behavioural theory has never used ideas like "mental energy" and thus has never claimed that the mother is the baby's only attachment figure. A baby might become attached to several adult caregivers if all of them are involved in feeding. In addition, in behavioural theory the first attachment is not considered central to all others.

**The Ethological Explanation**

The ethological explanation for attachment, first proposed by John Bowlby in 1969, claims that infants are preprogrammed that is, genetically "wired" to form attachment to the adults who best ensure their survival. **Ethology** is the study of animal behaviour. The ethological explanation for attachment focuses o the way young animals, including young humans, keep in touch with their mothers, and mothers (Water & Deane, 1982). Babies do this by sending signals to their mothers, and mothers respond by reacting to the signals. Babies prefer adults who read their signals accurately and respond to them appropriately. Although signals often revolve around feeding, attachments are not necessarily based on this situation. Babies may develop strong attachments to adults who have never fed them or provided them with other basic physical care.

The ethological explanation accounts both for the way babies try to stay near their mothers and for the way separate to explore. Babies must be able to explore if they are to learn about their environments and become independent, but they also need to be kept safe from danger.

The ethological theory predicts that babies will become attached most strongly to the adults who respond the best to their signals. This theory suggest is that babies are born with certain capabilities for building relationships with adults. It also assumes that adults have to be able to respond to the subtle signals babies send if these relationships are to work.

**How do we tell if a baby has become attached to a particular adult, and how can we judge the quality of the attachment?**

A standard method has been devised to study and describe attachment behaviour in babies between 1 and 2 years of age. It is called **strange situation.** It was developed by Mary Ainsworth and collegues in 1969. It involves seven episodes and three participants- mother, baby and stranger.

The experiment procedure begins with the mother and the baby being introduced to the laboratory playroom. Then the mother and baby are left alone in the room, but the mother doesn't play with the baby (episode 1). Next, a stranger enters, talks to with the mother a bit, and then focuses her attention on the baby (episode 2). The mother leaves introducing episode 3 in which the baby is separated from the mother, leaving the stranger and the baby alone.

Several features of infant attachment become apparent in the strange situation. The researcher or observer can see to what extent the baby used the mother as a secure base for exploration, how much the baby prefers the mother to the stranger, and how likely the baby is to consider the mother a strange situation, researchers have identified and described three major patterns of response. These patterns, which indicate the quality of infants' attachment to their mothers, have been labeled; secure attachment anxious am bivalent attachment and anxious/avoidant attachment.

In this pattern, the baby separates from the mother to explore toys in the playroom but periodically touches base with her. When she leaves, the baby is moderately distressed and either cries or plays in a more subued way. When she returns the baby greets her warmly. In the second pattern, Anxious/ambivalent, also called resistant), the baby stays close to the mother and doesn't explore the toys. When the mother leaves, he or she reacts with great distress. On her return, he or she seeks her and rejects her at the same time. That is the reaction of ambivalent.

In the third patter (anxious/avoidant), the baby readily separates from the mother to explore the toys and doesn't seem to prefer the mother to the stranger. When the mother leaves, the baby shows no concern and when she returns he or she ignores or avoids her.

Each pattern seems to reflect different patterns of behaviour by parents. When parents respond sensitively to the baby's signals, the baby tends to become securely attached. When they respond inappropriately, or not at all, the baby forms an anxious attachment of one kind or the other.

**Infants signal For Attention**

The most powerful; signal is **crying.** Adults find infant crying unpleasant and they usually move quickly to do something about it. Many parents can tell from listening to the infant's cries whether the baby is hungry, angry in pain. Most of them respond to a crying baby by picking her up and holding her.

The baby now uses another very powerful signal, **gazing.** This steady intent attention to another's face

indicates that the baby wants to engage in social interaction. The parent will probably gaze back at the baby and smile or speak. The baby smile or coo in return. Parents like this eye contact- it makes them feel that the baby is enjoying their company. They will often gaze back at the baby as long as the baby is gazing at them. Adults like looking at the faces of babies because they find them cute. Babies signal their wish to reduce stimulation or end the interaction by looking away. Sensitive parents do something different when the baby looks away. Of course, starting to cry again is another way the baby says, "that enough"

Besides crying and gazing, babies have other inborn ways to make adults pay attention and interact with them on their terms. When they are eating for example, babies suck in rhythmical bursts and then **pause.** Mothers often jiggle babies during their pauses, and in the first few weeks they learn that short jiggles make the baby start to suck again. This biologically based sucking pattern, with it's alternating bursts and pauses, keeps the mother actively involved in the feeding. She realizes that her attention is important to the feeding process, and she watches the baby's face closely. The baby often gazes back at her, and this too keeps her attention. When the baby is done with eating, the mother may wish to continue this pleasant interaction in some other situation such as playing. The turn taking nature of the feeding interaction may help mothers to learn to observe their baby closely and adjust their responses to the baby's behaviour.(kaye, 1982)

