



HUMAN GROWTH & DEVELOPMENT

MSWCC201

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Growth and Development of Individual

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1.0 Learning Objectives

In this module, you shall be introduced to the various concepts used in the context of development psychology, clarify their meaning and prescribe necessary definition. After reading this module, you should be able to understand the following concepts :

- Growth and development of individual
- Growth, development, maturation.
- Principles of human development,
- Heredity vs. environment
- Roles of heredity and environment in human development.

1.1 Introduction

In daily life situations, two common terms “Growth” and “Development” are frequently heard by us when everrefer to some kind of progress. Most of the time they are used interchangeably. “Maturation”and “Learning” also have close connections with them so far, our behavioural changes and advancements with age area concerned. From the time of conception in mother’s womb i.e., the time of fertilization, the new life changes itself in an orderly and progressive manner with all possible environment aleffects impinging upon it. The change is conceived assome kind of accelerationoren largement which is termedas growth. Growth encompass esobservable, readily recognizable changes (physical development) and also the acquisition of skills and concepts (physical growth) which are attributes of mental growth. They may not be apparent or readily measurable (development) but always qualify the individual’s ability to do some activity to express ability emotion etc. It is journey from womb to tomb.

1.2 Definitions

Growth refers to the increase is size and number, it has a u measure. It refers to the changes of structure i.e. height, weight of the organism. It includes physical development mainly. Development refers to qualitative improvement in circumstances–i.e. ability to sit, walk, run. It involves over all changes including growth and other progressive changes. According to E.B. Hurlock (1959) “Development means a progressive series of changes that occur in an orderly predictable pattern as a result of maturation and experience”. He has added, growth as “change in size, in proportion and disappearance of old features and acquisition of new ones”.

Though growth and development are intimately related to each other, the following comparison can be made to clarify the differences between them.

Table1: Comparison between growth and development

Growth	Development
Growth refers to psychological changes.	Development refers to overall changes in the individual. It involves changes in an orderly and coherent type towards the goal of maturity.
Changes in quantitative aspects are termed growth.	Development changes in the quality along with quantitative aspects.
Growth does not continue throughout life.	Development continues throughout life.
Growth stops after maturation.	Development is progressive.
Growth occurs due to the multiplication of cells.	Development occurs due to both maturation and interaction with the environment.

Growth	Development
Growth is cellular.	Development is organizational.
Growth is one of the parts of the developmental process.	Development is a broader and comprehensive term.
Growth may be referred to describe the changes in particular aspects of the body and behaviour of the organism.	Development describes the changes in the organism as a whole.
The changes produced by growth are subject to measurements. They may be quantified and observable in nature.	The development brings qualitative changes which are difficult to measure directly. They are assessed through keen observation of behaviour in different situations.
Growth may or may not bring development.	Development is possible without growth.

Growth and Development are neither discrete or independent, but are rather phases of the same process. Growth is a general concept which includes maturation and learning. Maturation stands for a process and a stage, or culmination of phase of growth. Physical and mental growth are the major aspects of an individual's growth as a whole. Physical growth means a change in the structure of the organism, changes of this kind make possible what is called as adaptive responses. Mental growth refers to adaptive changes in function and behaviour accompanied by a consciousness of purpose or a striving for a goal. A person can grow by eating, sleeping and exercising without much learning (physical growth). He can also grow by learning (mental growth) as an accompaniment of the physical processes.

1.3 Maturation and Learning

The two processes, namely, maturation and learning always interact, it is difficult to separate their effects from each other or to specify the contribution of each to child's development.

Growth is a biological process; it is not learnt but it depends on maturation. But improvement in motor activities such as walking, grasping depend on maturation and learning.

Maturation stands for a process and as a stage or culmination of a stage of growth. It refers to the changes qualitative and quantitative, which result from the natural unfolding of inherited tendencies. Changes that occur within an individual's body are relatively independent of external conditions, experience and practice. Maturation means the development of the organism's functions of time or age e.g., an infant sits with support at the age of four months, and sits without support at the age of six months and sits without support at the age of six months. This takes place even in the absence of special training.

