UNIT 6: STAGES OF HUMAN DEVELOPMENT

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6.1. LEARNING OBJECTIVES

After going through this unit you will be able to:

- identify the difference between growth and development;
- explain the nuances of conception and growth of the foetus in the prenatal stage;
- discuss the developmental periods of infancy and babyhood.

6.2. INTRODUCTION

As you learnt in the previous unit, development describes the growth of humans throughout their lifespan, from conception to death. Development is defined as a progression of changes, either quantitative or qualitative, that lead from an undifferentiated or immature state to a highly organised, specialised, and mature state.It is determined by factors such as heredity, physical environment and family. This includes all aspects of human growth - physical, emotional, intellectual, social, perceptual, and personality development. Growth may be defined as a quantitative increase in size or mass. Measurements of height in centimetres or weight in kilograms indicate how much growth has taken place in a child.

6.3. STAGES OF HUMAN DEVELOPMENT

The life of an individual can be divided into the following major developmental periods:

- Pre-natal period (conception to birth)
- Neo-natal period (birth to 10-14 days)
- Babyhood (2 weeks to 2 years)
- Early childhood (2 years to 6 years)
- Late childhood (6 years to 12-13 years)
- Adolescence (12-13 years to 18-19 years)
- Adulthood (18-19 years onwards)

Each stage has fundamental behavioural patterns and traits and not all human life goes through the stages as per the age limit specified. They are only approximations and it varies between individuals depending on culture, social pressures and achievement of developmental tasks.

6.4. PRENATAL STAGE

The miracle of human growth and development is perfectly illustrated in the prenatal period of life, which is a period of development which takes

place inside the womb of the mother. It is the development of a single cell to a full term baby. During this time, the organism changes from a comparatively simple single-cell structure to a complex structure consisting of billions of cells. What is remarkable is how these cells develop into the varied organs and perform an array of functions. The prenatal period is ten lunar months of 28 days each or nine calendar months, approximately 270 to 280 days. Pregnancy, also known as gestation, is the time during which one or more offspring develops inside a woman. A multiple pregnancy involves more than one offspring, such as with twins. Pregnancy can occur by sexual intercourse or assisted reproductive technology. It usually lasts around 40 weeks from the last menstrual period (LMP) and ends in childbirth. Symptoms of early pregnancy may include missed periods, tender breasts, nausea and vomiting, hunger, and frequent urination.Pregnancy may be confirmed with a pregnancy test. It is divided into three trimesters. The first trimester is from week one through 12 and includes conception. The first trimester carries the highest risk of miscarriage. The second trimester is from week 13 through 28. The third trimester is from 29 weeks through 40 weeks.



The prenatal period is ten lunar months of 28 days each or nine calendar months, approximately 270 to 280 days.
Pregnancy, also known as gestation, is the time during which one or more offspring develops inside a woman.

STAGES IN PRENATAL PERIOD

6.4.1. Zygote stage (first two weeks)

The zygote stage is also known as the Germinal Stage. It is initiated at the time of conception when the nucleus of the male germ cell (spermatozoon) merges with the nucleus of the female germ cell (ovum). When several ova are released, multiple births occur. During sexual intercourse, spermatozoa are deposited at the mouth of the uterus which is drawn into the tubes by strong harmonic attraction. Conception takes place when the ovum is penetrated and fertilized by a single spermatozoon. The newly formed zygote normally passes down the Fallopian tube and into the uterus. the zygote implants itself in the uterine wall. It divides many times and separates into an outer and an inner layer. The outer layer later develops into the placenta, the amniotic sac, and the inner layer develops into a new human being. In

fact one of the very important characteristics of this stage is the formation of the placenta, which is a tissue which has the function of passing nutrients and oxygen from the mother's blood to the foetus and it also removes the unnecessary waste materials from the embryo. If the zygote fails to pass into the uterus, it may result in ectopic pregnancies (tube pregnancy) resulting in destruction of the organism as it occurs once in 500 conceptions.

6.4.2. Embryo Stage (2 weeks till 8 weeks)

This stage starts at the end of the Zygote stage and continues till two months after conception. Tremendous overall growth occurs and by end of the period, all major organs and systems ae developed. The organism now acquires a human form. It is protected and nourished by the amniotic sac, the umbilical cord and the placenta. The nervous system, the brain, spinal cord, the eyes, heart, lungs, digestive system and other organs are formed but they are far from functional. At the end of this stage, the embryo weighs about 11/4 ounces and is 11/2 inches in length. A possibility of the embryo being dislodged resulting in miscarriage is a hazard in this stage.