As the newborn matures, another powerful signal appears the **social smile.** It begins to apparent on the baby's previously expressionless face by about 2 months of age. One day the baby's eyes light up and her face breaks into a smile. News that "the baby smiled today" is thrilling for parents and siblings. Smiling is the baby's way of saying that all is well with the interaction that is going on at the moment. When the smile starts to fade and the baby sobers, something is going amiss. Smiling and sobering, gazing and gaze aversion are the signals with which the baby regulates her interactions with her parents in the early months (Schikedanz, Hansone & Forsythg 1992)

**The development Smiling**

Newborns are often seen smiling in their sleep, but these spontaneous smiles are triggered by changes in their internal sleep states and are known as **endogenous smiles (**Emde & Gaensbaurer, 1980**).** Between 6 and 8 weeks of ages, the social smile appears- a smile given in response to something outside the baby. The baby, smiles more and more frequently over the next few months (Wolff, 1969; Anisfeld, 1982; Korner, 1982)

At first, the social smile is in discriminate. The baby smiles at familiar and unfamiliar adults alike, as long as they make some friendly gesture such as gazing, smiling or talking. But at about the fourth month, things begin to change. The baby begins top search the faces of unfamiliar people and to sober a bit

towards them. By 6 to 8 months of age, thebaby's reaction may be so intense that he cries if a stranger approaches (Koner, 1982: Lamb, 1982). The baby's smile is now a very selective social smile; reserved only for familiar people. Unfamiliar people are likely to make the baby cry. When a baby reacts this way to a stranger (usually between 6 and 18 months of age) he is showing ***stranger anxiety.*** Babies can be real partners in even the earliest social interactions, actions and responses with their repertoire of signals. Parents must be able to read and respond to the signals. What happens to the relationship when parents are insensitive to their baby?

**Relationship between infant attachment and parent's behaviour.**

The parent's overall pattern of behaviour towards the baby determines the kind of attachment the baby will develop for the parent. Babies become **securely** attached when their parents give the **responsive feedback securely** attached when their parents give them **responsive feedback.** This means that they (1) pay attention to the baby's signal;(2) interpret the signals accurately: (3) give appropriate feedback; and (4) respond contingently, that is, they respond promptly enough for the baby to feel that his signals caused the response (Ainsworth et al, 1978). Responsive parents also cooperate with the baby's on going activity rather than intruding or interfering. Mothers of securely attached babies "are more responsive to their infant's cries, hold their babies more tenderly and carefully, pace the intersection contingently during face to face interaction, and exhibit greater sensitivity in initiating and terminating feeding"(Crockenberg, 1981, p. 857)

Parents of anxiously attached babies act quite differently. They may ignore the baby's signals, or they may respond but inappropriate ways. For example, a mother may take the opportunity to read the newspaper every time she feeds the baby, holding him loosely and not noticing his gaze. A father may consistently ignore the baby's hungry cries in the middle of the night to get some extra sleep. A parent might bounce a baby vigorously when the baby prefers to be cuddled or end a feeding when he baby only wants to rest or, continue to stimulate the baby when the baby wishes to stop.

More serious problems in attachment occur when a parent's behaviour is more disturbed. For example, some mothers dislike physical contact with their babies or treat them in an angry or threatening way (Bretherton et al, 1986) .Some mothers have "restricted affect", meaning that they express fewer emotions that other mothers, especially positive joyful ones (Main, 1981). Some mothers even mock their babies' behaviour, speak sarcastically to them, handle them roughly, and "stare them down". Babies treated this way are likely to have severe problems in their emotional and social development.

Sensitivity in parenting has two dimensions: **responding versus not responding** and **responding appropriately versus responding inappropriately.** Babies whose parents respond to their signals learn that what they do matters. Children whose parents are insensitive to their signals may come to exhibit

"learned helplessness", the feeling that they have little effect on the world.

Babies whose parents don't respond contingently or consistently may show the **ambivalent (or resistant)** pattern of anxious attachment. The response they receive is appropriate when it comes, but they are not sure when it's going to be given or if it will some at all. Because they can't be sure the parent will give the desired comfort, they seek it but then resist it, as if anticipating disappointment.

The second dimension of sensitivity in parenting- responding appropriately versus responding inappropriately-in combination with the first may affect the development of the child's trust in others. Babies whose parents respond to them appropriately learnt to expect that people will react to them in desired ways. Babies whose parents respond inappropriately, who find they can get a response but aren't sure what it's going to be, may tend to show the avoidant pattern of attachment. They stop sending signals and may even try to avoid the parent. Perhaps as a protection against getting an inappropriate response.