Learning implies exercises and experience. The traits which are potentially present in a child will not

develop to the maximum with out effort. Here again the maturation and learning are not exclusive process; they are dependent on one another. Lacking as ufficient degree of maturity, a child can not learn. He will not be able to walk unless the muscles are mature enough. Priorto this no amount of training is going to be helpful. Learning in turn affects the manner in which maturation takes place.

1.4 General Manifestations of Growth

Physical growth is always manifested in changes of the structure and physiology of the organism. i.e., attainment of growth cycle from conception till the age of maturity e.g. physical size, emergence of teeth.

In the mental or psychological as pect of person's growth, one has to look for a different kind of manifestation of growth. The observable aspectsare as follows :

- a) **Growth inperception** : After birth, though the sense organs are not yet ready to function in an adult manner, there is a signor gradual growth i.e., the co-ordination of eye sattending to some visual or sound stimulus, response to the uncomforts, hunger and general pain. Gradually the perception of objects, distance, spatial relationship and social awareness develop.
- b) **Growth in neuromuscular Control** : The child develops control of eyes muscles in the process of co-ordination very early after birth. Then, gradually he achieves differentiation of the arm and hand movement, of the body in maintaining a sitting posture and later of the legs in walking. Later he develops various types of neuromuscular control i.e., skating, riding abi cycle, swimming and dancing.
- c) **Growth in skills** : It is an advanced stage of differentiation from gross bodily movement.A skill results from extensive practice of activity. Skilled behaviour of the sensory-motor type develops slowly in the infant and the young child.
- d) **Growth in knowledge** : An increase in knowledge is readily observable and is one of the easiest aspects of education, to measures and evaluate with growth the child's ability to respond to a large number of situations in a variety of ways increases.
- e) **Development of mental grasp** : Growth is manifested by the increased speed, facility and adequacy with which a person deals with intellectual situations. A child's immaturity and lack of pertinent experiences limit his ability to grasp a situation.
- f) **Growth in ability to choose and inhibit** : Growth and learning necessitate the choice of ends and values i.e., the things one values and considers worth while in life. It leads to inhibit the values or courses of action that run counter to the chosen values.

1.5 Human Development and Developmental Psychology

Human development is a branch of psychology that studies—and strives to optimize—the elements that help people live healthy and fulfilling lives. This field aims to understand the various changes individuals and their relationships go through as they continue to learn and grow.

The more complex definition of human development in psychology is that it's a multi-disciplinary study of the psychological, biological, and sociological factors that impact people from infancy through adolescence to adulthood.

On the other hand, developmental psychology is defined as a scientific approach to explaining growth, change, and consistency throughout a lifetime. It uses various frameworks to understand how people develop and transform throughout their lives. The goals of developmental psychology are to describe, explain, and optimize development to improve people's lives. In the real world, developmental psychology is used in the study of physical, psychological, emotional, social, personality, and perceptual development.

1.6 Principles of Growth and Development : Human Development Principles

Researches, both cross – sectional and longitudinal, in the growth and development of children of all ages, have led psychologists to formulate the following general principles that govern growth. These principles apply to the growth pattern of all children, barring a few exceptional for which other explanations have to be sought.

- 1) **Growth and learning depend on maturation** : Attempting to teach materials or functions before proper maturity has been reached in a wasteful process.
- 2) **Growth is more rapid in early age** : Speech, habits, attitudes, concepts and patterns of conduct and personality are acquired during the early stage of life through an orderly process.
- 3) **Growth involves both differentiation and integration** : With the process of growth specific responses emerge from the general pattern of growth. e.g., from the gross movement of body legs and arms, movement of one arm, or the movements of fingers independently of the other develop.
- 4) **Growth is a process of integration too** : The child learns to sit erect, to balance himself in a given posture to move his legs with increasing facility and strength, and to get sense of movement in crawling. Further coordination and integration of these movements' results in walking.
- 5) **Development follows a set direction** :
 - Cephalocaudal : The muscles organization and the resulting behaviour proceed from head to foot along longitudinal axis.