6.4.3. Foetal Stage (2 months after conception till birth)

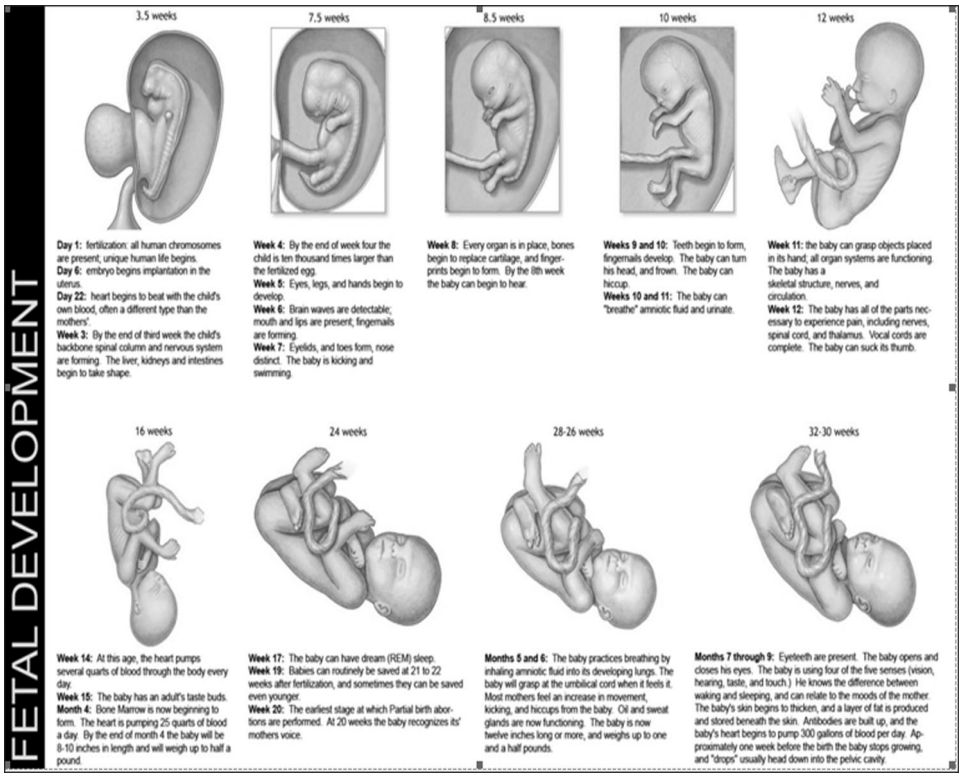
The foetal stage, the longest prenatal period, is when the preparation of the organism to sustain life after birth usually takes place. Sex organs of the foetus begin to appear during the third month of gestation. The foetus continues to grow in both weight and length, although most of the physical growth occurs in the later stages of pregnancy. The foetal heartbeat can be detected about the fifteenth week. Foetal movements like rolling, short or quick kicking appear by eighteen and twenty-one weeks and then increase rapidly up to the end of the ninth lunar month.Then they slow down because of crowding in the amniotic sac. The foetus develops enough to survive by the end of seventh lunar month, if there is a premature birth. By the time the foetus is considered full-term at 38 weeks gestation, he or she may be 20 inches in length and 3.3 kilograms in weight.

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The foetus increases quite dramatically in size, increasing about six times in size. The brain and central nervous system also become responsive during the second trimester. At around 28 weeks, the brain starts to mature

much faster with activity that greatly resembles that of a sleeping newborn. The lungs begin to expand and contract, preparing the muscles for breathing. The hazards that the foetus still faces are that it may perish due to a miscarriage, or premature birth may occur, leading to less chance of survival. A healthy prenatal environment contributes to good adjustment of the infant. But certain factors like malnutrition of the mother during pregnancy can result in still birth or premature birth. If the mother has been subjected to a lot of stress, this can contribute to complications during delivery and in some cases, even lead to difficult behaviour in the infant such as irritability, sleep problems and many other issues that make adjustment difficult.

The growth and changes that take place during the foetal stage is shown in the picture below.