**Kinds of attachment reactions in babies**

Between 6 and 12 months-babies develop a whole new set of actions that they did not have before they begin to move around. They learn to cling, creep, crawl and finally walk. Now they don't have to wait for their parents to come to them or just watch them as they move away. They can follow them around. At about the same time, babies start to discriminate sharply between familiar and unfamiliar adults. When approached by someone they don't know, the sober and may even cry, a response known as **stranger anxiety.** Babies also become capable of gaining information about new people and situations by **social referencing,** for example by asking questions, "is she good mummy?"

Somewhere between 8 and 10 months of age, babies start to be able to express on their faces emotions such as joy, surprise and anger. Now they can put together facial expressions, sounds and motion to produce the full-blown attachment reactions that parents or other caregivers know so well. When they see their parents after a separation they greet them with joy and stretch out their arms or crawl to them. When they're separated from their parents, or when they are concerned that a separation may be coming, they show **separation distress-** they sober, cry and cling or try to follow. The older infant and the toddler show attachment by waling or running to keep in contact with the parent. With the acquisition of language, the child adds words to the protest e.g. mom doesn't go. These kinds of scenes are practically the hallmark of the toddler years, when separation distress is at its height. Another important development is social referencing.

**Social referencing**

The strategy of using information about how another person feels about a third event is called social referencing. It involves scanning the face of a familiar and trusted person to pick up in formation about a new situation. From that person's emotional reaction to the situation, the child can form his response. Babies 8 or 9 months of age and older often use this strategy. as they get older, they get better at interpreting and using the information their parent provides.

When babies engage in social referencing, it indicates that they recognize and can respond to the facial expressions that reflect various emotional states.

**Develop attachment**

There are various explanations (theoretical explanations) or how infants develop attachment with other people.

Biological explanation.

Parental history explanation.

The social system explanation.

**The Biological Explanation.**

The biological explanation, ,also known as the critical period explanation, claims that maternal attachment is based on hormones. Hormones released at the end of pregnancy or soon after birth cause in the mother to bond with her baby. **Bonding** refers to the dramatic and immediate emotional tie that mothers feel towards their newborn babies. It is triggered in the mother by contact with her baby within a critical period immediately after birth, when the hormones are at their highest level. If the mother bonds with the baby during this early period, her love will continue to grow, and she will be able to provide the responsive care needed to ensure the baby's attachment to her.

The biological theory of maternal attachment originated in research on lower animals. Studies of sheep, goats and rats showed that mothering was disrupted when the young were separated from their others immediately after birth, even for only one or two hours (Collais, 1952). The identification of a critical period for maternal attachment emerged from these studies.

**The Parental History explanation**

Other theories and researchers have suggested that maternal attachment is closely related to the mother's history, that is her earlier experiences in life. A mother's ability to form a close, nurturing tie is closely related to her personality and on the way she was cared for when she was a child. Mothers who have no

positive attachment to their children are seen as lacking in parenting skills, knowledge about children, or the ability to act responsibly because of their known immaturity. Sometimes these mothers have psychological problems or personality disorders.

However, parents' childhood histories don't completely explain maternal attachment behaviour. After all, not all abused parents abuse their own children. Parental history and personality characteristics may provide part of the explanation for maternal attachment, but they don't account for it completely (Parke & Lewis, 1981)

**The socials system explanation.**

Because no single factor completely explains maternal attachment, some researchers have considered that many factors might be working together. They have proposed a model, known as the interaction/social system explanation, suggesting that maternal attachment is a function of several interacting factors:

(1) Characteristics of the mother (such as personality traits and psychological well-being):

(2) Characteristics of the baby (such as health, degree of development at birth, activity level etc);

(3) Characteristics of the family (such as number of children, role of the father in child care, economic resources etc) and

(4) Social supports beyond the immediate family (such as extended family, friends, medical resources etc.

These factors are thought to interact to determine the kind of attachment the mother forms as well as the extent of her ability to nurture attachment in the baby. It's the combination of circumstances-not one or another single factor- that determines the quality of the mother-baby attachment.

Since many factors are involved in the development of attachment, it follows the infant **temperament-** the inborn characteristics that account for differences in crying, cuddliness, activity level etc among babies is not a critical factor in the relationship. Temperament characteristics at birth often don't last, and they don't predict the baby's later behaviour nearly as well as the mother's parenting does.