- Proximodistal : This direction of growth proceeds from center to the periphery of the body. The first reaction of the organization both before and after birth depends upon the fundamental axial muscles. As growth proceeds, there is a progressive advance of motor control from the larger fundamental muscles to the smaller muscles which can execute more refined movements.
- 6) **Heredity and environment** : Heredity supplies the potential or capacity which the environment (education) may nurture. These two need to interact in order to produce and accelerate growth and development.
- 7) **The general pattern of behaviour is common** : The order of development, however, does not seem to change appreciably from one individual to another. All children walk before they talk.
- 8) **Each individual grows at his own rate** : A person's organic composite growth curve maintains a rate comparable with that of others. His rate of growth varies with his various functions. At any given time, the overall picture of an individual maintains its position relative to that of others. e.g., the retarded tends to remain retarded.
- 9) **Growth may be accelerated or retarded** : Here development develops only under favourable normal circumstances but the child will develop according to his capacities. Illness, diseases, lack of opportunity and exposures; mental set, attitude, motivation all level, poor or no guidance may retard development.
- 10) **Development follows a sequence** : There is a sequential order in development of motor behaviour, adaptive behaviour and personal-social behaviour.
- 11) **Development is cumulative** : In the developmental process, certain changes impress us with their dramatic suddenness. But the child does not reach these points abruptly. Each is a cumulation of his prior growth.
- 12) **Development is continuous** : It starts from the moment of conception in the mother's womb and ends at the time of death (Womb to Tomb).
- 13) **Mental function appears together rather than in order** : Imagination, reasoning, memory- all begin quite early and at the same time.
- 14) **Principle of interrelation** : The growth and development in various dimensions like physical, mental, social etc. are interrelated and interdependent. Growth and development in any one dimension affect the growth and development of the child in other dimension also. e.g., a child having poor physical development also tends to regress in emotional, social and intellectual development.
- 15) **Development is predictable** : It is possible to predict the range within which the child's mature development is going to fall with the help of the rate of growth and development of a child.

- 16) **Uniformity of pattern** : Though development does not occur at a uniform rate and shows marked individual difference, yet it follows a definite pattern. e.g., the motor development and language development in all children seem to follow a pattern.
- 17) **Development proceeds from general to specific** : General activity precedes specific activity. e.g., The child waves his arms in general before he can do as specific as grasping. This is helped by developmental progress.
- 18) **Development is spiral and not linear** : The child does not proceed straightly on the path of development with a constant pace, rather he turns back and then moves forward like a spiral.

1.7 Factors influencing Human Growth and Development: Nature vs. Nurture

Growth plays a very crucial role in human life. The growth and development of human beings are affected by a variety of factors right from the beginning of life in a mother's womb. The factors influencing growth and development are broadly categorized into internal and external factors.

A. Internal Factors

All those factors which lie within the individual are called internal factors. These factors include

1. Heredity factors
2. Biological or constitutional factors
3. Intelligence
4. Emotional Factors
5. Social Nature

1. Heredity factors : Heredity factors play their part at the time of conception in the mother's womb. The heredity factor contribution includes :

- What is transferred to the offspring from its immediate parents in the form of genes and chromosome
- The height, weight, colour of eyes and the skin, the characteristics of hair all these decided by the hereditary influence
- The physical structure, nervous system and other things related to one's constitutional make-up, body chemistry and physical development are, to a great extent, decided by heredity factors.

If the heredity contribution is satisfactory, then with minimum efforts of the environmental forces, we get satisfactory results. However, in case the hereditary contribution is quite meagre, then we have to make tremendous efforts for achieving desired success in terms of a child's satisfactory growth and development.

2. Biological or constitutional factors : A child's constitutional make-up somatic structure, physique and body chemistry influence his growth and development throughout his life. This can be sustained in the following manner :

- A child who is physically weak or has any internal deformities cannot be expected to achieve satisfactory results in terms of his normal growth and development. He usually suffers from an illness which is not only hampering his physical growth but also affect his development in other spheres- mental, social and emotional.
- The nervous system which controls the body movement affects the growth and development of a child in cognitive spheres.
- The endocrine or ductless glands are potent factors affecting the growth and development of an individual from his birth. The chemistry of the body is governed by these glands. Each of these glands secretes its own chemical known as hormones. Ex- an imbalance in the pituitary gland may lead to an abnormal increase or decrease in height.
- Defective constitutional make-up like ugly face, short stature and any other deformity of the body may give birth to feelings of inferiority of a child. Moreover, he may face adjustment problem in the environment and consequently may lag behind in the race of growth and development pertaining aspects of his personality.