Source: https://411something.files.wordpress.com/2009/03/fetaldevelopment-copy.jpg

Prenatal care needs intake of protein, calcium, iron and iodine, as well as vitamins A, B, and D to meet the demands of foetal growth. Complications of pregnancy may include high blood pressure, gestational diabetes, iron-deficiency, anaemia and severe nausea and vomiting.

Childbirth terminates prenatal development and introduced infancy. Three stages of labour occur during normal childbirth: uterine contractions and widening of the birth canal, rupturing of the amniotic sac and finally the expulsion of the placenta from the uterus. There are five kinds of birth (natural, breech, transverse, instrumental and caesarean).Most hazards are associated with instrument births and caesarean sections.

CHECK YOUR PROGRESS 1

1. Define the term 'development'.
2. State in short what changes take place during the prenatal stage.

6.5. INFANCY



Infancy is the beginning or the early period of existence when the new-born is a separate individual outside the mother's body and no longer a on the mother. Also known as the neonatal period, it is the first weeks of life, during which the new-born infant makes radical adjustments to the demands of the outside world. It is a stage of extreme helplessness and complete dependence on significant others.

6.5.1. Characteristics Of Infancy

Each developmental period has distinct characteristics to differentiate it from the other periods. Infancy also has certain unique characteristics:

- **Shortest developmental period**

  Infancy is from birth till about two weeks. As the infant at this stage has to adapt to the new environment, it undergoes certain anatomical and physiological changes. In spite of being the shortest developmental period, there are two sub-stages of infancy: the period of partunate - which is from birth to fifteen or thirty minutes, from the period the baby emerges out of the mother's body until the umbilical cord has been cut and tied. Till this period the baby makes no

adjustments to the postnatal environment. The other period is the period of neonate which is from the cutting of the umbilical cord to two weeks of postnatal life. In this period, the infant tries to make adjustments to the postnatal environment. Approximately an infant requires around two weeks to adjust to the environment outside the mother's body, and therefore it is considered the shortest developmental period.

- **Stage of radical adjustments**

  It is a sudden and complete change of locale which may be easy for some infants but difficult for others, some of whom may even fail to make it. Infants need to breathe on their own and inflate the lungs when the umbilical cord is cut and adapt to temperature outside the womb. Learning to suck and swallow (if they are unable to do this, they lose weight) and also elimination waste are adjustments to be made compared to the life inside the womb. The change of temperature from the womb to the outside world also requires adjustment.

- **It is a plateau in development**

  Owing to the radical adjustments to be made, there is a halt in the growth and development, resulting in a plateau. The rapid growth and changes taking place during the prenatal period are stabilised in this phase. Parents are concerned due to weight loss for a week but later, the infant slowly begins to progress. This is due to the sudden necessity of adjustment and the number of adjustments that an infant has to make after birth. After a few days after the adjustments are made, however, the normal pace of growth and development resumes.

- **It is a hazardous period**

  Physically and psychologically, infancy is a hazardous period. Physical hazards arise due to the radical adjustments the infant needs to make to the new environment which is indicative of the high mortality rate during this stage. Psychological hazards are dependent on the attitude of the significant others towards the infant.

It also depends on the birth conditions and the extent of adjustment between the parents and the infant.

6.5.2. Influence Of Family

The attitude of parents and siblings toward the infant usually persist as the child grows older. So, it is important that the attitudes of significant persons be favourable as the adjustment of the infant to postnatal life is largely influenced by the attitude of parents. A relaxed mother, for example, produces more milk than one who is tense. The maternal attitude matters a lot and so does the attitude of the father; both can directly or indirectly have an impact. The way fathers handle the new born infant, assisting in the care and also being present during delivery, contributes a lot towards developing a favourable attitude towards the infant.

Three aspects of postnatal care are essential to ensure that infants adjust to the environment without any hazards. Firstly, the amount of attention they receive to ensure that their needs are met promptly is important as all that the infant can do is cry. During the prenatal period, they are used to a stable environment where all their physical needs are automatically met, but now they need to depend on people for fulfilling their needs. Secondly, an infant's adjustment to postnatal life depends on the type and amount of stimulation given. Stimulation includes rocking the baby, and talking or singing to them as part of routing care. When they are stimulated in a loving manner, they regain their lost birth weight, and become more alert and responsive to their new environment. The warmth and affection that a mother shows by cuddling the baby does not only imply her love but also stimulates the infant's neurological development. Early stimulation and having more objects to look at helps the infant overcome developmental lag in vision and hearing. Thirdly, the degree of confidence of parents, especially mothers, have in performing their parental tasks satisfactorily aids the infant's adjustment to postnatal life. Mothers and other caregivers should know how to interpret the different cries of infants - whether it is hunger, a wet diaper, a feeling of loneliness or something else - and accordingly handle the situation.