The social system model is currently the favoured explanation for maternal attachment. Studies have shown that the quality of the early attachment has long-lasting effects on the child's social and cognitive development. Children who were securely attached as infants grow into toddlers and preschoolers with a positive attitude, a friendly interest in other people, and a confident approach to problem. Children who were anxiously attached as infants, on the other hand, have a much harder time getting along in the world. They tend to become extremely difficult children who are negative and aggressive with people and tasks. They evoke reactions from others that keep them in negative relationships and that prevent them from developing more positive social behaviour.

**Do babies interact with other babies?**

Babies notice and interact not just with adults but with other babies as well. They are curious and interested in what their peers might be like.

Babies' peer interactions are different from parent-child interactions. Babies start to watch other babies and send them social signals as early as 10 months of age. They might smile, laugh, or vocalize to them, more often than not from a distance or they might cry or fuss while watching another baby. Occasionally they might touch or strike another baby. Many times the interactions among infants and toddlers involve a toy. Toddlers often offer a toy to another child, reach for the toy the other child is playing with, or attempt to play with toy while the other child is playing with it. Some of the signals observed in a group of toddlers are listed and defined.

| ***Category*** | ***Definition*** |
|---|---|
| Offer | Child holds out a toy to peer. |
| Deposit | Child places an object in peer's lap or at peer's feet. |
| Offer-withdraw | Child holds out a toy to peer, then retracts it as peer starts to accept it. |
| Join gesture | Child acts on peer's toy e.g. child hits ball held by Peer. |
| Play gestures | Examples included throwing a ball towards a peer, taking a book to a peer. |
| Affiliative gestures | Child kisses, pats, hugs peer. |
| Point to peer. | |
| Reach for peer's toy. | |
| Touch peer. | |
| Touch peer's toy. | |
| Smile/laugh. | |
| Verbalizations. | |

Real social interaction requires not just a signal but also a response. Infants and toddlers aren't very adept at responding. By far their most frequent response to a social gesture from another infant or toddler is to ignore it. They also might look at the other child or passively grasp an offered toy.

Reciprocation of the social intention of the child are fairly rare in the first or second year of life. When a child of this age does respond to a social gesture. It's most often a single response with no further interaction following.

Children up to about 2 years of age don't have much ability to sustain social interaction with peers.

Interactions do increase when children are brought together more than once and have a chance to become acquainted with each other. They also sometimes get caught up in social games, group activities that involve taking turns, repetition and imitation, along with lots of smiling and laughing.

**Emotional Development**

It was once thought that young infants do not have emotions (feelings). Their cries and smiles were thought to be simply reflex actions that were not truly related to emotions feelings. It has however been found that infants show and respond to many emotions e.g. joy, surprise, anger, fear, disgust, interest, sadness etc.

**Birth- 6 months.**

One of the first emotions seen in infants is fear. Infants a few months old (2 months) will cry, look surprised and afraid if they hear a loud noise or if they suddenly loose support or see an object fall towards them. Slightly older infants have more pronounced fear reactions and seem angry at times. Babies are also sensitive to sadness e.g. in an experiment. Infants between 1 month and 3 months responded by turning away when their parents pretended to look sad and depressed. When surprised they open their eyes wide. They smile when happy or when smiled at. This is a clear indication that these emotions are developed at least to a certain extent, in the infants.

**8 Months-2 years.**

By 8 months, infants emotions become much stronger e.g. many new experiences produce fear. There are different types of fears that are universal among children fear of strangers (Stranger anxiety) and separation anxiety- fear of being left by mother or caregiver. Another emotion that becomes much common in toddler hood is anger. Babies also laugh and smile more quickly and more selectively.

**Personality Development.**

Personality has to do with the way a person behaves. It refers to the person's moods, emotions, actions and responses. When referring to children, we talk of **temperament.** It refers to the basic dispositions inherent in the person that underlie and govern the expression of activity,. Reactivity, emotionality and sociability. Many aspects of temperament are innate (the result of genetic & prenatal influences). As the person develops in the social context, the individual's experiences increasingly influence the nature and expression of temperament. For example, we shape the way a child expresses himself by discouraging some habits. Studies have shown that babies are active, they kick a lot in the uterus before.

a. **Activity Level:** Some babies are active ,they kick a lot in the uterus before they are born. They move around as toddlers and are always nearly running and others are less active.
b. **Rhythimicity:** Some babies have regular cycles of activity e.g. they eat, sleep and defecate at regular periods, others do not.
c. **Approach-withdrawal:** Some babies are delighted by every new thing. Others withdraw from nay new situation. E.g. the first bath makes some babies laugh and other cry.
d. **Adaptability**: Some babies adapt quickly to change; others are unhappy at every disruption of their normal routine.
e. **Intensity of reaction**: Some babies are calm and others seem to react intensely.
f. **Threshold of responsiveness**: Some babies seem to sense every sight, sound and touch. E.g they wake up at a slight noise, turn away from a distant light. Others are unaware of bright lights loud noises and wet diapers (nappies).
g. **Quality of mood:** Some babies seem constantly happy, smiling at almost everything. Others are constantly unhappy- they are ready to complain at any moment.
h. **Distractibility:** Some babies are easily distracted from an interest while others are hard to distract –they are single murdered.
i. **Attention Span:** Some babies play happily with one toy for a considerable period of time. Others quickly drop an activity for another. The attention span varies among children.

