UNIT 6 : DEVELOPMENT OF NEW BORN INFANT

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6.1 LEARNING OBJECTIVES

After going through this unit, you will be able to-

- understand how development take place in new born infant
- identify the sensation and perception of new born infants
- list out the physical as well as early cognitive skills of new born infant.

6.2 INTRODUCTION

The discussion made in the later section of Unit 5 (sub-section 5.5) must have clarified your concept about neo-natal period and its different features. Neo-natal period is the most important period of human life as it introduces the baby with a completely new environment where he/she has to adjust outside the mother's womb. After being in mother's womb for about nine month, when the baby comes out, he/she faces a complete new world, he/she becomes independent unlike the pre-natal period. Parents and the other members surrounded by the baby also experiences variety of activities and development in the baby. Here in this unit, we will discuss

about the developmental aspects of the new born infants including their physical and cognitive skills. Moreover, the unit will also highlight on the sensations and perception of the new born baby.

6.3 DEVELOPMENT OF NEW BORN INFANT

According to Elizabeth Hurlock, infancy begins with birth and ends when the infant is approximately two weeks old. The neo-natal period can also be termed as infancy. Further many other psychologists consider that the period from birth to two years constitutes the infancy stage. The word *infant* is derived from the Latin word, "infans", which means unable to speak. When a human child learns to walk, the term toddler is used. According to standard dictionaries, the infancy or the period of new born infant is the beginning or the early period of existence as an individual rather than a parasite in the mother's body. Again, medical terminology recommends that an infant is a young child, but no specific age limits are placed on when the individual ceases to be an infant and becomes a child.

In the proceeding unit, we have discussed about the two sub-stages of pre-natal period in terms of period of partunate and period of neonate. Period of partunate begins when the fetal body has emerged from the mother's body and lasts until the umbilical cord has been cut and tied. The period of neonate begins from the cutting of the umbilical cord and last for the end of second week of post-natal life. The development of new born infant in their post-natal life begins to show in behaviour with their completion in adjustment in the new environment. Although the human life span legally begin at the moment of birth, birth is merely an interruption of the developmental pattern that started at the moment of conception. Development in new born infant is the graduation from an internal to an external environment.

Developmental Characteristics of New Born Infant –

- **Development back after a halt at birth:** The rapid growth and development which took place during the prenatal period suddenly come to a stop with birth. This regression in new born last for few days, after which the new born infant begins to improve. By the end of

the infancy period, the new born infant's state of development is usually back to where it was at the time of birth.

- **Development resumes after adjustment:** The new born infant has to make radical adjustment in the new environment in post-natal period outside the mother's body. Once the adjustment is completed, infant resumes their growth and development.
- **Development in new born is a preview of later development:** Though it is not possible to predict the individual's future development on the basis of the development apparent at birth, however, the new-born's development provides a clue to what to expect later on.
- **Development is hazardous for new infant:** New born infant face so many hazards in physical and psychological development as they have to make necessary radical adjustment.

6.3.1 Physical Development of New born infant

New born infants differ greatly in appearance and physical development during their post-natal period. The physical development of the new born are discussed under the following headings-

A. Size: At the time of birth, the average new born infant weighs about 7 ½ pounds and measures 19 ½ inches in length. Weight in relation to height is less at birth, on the average, in the more active foetus than in those who have been less active during pre-natal stage. Again, boys on the whole are slightly longer and heavier than girls.

B. New Born features: Development take place in the muscles of the neck and legs of new born than in those of the hands and arms. The skin of white infants becomes lighter as they grow older while that of non-whites becomes darker. The soft downy hair found on the head and neck starts disappearing in the new born infant. Infant with dark skin have dark brown eyes but they starts changing, become darker in time.

C. Physical proportion: The body proportion of the new born infant resembles a miniature adult. The head is approximately one fourth of the body length. The cranial region, the area over the eyes is proportionally much larger than the rest of the head. The chin is proportionally much too small. The tiny nose and mouth starts developing.

D. Muscle growth: A continuous growth occurs in case of muscles since the child is born. In the beginning, the muscle fibres happen to be small in size –in length, breadth and thickness. With age however, the new born infant gain in all these aspects as their muscles are soft.