Early stimulation and having more objects to look at helps the infant overcome developmental lag in vision and hearing.

Parents should not be disappointed about the infant's sex and

appearance, its excessive crying and extreme state of helplessness as it can affect their attitude towards the infant. A mother must try to quickly recuperate after delivery, overcome the 'post partum depression' and confidently fulfil her maternal role. Parents can get worried about the expenses mounting up due to childbirth, any complications during birth, prematurity or any birth defects requiring prolonged medical care. These concerns and anxiety relating to the child's survival also influence the attitude of parents towards the infant.

6.6. BABYHOOD

Babyhood occupies the first two years of life following infancy. During this period, there is a gradual decrease in the helplessness and over a period of time, the infant develops into an independent individual who has achieved enough body control by the end of two years. Toddlers, as they are commonly referred to, are expected to meet certain standards of social expectation called developmental tasks or milestones such as walking, eating sold food, gaining partial control of the organs of elimination, learning the foundations of speech, being able to arrange words into meaningful sentences and relating emotionally to parents, during this stage.

6.6.1. Characteristics of Babyhood

The special characteristics of babyhood include the following:

- Ii is the foundation age: At this time, many behaviour patterns, attitudes, and patterns of emotional expressions are established. Whatever children learn early in life persists forever. It is imperative that undesirable behaviour or attitudes should be corrected during the foundation years so that this experience has a lasting effect on the child's personal and social adjustments.
- Age of rapid growth and change: In this stage, rapid physical and psychological changes occur not only in appearance but also in capacities. Proportionate changes in height and weight are observed especially during the first year. Intellectual growth occurs and the baby is able to recognize and respond to people around. There is

also development of nervous system, ossification of bones and strengthening of muscles.

- Age of decreasing dependency: Independence also increases in this stage as babies can communicate their needs. With the development of body control, babies learn to sit, stand, walk and do certain things independently.
- Age of increased individuality: Each baby develops their own interests and abilities as individuals. Hence, sleep, eating pattern and child rearing techniques also need to be individualised.
- It is the beginning of socialization: Babies show the desire to be part of a social group, beginning with the attachment and affection they have for their mothers, which later develops into a strong emotional bond.
- It is the beginning of creativity: Babies begin to learn and develop interests which need to be encouraged and positively received by the parents so that it contributes to development of their creativity in the future. Exploring the world around them and being adventurous are other traits of babyhood.
- It is a hazardous age: Fatalities can occur due to illness or an accident. If babies are not trained during this stage to develop healthy behaviour, interests and attitudes, it can result in psychological problems in later stages.

6.6.2. Child Rearing Practices

Children learn values and moral codes from their parents, and later from teachers and peers. They have no conscience and their behaviour is not guided by any moral standards. Exhibiting morally approved behaviour is a slow process. Children should be taught what is right and wrong. Also, they should be praised and encouraged to continue with good behaviour with rewards and affection. Playing with the child, solving puzzles with them etc. are activities that help in building their communication, social and motor skills. Talking and reading regularly to the child helps to develop language skills. It is good for parents to start setting limits or rules about expected

Exhibiting morally approved behaviour is a slow process. Children should be taught what is right and wrong. Also, they should be praised and encouraged to continue with good behaviour with rewards and affection.

behaviour in a positive way. Babies should not be left alone or unattended. They should also be surrounded by safe things to prevent hurt or injury. Soft toys, rubber or plastic objects can be given to them to hold and play.

6.6.3. Influence Of Family

Family relationships play a dominant role in determining the future patterns of the baby's attitudes and behaviour towards relationship with others. Families also lay the foundation for the baby's socialization that begins at home. The parent - child relationship is more important than any other relationship, and research evidence has proved that babies who are neglected or deprived of this love grow up having emotional problems and they become unable to express love or respond to love in later stages of their life. As per Attachment Theory, a close, warm and satisfying relationship develops between the mother and the baby that makes the baby feel secure and also lays the foundation for him or her to trust and establish relationships with people other than the mother. Parents should create an environment that is intimate and makes the baby feel nurtured. Toddlers should be encouraged to explore their curiosity and allowed to become independent by letting them eat by themselves or dress up on their own. The first year of the baby's life is the happiest of the life span and they appeal to everyone around them because of their dependency. But after the completion of the first birthday, situations arise that cause discomfort or difficulty for both the baby and the parents. Teething starts, and the need to become independent arises, they start rebelling and desire more attention from their parents. Parents also become disenchanted with their parental roles, which may bring about a change in their attitude. The family should be able to adapt to the changes that take place in the baby and continue to provide them with the attention and affection they require at all stages of their growth and development. Parents need to accept that each child is unique and understand, respect and support the unique characteristics and abilities of each child.