**Factors that influence emotional development.**

Research has documented the role of the following factors in emotional development:

- **The child's temperament:** The inborn personality characteristics of a child determine how the child will express and control his/her feelings.
- **Quality of care giving:** The nature of care giving provided to a child shapes how the child feels, the emotional states he/she develops. Nurturing and gentle caregivers foster the development of the positive emotional states while inconsistent, indifferent and aggressive caregivers may stimulate the development of negative emotions more than positive ones.
- **Health status of the child and caregivers:** A child that is consistently ill will not often pay attention to or may become overly sensitive to emotional expressiveness of others. Caregivers that are unwell may also be extreme in the way they express feelings. This may impact the emotional stability and development of those around them, particularly young children.
- **Parental expectations and beliefs:** Parents beliefs and expectations about how emotions should be expressed determine how children show their feelings. Culture suggests the appropriate level and ways for expressing emotional states and specific emotions. These shape the parents

expectations and beliefs about emotional; expressions. Sometimes there are differences in the parents view of how a girl child should express their anger, happiness, sorrow or curiosity. In some cultural groups, a boy child is not expected to express certain emotions openly. Boys for example are not encouraged to express emotions by crying. Crying is considered feminine and consequently girls are encouraged to express emotions freely by crying.

## LESSON ELEVEN: MORAL AND SPIRITUAL DEVELOPMENT

### Introduction

As children develop their general thinking skills, they are expected to start to conform to the morality rules that society dictates. Psychological theories of moral development differ immensely in their opinions on how moral development occurs. Freud claims that the quality of relationship the child has with his/her parent/s greatly affects the way the child develops morally. On the other hand, the Social learning theory states that children initially learn how to behave morally through observing and imitating significant adult's behaviour. Cognitive development theories claim that a child's ability to reason morally depends on his/her general thinking abilities. Different theories help us to understand moral development.

### Theories of moral development

#### The Social Learning Theory

According to social learning theorists (such as Albert Bandura), children initially learn how to behave morally through observing and imitating adults in the environment, a process referred to as modeling. Children adopt behaviours that are exhibited by significant people in the environment such as caregivers, parents and elder siblings. Social learning theorists believe that children's moral development can be assisted by providing appropriate behaviour models that children could learn from.

#### The Cognitive Developmental Theory

Cognitive developmental theories argue that a child's ability to reason morally depends on his/her level of general thinking abilities. Piaget assessed children's moral development using two methods: 1) He presented them moral issues to them and then analysed their responses to them and 2) He observed the way in children used rules in a game. He concluded that children's way of looking at and treating rules changed with age. Thus:

- Preschoolers play for enjoyment and disregard rules.
- Six year olds consider rules to be sacred and inflexible.
- Ten year olds realize that rules can be manipulated.

According to Piaget, children differ in response to moral dilemmas depending on their stage of moral development.

### Stages of moral development

**Moral realism:** Children younger than ten years of age determine whether an act is

good or bad depending on how much damage it causes. They do not put into consideration the motives or intentions behind the action.

**Moral relativism:** In this stage, children take into account the motives behind an action when making judgements about an action. They no longer believe that every wrong action should necessarily be punished. If for example, a girl breaks her mother's cup, she should only be punished if she intentionally broke the cup.

Kohlberg presented moral dilemmas to older children. He would for instance ask: "Should a man steal an overpriced drug that he can't afford, to save his wife from cancer?" in order to analyse their moral reasoning (development). Using this method, Kohlberg concluded that there were three distinct levels of moral reasoning.

- **The pre-conventional level**: At this level, the child's actions are primarily motivated by the desire to gain a reward or to avoid punishment.
- **The conventional level:** A child's moral decisions are largely influenced by society. The child is motivated by the desire to obey the rules and laws of the society. At this stage the child thinks that rules can not be changed.
- **The post-conventional level:** The child is able to determine which rules can be bent, but the child also considers some values such as human dignity to be sacred.

**Children's development of the understanding moral and pre-social development**

The child's understanding of moral and pre-social development increases with age. The following table shows how this understanding changes with age.