LET US KNOW

- The word *infant* is derived from the Latin word, "infans", which means unable to speak.
- Weight in relation to height is less at birth, on the average, in the more active foetus than in those who have been less active during pre-natal stage. Again, boys on the whole are slightly longer and heavier than girls.
- With the birth cry, the lungs of the new born infant are inflated and respiration begins. The respiration rate at first ranges from 40-55 breathing movement per minute. By the end of the first week of life, it normally drops to approximately 35 per minute and become more stable.

6.4 SENSATIONS AND PERCEPTIONS OF NEW BORN INFANT

Sensory reaction is another significant feature in new born infant. Though accurate knowledge of sensory reaction of the infants is somewhat limited, however studies made on infants help us to believe that infants have a greater capacity for sensory discrimination. The best criterion that can be used to determine the presence or absence of sensory capacity is the motor responses to sensory stimuli that normally arise when the sense

organs of the new born infants are stimulated. However, it cannot be established that whether a motor response is made to a stimulus or whether the reaction is a part of general mass activity in new born infants. When the infant are drowsy or asleep or when they are pre-occupied with feeding, they will react differently to sensory stimuli that when their physical condition is better. The intensity of the stimulus has a profound influence on infant's reactivity to different sensory stimuli.

Sensory Capacity of the New born Infants:

As mentioned above, infants have a greater capacity for sensory discrimination. The sensory capacities of the new born infants can be discussed under the following headings-

A. Vision: New born infants are far from blind but their visual field is only about one half that of adult because the rods are not fully developed except around the fovea. Because of muscle weakness, the infant cannot focus both eyes on the same object simultaneously and as a result everything is seen as blur. There is some evidence that infants responds to differences in brightness. The ability to follow a moving object and then moving the eyes backward is developed gradually in new born infants. The horizontal eye movement is first developed than the vertical movements.

B. Hearing: Hearing is the least developed of all the senses at birth partly because the stoppage of the middle ear with amniotic fluid for several days after birth makes it impossible for sound waves to penetrate to the inner ear where the cells for hearing are located and partly because these cells are only partially developed. The capacity to hear normally improves within the first three or four days after birth as the amniotic fluid drains from the middle ear. Hence, the new born infant can determine the direction from which a sound is coming and he/she can discriminate the pitch and its intensity. The new born baby respond more to human voice than to other sounds. Very loud sounds increase the rate of heart palpitation and elicit body movements in them.

C. Smell: The cells for smell located in the upper part of the nose are

well developed at birth. Hence, the new born infant can distinguish odours by crying or turning head and attempts to withdraw from unpleasant stimuli and they responds to pleasant smell stimuli by sucking and relaxing the body.

D. **Taste:** The cell for taste which are located on the surface of the tongue and in the cheek area are too well developed in the new born baby. Hence the infant's sense of taste is keen. They react towards positive stimuli by sucking or relaxing the body and react towards negative stimuli such as-salty, sour and bitter by crying.

E. **Organic Sensitivities:** Sensitivity to hunger is fully developed at birth and hunger contraction occur within the first day of life. Thirst also appears then.

F. **Skin Sensitivities:** The sense organs for touch, pressure and temperature are well developed at birth and lie close to the surface of the skin. The skin of lip of the new born is especially sensitive to touch, while the skin on the trunk, thigh and forearms is less sensitive. Sensitivity to cold is more highly developed than sensitivity to heat. Again, sensitivity to pain is weak for the first day or two of post-natal life and then it improves rapidly. The pain responses are developed earlier in the anterior than the posterior end of the body.

Perception of the New born Infants:

Infants have a greater capacity for sensory discrimination. Likewise perception of the new born is another significant feature. The development of perception in new born infant is originally dependent on sensory development. Fortunately, in the first few weeks of life the sensory apparatus of a typical infant is in good working condition. Nevertheless his understanding of what is going on around him is negligible. All infants experience some disorganization for the first day or two after birth. This indicates that they are not entirely conscious of what goes on around them. Gradually, as the shock of birth goes off and their sense organ begins to function better, they become more conscious of their surroundings.

Consciousness of the New born Infants:

With the development of the sense-organs, the new born infants

become conscious about the surrounding though they may or may not react to it. The consciousness of the infant is markedly influenced by the depressant effects of drugs used during labour. Prematurely born infants take longer time to adjust to the ordeal of birth than the full term infants whose birth has been difficult. As such, it takes them even longer to become conscious of what goes on around them.



CHECK YOUR PROGRESS

Q 1: What is the derivative meaning of Infant?

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Q 2: Fill in the blank-

Development in new born infant is the graduation from ..... environment.