CHECK YOUR PROGRESS 2

3. What are the significant chances during infancy stage?

4. State the important characteristics of babyhood stage.



6.7 LET US SUM UP

- Development describes the growth of humans throughout the lifespan, from conception to death. This includes all aspects of human growth - physical, emotional, intellectual, social, perceptual and personality development. Growth may be defined as a quantitative increase in size or mass.
- The prenatal period is ten lunar months of 28 days each or nine calendar months, approximately 270 to 280 days. It is divided into three important stages - zygote, embryo and foetal stage.



In the zygote stage or period of the ovum, implantation of fertilized ovum takes place (first two weeks).

- The embryo period includes the emergence of major body structures (2 weeks till 8 weeks).
- The foetal stage is the third and longest prenatal period.
- Symptoms of early pregnancy inlulde missed periods, tender breasts, nausea and vomiting, hunger, and frequent urination. Pregnancy may be confirmed with a pregnancy test. It is divided into three trimesters.
- Infancy is the beginning or the early period of existence and stage of extreme helplessness, the shortest developmental period, calling for radical adjustments to postnatal life.
- Three aspects of postnatal care are essential for infants: attention, stimulation and confident parents.
- Babyhood extends for two years following infancy. Rapid growth and

change with decreasing dependency occurs. Babies learn to walk, take sold foods, learn foundations of speech, and relate emotionally to parents. It is the beginning of socialization and parents need to teach values and morality, as this is the foundation age where children learn to be disciplined. Babies like to explore the world around them and become adventurous.



6.8. FURTHER READING

- Developmental Psychology - A Life-span Approach. Elizabeth Hurlock. Tata McGraw-Hill Publishing Company. New Delhi. 1980. 5th Ed.
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- Psychology of Human Development. Justin Pikunas. McGraw-Hill Book Company. Inc. 1961. http://www.archive.org/details/psychologyof huma00piku.
- Growth stages. Check http://sciencenetlinks.com/student-teacher-sheets/major-physical-growth-stages/
- Human development. Check http://sciencenetlinks.com/student-teacher-sheets/growth-1-human-development/
- Positive parenting. Check http://www.cdc.gov/ncbddd/childdevelopment/ positiveparenting/infants.html

6.9 ANSWERS TO CHECK YOUR PROGRESS

1. Development is defined as a progression of changes, either quantitative or qualitative whereas Growth may be defined as a quantitative increase in size or mass.
2. During prenatal stage, the organism changes from a comparatively simple single-cell structure to a complex structure consisting of billions of cells through three distinct stages: zygote, embryo and

foetal stage. The prenatal stage includes ten lunar months of 28 days each or nine calendar months, approximately 270 to 280 days. Prenatal care is crucial for safe growth of the foetus that culminates with childbirth.

3. Infancy is the shortest developmental period of two weeks from birth and the most hazardous stage, where the infant is completely helpless and needs to make radical adjustments to life outside the womb. Attention, stimulation and confident parents aid their adjustments

4. Babyhood occupies the first two years of life following infancy. Rapid growth and change with decreasing dependency occurs. Babies learn to walk, take sold foods, learn foundations of speech, and relate emotionally to parents. This stage is the beginning of socialization and parents need to teach values and morality, as this is the foundation age to be disciplined.



6.10 MODEL QUESTIONS

Short questions

1. What are the different stages of growth and development ?
2. Write a brief note on the embryonic stage.
3. Why is infancy a period of hazards ?
4. Briefly list the characteristics of babyhood.
5. How can parents discipline a toddler ?

Long questions

1.6. Trace the growth of the foetus in the prenatal period until childbirth.

2.7. Describe the major characteristics of infancy.

3.8. Why is babyhood an appealing age? Trace the developments that take place during babyhood.

4.9. How can parents contribute to the infant's postnatal adjustment to life?

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