1 – 2 years: Children help others when they are upset by providing physical comfort.

2 – 3 years: Starts to show guilt for undesired behaviour.

3 – 6 years: Actions are motivated in order to gain a reward or to avoid punishment.

7 – 11 years: Children's actions are primarily motivated by what other people in society will think.

11 – 15 years: Judges moral dilemmas according to the intentions of the perpetrator.

16 years and above: Reasons on the basis of internal principles.

**Foundations of moral development**

At this age children are considered moral; they have no knowledge of right and wrong and do not behave according to rules. However, this is not completely true.

**A. Moral Development In The First Three Years**

Children during this age respond to differences in tone of parent's voices that suggest certain actions are "good" and others are "bad" those that are accepted and those that are not. They may even stop behaviour if a parent says "No" with a sharp tone or they may attempt to test their limits and express their autonomy by continuing the behaviour.

It is important for the caregiver to give reasons for the "No". These reasons should refer to the social and emotional consequences of the action on others. The children will begin to internalize these ideas and develop norms of behaviour.

If explanations for the "No" are not given, a child will only stop the behaviour because of fear of being seen and thus being punished. They may develop the idea that the behaviours are only bad because of the when one is caught or seen doing it. The behaviours are not thought of as bad because of their consequences to the child that does it.

**B. Factors that Impact Moral Development**

**Culture:** Culture often determines moral beliefs, culture may dictate what is considered right or wrong. Consequently, people in different cultures may have quite different moral beliefs. For example, some cultures allow to call parents by their names while others don't.

**Media:** Media has a strong influence on children's moral development. Some prosocial and antisocial behaviours are transmitted to children via the media. A good example of such behaviours is violence. Some television broadcast in Kenya and elsewhere contains violence. Young children are more susceptible to violence because they do not fully understand the link between actions and consequences. These children also find it difficult to separate real life from television. That exposure to television violence results in more frequent aggressive acts by children. This is evident in research. The more violent television a child watches, the more violent he/she becomes.

**Temperament**: Research suggests that child temperament is a valid variable which affects child development. This has implications for discipline strategies.

**Parenting**: House (1997) found that positive attention and communication practices between parents decrease the likelihood of child aggression towards peers. Also harsh punishment and criticism from

parents result in increased aggression. To assist early child moral development, it is suggested (Kochanska 1995) that parents should adapt their strategies of child rearing to fit their children.

Temperamentally inhibited children respond to gentle reasoning because this develops their conscience. Fearless impulsive children require a strong attachment bond with the care-giver.

**C.**

1. Presence of parents and other caregivers to act as role models of moral behaviours.
2. Caregiver's talking to the child about right and wrong behaviours.
3. Caregivers consistently directing and redirecting the child to right behaviours. This suggests that no punishment of wrong behaviours occurs, but the child is redirected to and then reinforced for right behaviours.

**Foundations of spiritual development**

The development of a personal relationship with the higher power (God) occurs over years. Virtues are not known nor is knowledge of the spiritual power developed until after this age group. However, these are the foundation years in which the child begins on the journey of spiritual development. At this age they come to know that there is "someone" bigger than their parents/caregivers who are very important.

**A. Extent of spiritual development before three years**

In addition to developing an understanding norms of social behaviour children under 3 years are developing awareness of a greater power, a higher person (God). As caregivers demonstrate by their actions the existence of a higher power. Children imitate the actions and eventually develop some basic spiritual awareness. It caregivers pray or spend time reading the bible. Koran or other religious materials children see and are likely to imitate the actions. At this age they will not develop spiritual values, but by age five they will have internalized the spiritual values their caregivers have demonstrated in their behaviours.

**B. Factors that Impact Spiritual Development**

Some of the factors include:

1. Presence of significant caregivers to act as role models for the child to observe and imitate in terms of prayer and other forms of devotion.
2. Caregiver's talking to the child about the higher power (God).

3. Caregiver relating daily actions of the child and others to the wishes of the higher power (God).

***Activity***

***a) What is the role of mothers and caregivers in moral development?***

***b) How can mothers and caregivers lay foundation for infant attachment***?

**Summary**

a) The session covered theories of infant attachment, social and emotional development

b) Some explanation on theories on attachment and relationship and caregivers and its roles in infant attachment development.