Q 3: What is the average size of a new born at birth?

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Q 4: What are the skin sensitivities of new born baby?

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6.5 PHYSICAL SKILLS OF NEW BORN INFANT

In unit 5, we have discussed about the different reflexes of new born infant. These reflexes indicates the physical skills or movement in new born infants. The physical skills in the baby develops as soon as the foetus emerges from the mother's body with the first movement. Because of the neurophysiological immaturity of the infant, one could not expect its movement to be co-ordinated or meaningful.

During the pre-natal period, the foetus faces the task of preparing itself for the birth process and to overcome the odds against normal development. Hence, the new born infant has the capacity for all life sustaining activities or skills such as-breathing, sucking and swallowing and discharging bodily waste. Physical development in infants is fast.

Physical development pertains to the baby's bodily growth, fine and gross motor skills and the abilities of various organs of the body. When a baby achieves a new physical skills, his life improves.The new born infants can display several reflexes or physical skills which aids him/her in the adjustment to the new world. Some of the physical skills of the new born infant in terms of reflexes are listed below-

1. **Rooting Reflex or Skill:** The new born infant responds to pressure or touch on the neck by turning the head towards the touch or opening the mouth. This automatic and involuntary responses or reflexes are known as rooting reflex or skill. This skill helps the baby feed from the mother by orienting her to the mother's breast or bottle.
2. **Sucking Reflex:** Feeding is further facilitated by sucking reflex or skill by which the new born sucks on any object placed into the mouth.
3. **Head Turning:** One of the most important physical skill displayed by the new born is head turning. The rooting reflex disappears over the first week of life and it is replaced by voluntary head turning.
4. **Head Up:** The growth in neck muscles helps the baby to hold the head up when lying flat on the tummy. It is an important physical development milestone, which indicates improved muscle strength and flexibility.
5. **Startle Reflex:** If someone makes a loud noise or startle a new born baby in some other way, the reaction would be a stretch or a shiver. This reflex is called as startle reflex.
6. **Grasp Reflex:** The grasp reflex is another important reflex in the new born which is linked to the later ability to hold on to object.
7. **Babinski Reflex:** If the bottom of the foot is stroked with a finger or pencil, the new born reacts by fanning out its toes. This is called Babinski reflex.

Hence, these reflexes are the starting point for many important physical skills including reaching out, grasping and walking. Besides these reflexes, a new born infant possesses a large repertoire of tasks. He/she can suck, salivate, hiccup, vomit, yawn, stretch, sneeze, kick, shiver, and blink. Crying plays an important role in initiating physical movement in baby

as crying infant squirms, kicks, turns his head from side to side and extends his arms, legs, fingers and toes.



ACTIVITY 6.1

List out the physical activities exhibited by a new born infant in your family or in the neighborhood.

6.6 EARLY COGNITIVE SKILLS OF NEW BORN INFANT

Though, cognitive skills in the new born infant is not much developed and recognized, but some of the activities or reflexes exhibited by the new born infant ca be considered as early cognitive skills. Much before birth, the fetus responds to sounds and within few hours after birth, the new born baby can distinguish between different sounds of language. The new born can too *distinguish between mother's voice and other human voice*, hence the baby can responds to sounds. Moreover, the baby can follow a moving object put in front of him/her. If parents or other family members put moving finger in front of the baby, he/she can respond through blinking.

Jean Piaget's theory of cognitive development suggests that children move through four different stages of mental development. **A. Sensorimotor stage: birth to 2 years B. Preoperational stage ages 2 to 7, C. Concrete operational stage: ages 7 to 11 and D. Formal operational stage: ages 12 and up.** As such cognitive development take place since the time of birth. Piaget's theory describes the cognitive development of children. Cognitive development involves changes in cognitive process and abilities. In Piaget's view, early cognitive development involves processes based upon actions and later progresses to changes in mental operations. The infant knows the world through their movement and sensation. The new born learn about the world through basic actions such as sucking, grasping, staring and listening.

During this earliest stage of cognitive development, infants acquire knowledge through sensory experiences and manipulating objects. A child's entire experience at the earliest period of this stage occurs through basic

reflexes, senses, and motor responses.

It is during the sensorimotor stage that children go through a period of dramatic growth and learning. As kids interact with their environment, they are continually making new discoveries about how the world works. The cognitive development that occurs during this period takes place over a relatively short period of time and involves a great deal of growth.



CHECK YOUR PROGRESS

Q 5: What is Rooting Reflex?