3. Intelligence : Intelligence as the ability to learn, adjust and take up the right decision at right time, has a great influence on the overall growth and development of a child. It affects child social behaviours, moral judgement and emotional growth. It is said the intelligence person is very well controlled over his emotions and is found to carry on well with his personal and social adjustment. Thus, the physical, social, emotional, moral and language development of a child is greatly affecting and controlled by the level of his intelligence.

4. Emotional Factors : Emotional factors, e.g. emotional adjustability and maturity, play a big role in influencing a person's overall growth and development. A child who is found to be overwhelmed by negative emotions like fear, anger, jealousy etc is adversely affected in his physical, mental, social, moral and language development.

5. Social Nature : A person's socialization helps him in achieving adjustment and advancement in other aspects of his growth and development. He may learn from his environment, more by means of his social nature, which may prove to be a boom to him for his proper growth and development.

B. External Factors

The factors lying outside the individual in his environment are said to be the external factors affecting growth and development. These include :

- 1. The environment in the womb of the mother :** The amount and quality of nourishment available in the mother's womb from the time of conception till his birth is very important in the aspects of growth and development of the child. The factors associated with this period are
 - The Physical and mental health of the mother during pregnancy;
 - Single child or multiple children getting nourished in the womb;
 - The quality & quantity of nutrition received by the embryo within the womb of the mother;
 - Normal or abnormal delivery;
 - Any damage or accident to the baby in the womb;
- 2. The environment available after birth :** Whether a child gets from different conditions and forces of his environment after his birth, influence his growth and development in many ways. These include :
 - i. Accidents and incidents in life :** The growth and development are greatly affecting by the good and bad incidents and accidents which happens to meet in his lifetime. Sometimes, a small injury or an incident may change the entire development course in his life. For Example : If a child's nervous system is damaged in an accident, it will hamper his mental development and it turns it will affect his development in other spheres-social, emotional, moral and physical
 - ii. The quality of the physical environment, medical care and nourishment :** A child growth and development is greatly influenced by the quality of his physical environment and medical care and nourishment available to him for his living and working. These include open space, balanced diet, good living and working conditions and proper medical care.
 - iii. The quality of the facilities and opportunities provided by the social and cultural forces :** What a child gets from his social and cultural environment for the growth and development of his potentials, influences the entire course of his development. In a true sense, he develops and becomes what he permitted to and desired by these social and cultural forces. A few such conditions are given below :
 - Parents and family care received by the child
 - Economic and social status of the parents and family
 - The quality of the neighbourhood and the surrounding environment
 - The quality of schooling received by the child
 - The quality of peer group relationship and company of a child.
 - iv. Socio-economic factors :** Another important factor influencing growth and development is the socio-economic factor; children from socially and economically advanced families are far ahead

than children from socially and economically underdeveloped families in terms of growth and development. The most important reason for these is regular balance diet and nutritious food, improved facilities, proper sleep, proper care, proper medical care etc.

- v. **Nutritional factors** : The most important factor influencing growth and development is nutrition. Nutrition is essential korma especially for the growth of individuals. Adequate nutritious food is essential for the healthy and normal growth and development of human body;lack of adequate nutritious food disrupts the normal growth and development of the human body.
- vi. **Pollution** : Pollution is a factor that has negative effect on the growth and development of children and individuals. The information that has come up from different studies shows that different types of pollution such as air water soil and above all environmental pollution have a negative impact on human growth and development.

The growth and development are influenced by both heredity and environment. If the quality of a gene and chromosome transfer from parents to a child then we need minimum environments efforts to achieve the maximum growth and development of a child. Family is one of the most important factors in the child overall growth and development in all spheres.

Nature vs. Nurture

The wording of the phrase “nature vs. nurture” makes it seem as though human individuality—personality traits, intelligence, preferences, and other characteristics—must be based on either the genes people are born with or the environment in which they grew up. The reality, as scientists have shown, is more complicated, and both these and other factors can help account for the many ways in which individuals differ from each other.