**LESSON TWELVE: COGNITIVE DEVELOPMENT - PIAGET'S SENSORI-MOTOR SUBSTAGES.**

***Objectives***

***By the end of the session, you should be able to:-***

- ***i) Explain the theories of moral development***
- ***ii) Describe factors that impact on moral development***
- ***iii) Explain cognitive development of an infant***
- ***iv) analyze the stages of moral development***
- ***v) Explain spiritual development in an infant.***

Piaget began to describe the differences in the ways infants, preschoolers, school-age children, and adolescents understand their environments. At each of these ages, different internal structures are operating. The internal organizations that infants exhibit are limited. Unlike adults, infants are not constantly thinking about their environment. Their knowledge is based on actions. These actions become organized into patterns of behaviours called schemes. For older children and adults, schemes are like concepts, but for these infants they are organizations of behaviours.

Cognitive growth is the result of the infant actively exploring the environment and developing more organized schemes. During the first two years. Piaget outlines six different milestones based on the child's rapidly changing schemes.

**Stage 1: Exercise reflexes and built-in patterns of behavior: (Birth to 1 month):**

The newborn's beginning equipment, as we have seen, is primarily a set of reflexes and some loosely patterned behaviours. These reflexes and beginning sensory skills constitute the initial organization of the child. During the first month, through the dual processes of assimilation and accommodation, these initial skills become more stable, more useful, and more organized. After perfecting the sucking reflexes, the infant may suck fingers, blankets, stuffed animals and his parent's shoulders. The same is true of the "looking" reflex. In the first week, the infant's eyes are not always coordinated. By exercising the eyes, the pattern of behavior that is called "looking" becomes well established. During active alert states, the infant does a great deal of looking. Even the grasping reflex changes during the first month of life and is gradually transformed into a grasping scheme.

**Stage 2: Extending reflexes (1 to 4 months):** Before infants can really understand the world, they must coordinate the information that is being gathered through the schemes of looking, grasping, or sucking. Although this coordination takes time, the beginning of this stage, the infant notices the association between some action and a consequence. For example, Laurent's hand somehow gets into his mouth. When he loses contact with his hand, he tries again to get his hand in to his mouth. His arms, instead of gesticulating aimlessly, constantly move towards his mouth. There is no longer any doubt that coordination exists. His right hand may be seen approaching his mouth. But as only the index finger was grasped, the hand fell out again. Shortly after, it returned. This time the thumb was in the mouth. I then remove the hand and place it near his waist. After a few minutes, the lips move and the hand approaches them again. (Piaget, 1952, p. 52-53)

The importance of the second stage of sensory motor development is that the schemes we saw in the first stage no longer exist in isolation. The infant begins to relate these behaviours Laurent's struggle to get his hand in to his mouth illustrates the gradual changes that take place in the sucking and grasping schemes so that ultimately infants can direct their hand to their mouth quickly and effectively. Laurent is practicing two schemes-sucking with his mouth and swiping with his hands. Initially, these two actions are isolated is established. Now he can manoeuvre his hands into his mouth. This new action reflects the infant's revised organization or structure.

In addition to coordination, we see that the infant takes a more directive role in exploring. Looking is one scheme that demonstrates this increased control. When looking was merely an exercise, it was not particularly directed. Now Laurent explores by looking.

In this second stage of the sensory motor period, there is a definite change from the reflexive behavior of the first stage. The skills that the child had at birth have been practiced and organized into higher level schemes that involve two senses. More importantly, infants have much control over these behaviours.

**Stage 3: Intergrating senses (4 to 10 months):** Each stage builds on the one before, and comparing behaviours in two adjacent stage makes the limits of the earlier stage and the progress of the later stage clear. In this period, all the senses become fully coordinated. Not only can infants get their thumbs into their mouths, they can see or hear an object, direct their arm to it, grab it, and put it in their mouths. The child has a more flexible and more sophisticated organization to guide the exploration of the environment. In this stage, the intentions and goals that were missing before become more evident. The child observes an action, then tries to reproduce it. For example, rhythmical kicking causes some toys attached.

The combination of fully coordinated schemes and the ability to carry out simple goals helps the child explore everyday objects. Towards the end of this stage, infants understand that objects exist independently of them. This realization, fitting called the object concept, is rally a monumental

accomplishment because it signals the beginning of symbolic processes. To understand that an object is permanent and still exists when it cannot be seen or heard or felt means that the infant has developed some way to imagine or remember the object. Acquiring an object concept signifies a transition from relying on actions and simple schemes to representing the world in the mind. Hence, we need to examine the object concept in some detail. To form an object concept, infants must first understand that an object is the sum of their expressions. Mother is no longer an isolated voice, a particular face, or a pleasant as she was in Stage 1. Now these schemes are integrated, the child forms a multifaceted representation of mother. It takes many hours of contact with an object and a lot of active exploration to understand all of its facets. Infants gave this kind of contact with their mothers. Hence, it is not surprising that the first object that infants seem to understand as a collection of different pieces of information is their mother.