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Q 6: What are the four stages of Jean Piaget's theory of cognitive development?

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6.7 LET US SUM UP

After going through this unit, it can be summarized as-

- Neo-natal period is the most important period of human life as it introduces the baby with a completely new environment where he/she has to adjust outside the mother's womb.
- According to Elizabeth Hurlock, infancy begins with birth and ends when the infant is approximately two weeks old.
- The word-infant is derived from the Latin word-"infans" which means unable to speak.
- According to standard dictionaries, the infancy or the period of new born infant is the beginning or the early period of existence as an individual rather than a parasite in the mother's body.
- Development in new born infant is the graduation from an internal to an external environment.

- Developmental Characteristics of New Born Infant – development back after a halt at birth, development resumes after adjustment, development in new born is a preview of later development, and development is hazardous for new infant.
- New born infants differ greatly in appearance and physical development during their post-natal period.
- At the time of birth, the average new born infant weighs about 7 ½ pounds and measures 19 ½ inches in length.
- With the birth cry, the lungs of the new born infant are inflated and respiration begins. The respiration rate at first ranges from 40-55 breathing movement per minute. By the end of the first week of life, it normally drops to approximately 35 per minute and become more stable.
- Sensory reaction is another significant feature in new born infant. Though accurate knowledge of sensory reaction of the infants is somewhat limited, however studies made on infants help us to believe that infants have a greater capacity for sensory discrimination.
- The development of perception in new born infant is originally dependent on sensory development.
- With the development of the sense-organs, the new born infants become conscious about the surrounding though they may or may not react to it.
- Physical development in infants is fast. Physical development pertains to the baby's bodily growth, fine and gross motor skills and the abilities of various organs of the body. When a baby achieves a new physical skills, his life improves.
- Though, cognitive skills in the new born infant is not much developed and recognized, but some of the activities or reflexes exhibited by the new born infant ca be considered as early cognitive skills.
- The new born can too *distinguish between mother's voice and other human voice*, hence the baby can responds to sounds.
- During this earliest stage of cognitive development, infants acquire knowledge through sensory experiences and manipulating objects.



6.8 FURTHER READING

1) Chetry Krishna Kumari (2016): Developmental Psychology, Ashok Book Stall, Panbazar, Ghy.
2) Goswamee Gayatree (2008): Child Development and Child Care, Arun Prakashan, Guwahati, Assam.
3) Hurlock Elizabeth B (1980): Developmental Psychology: A life-span Approach, Mc Graw Hill Companies, Inc., New York.
4) Mangal S.K (2006 2nd Edition): Advanced Educational Psychology, Published by Asoke K Ghosh, Prentice Hall of India Private Limited, New Delhi.



6.9 ANSWERS TO CHECK YOUR PROGRESS

Ans to Q No 1: The word-infant is derived from the Latin word-"infans" which means unable to speak.

Ans to Q No 2: Development in new born infant is the graduation from an internal to an external environment.

Ans to Q No 3: At the time of birth, the average new born infant weighs about 7 ½ pounds and measures 19 ½ inches in length

Ans to Q No 4: Skin Sensitivities in new born means the sense organs for touch, pressure and temperature are well developed at birth and lie close to the surface of the skin. The skin of lip of the new born is especially sensitive to touch, while the skin on the trunk, thigh and forearms is less sensitive. Sensitivity to cold is more highly developed than sensitivity to heat.

Ans to Q No 5: The new born infant responds to pressure or touch on the neck by turning the head towards the touch or opening the mouth.

This automatic and involuntary responses or reflexes are known as rooting reflex or skill.

Ans to Q No 6: The four stages of Jean Piaget's theory of cognitive development are-

A. Sensorimotor stage: birth to 2 years

B. Preoperational stage ages 2 to 7,

C. Concrete operational stage: ages 7 to 11 and

D. Formal operational stage: ages 12 and up.



6.10 POSSIBLE QUESTIONS

A. Short Questions (Answer each questions in about 150 words)

Q 1: What are the Developmental Characteristics of New Born Infant?

Q 2: Why Development is in new born considered as preview of later development?

Q 3: Write about the perceptual development in new born.

B. Long Questions (Answer each questions in about 300-500 words)

Q 1: Discuss the physical development in new born infant.

Q 2: Discuss the Sensory Capacity of the new born Infants.

Q 3: Explain the physical and cognitive skills in new born infants.

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