**Stage 4: Coordination of schemes: 10 to 12 months.** During this stage, infants begin to understand other objects in the same way they under-stand their parents' permanence. Prior to developing an object concept, an infant seems to think that any change in the object makes it a different objects.

Another experiment called the disappearing toy illustrates the child's tenous understanding of objects. This is an easy experiment to conduct with infants in the 6- to 11 month age range: Older children seem to be able to hold an image of the toy in memory long enough to conduct a search. They have developed a concept of an object that endures even when the object disappears.

There might be another interpretation for this change in behavior. It could be that the six-month-old does not have the ability to remove the towel. If this case, it is a replay of the flea experiment mentioned earlier. Psychologists are including that the infants cannot hold an object in memory, but that is not really the problem. It might be that the towel is too big for the infant to manage. To check this possibility, Gratch covered the toy with a see-through cover.

The hide and seek technique has been used to explore facets of the child's memory. Some researchers have tried to fool the children, they hide a set of keys while the children watch.

The development of an object concept is a landmarks in the development of memory. As infants develop more expensive with objects, they can represent objects in their minds. This representation is the basis of later symbolic behavior. Once infants understand that objects and people exist independently, they can engage in much more thoughtful behaviours. An infant can plan actions to accomplish more complex goals. Laurent demonstrates his ability to coordinate different schemes in the following vignettes:

As in stage 3, the child is behaving intentionally and has a clear goal in mind. But the coordination of schemes that is required in Stage 4 is quite different. The behaviours that Laurent must combine now to use his coordinated schemes to get beyond obstacles. This takes thought.

**Stage 5: Search for novelty (12 to 18 months):** Infants who have a concept of an object and can remember objects, who can plan a course of action, and who are mobile are well prepared to investigate their world. They begin their exploration in earnest during the fifth stage. Using their full repertoire of coordinated schemes such as throwing, dropping, rubbing and banging, toddlers scrutinize every facet of their environment. Infant explores like to watch tissues come out of the box one at a time.

Jonas Langer, a Piagetian scholar, believes that the action sequences produced during stage 5 are the roots of abstract logic. He points out that people sort the world into categories on an abstract level. Objects are identified by color, mass, weight, density, volume and friction. The logic that underlies these categories can be seen in action sequences. Infants learn that when they drop different objects, some float downward, others bounce, while still others break. Their action sequences help them form rudimentary classes that will later be transformed into a symbolic classification system.

**Stage 6: Beginning of though (18 to 24 months):** The emphasis through the fifth stage of sensory motor developed is on action. Although we can see the beginnings of representation in the child's memory of objects, the child still relies on manipulation. However, during the sixth stage, the role of action begins to recede and we see thoughtful assessments assume more importance. The ability to remember something that was not present was acknowledged with the object concept. At that point, the child's ability to reconstruct objects was very limited. Now infants not only reconstruct images of people and objects that are absent, they can manipulate these images in their mind. As a result, they can think about problems. The experimenter of stage 5 gives way to the philosopher of stage 6. During this final period of sensory motor development, infants, who now know a great deal about the environment, begin to use their information to solve problems.

In reviewing the changes in the child's conception of the world newborns exercise their reflexes and built-in patterns of behaviour until they gradually gain control over their eyes, hands and mouth. With few more weeks of effort, these isolated patterns become coordinated into action schemes. Exploring objects-by seeing them, touching them, and sucking on them – helps infants realize that the people and objects-by seeing them, touching them, and sucking on them-helps infants realize that the people and objects in the environment have an independent existence.

Once children understand that objects have a permanence of their own, they can begin to represent these objects. Now hide-and-seek games reveal the child's conceptual understanding of the world. Equipped with intergrated senses and the ability to remember-at least for short periods of time- the infant investigates the environment with gusto. At the culmination of the sensory motor period, the infant is able to devise new approaches to problems by manipulating the world symbolically rather than physically.

Piaget's observations, first published in 1936, have stood the test of time. Almost 50 years later, this description still provides an accurate overview of the changes in the infant's thought patterns. The coordination of schemes, the formation o early memories, the development of the object concept, and the relationship between language and thought are all new areas of research that have grown out of Piaget's work with infants have been conducted in the areas of research that have grown out of Piaget's description of the sensory motor period. In addition, extensions of Piaget's work with infants have been conducted in the areas of vision, memory, learning and concept development. With these extensions of Piaget's ideas, our understanding of an infant's cognitive development has become much more elaborate and detailed.

***Activity***

***a) Explain the role a mother or caregiver in moral development***

***b) Describe the significance of the levels of moral development of an infant.***

**Summary**

The session covered theories of moral development.

It analyzed the factors that impact on moral development were examined and also foundations of spiritual development