The words “nature” and “nurture” themselves can be misleading. Today, “genetics” and “environment” are frequently used in their place—with one’s environment including a broader range of experiences than just the nurturing received from parents or caregivers. Further, nature and nurture (or genetics and environment) do not simply compete to influence a person, but often interact with each other; “nature and nurture” work together. Finally, individual differences do not entirely come down to a person’s genetic code or developmental environment—to some extent, they emerge due to messiness in the process of development as well.

1.8 Stages of Human Development

The stages are of two parts :

- 1) Prenatal period (from conception to birth) : 9 lunar months
- 2) Postnatal period (from birth till end of life)

Human Growth and Development

Prenatal Development includes the development of :

- (a) the ovum (0-2 weeks)
- (b) the embryo (2 weeks to 2 month)
- (c) the foetus (2 months - to birth).

It starts with fertilization and continues up to 270-280 days until birth.

In human pregnancy, prenatal development is also called antenatal development. By the end of the tenth week of gestational age the embryo has acquired its basic form and is referred to as a fetus. This fetal period is described both topically (by organ) and chronologically (by time) with major occurrences being listed by gestational age.

Postnatal Development is generally distributed into three distinct, but continuous phases :

- Acute Phase : 24 hours immediately following delivery
- Sub-Acute Phase : can last 2-6 weeks following delivery
- Late Phase : can last from 6 weeks - 6 months following delivery

The length of the Late Phase is dependent on major muscle tone and connective tissue recovery in the postpartum person. The physiological changes happening in the Late Phase are generally very gradual and subtle.

1.9 Factors affecting Pre-Natal Development

- 1) **Maternal Nutrition** : The maternal blood stream supplies the unborn child's nourishment through the placenta. Therefore, mother's diet should contain sufficient nutrients like carbohydrate, fat, mineral, proteins of various kinds.
- 2) **Vitamin Deficiency** : In order to avoid any negative interference with the normal prenatal development, Vitamins C, B-6, B-12, D, E, and K should be kept perfect in the mother's body.
- 3) **Maternal Health** : Endocrines in order, infections, diseases, prolonged or wasting diseases (Tuberculosis) and profound under or overweight of mother should be corrected due to the negative impact on child's health.
- 4) **Rh Factor** : Damage to cells of unborn child may occur due to the incompatibility between parental blood type. This can cause serious physical and mental complications of the child in prenatal and post-natal level as well.
- 5) **Drugs** : Pregnant women are strongly advised not to take medicine without the consultation of the physician. An expert's knowledge is always required before taking up a simple medication.

- 6) **X ray and Radium** : They are usually damaging to the unborn child. In modern days ultrasound is being used to avoid the danger in the rapeutic conditions throughout the period of pregnancy.
- 7) **Alcohol** : For normal prenatal growth and development, it is advisable for the mother to avoid frequent consumption of alcohol.
- 8) **Tobacco** : Tobacco in any form has direct impact on the health of the unborn child. Even a pas-sive smoking can create a hazard to the growing fetus. i.e., heart rate, and chemical content of blood.
- 9) **Parental Age** : For females best age is between 21 years to 29 years to be pregnant because of the complete maturity of the sexual hormones and other bodily apparatus.
- 10) **Maternal Emotions** : Stress and tentional way saffect negatively the mental health of the fetus which is known as “blood-borne anxieties”. This serious effect continues in the postnatal condi-tion also.
- 11) **Uterine Crowding** : Fetalactivity in mother’s wombis generally restricted if there are multiple children. This may have longer impact on post-natal growth and development also.

1.10 Sequence of Development and Rate of Development

According to Burn hamet. al. (2010) the difference between the sequence of development and the rate of developments is thats equencerefers to the normal or expecteds equence in which children learn different skills. The rate of development refers to the speed in which a childwilld evelop.

Rate of development is important because it is essential to identify the child’s needs during different stages of development. It is crucial to plan effectively the kind of support and help the children need in the specificare as where they face more difficulties. Human are constantly growing, shifting, developing and transforming, right from the moment of conception. There fore, development a lapproach reveals the series of crises through which the individual grows and evolves.

Main Development a llssues :

Development encloses :

- a) Physical growth
 - b) Psychological growth.
 - c) Social and Cultural growth
- a) **Physical growth** : involves general structural part of the body, mainly the height and weight i.e., normal structure hand, legs, body, sense organs, internal organs, nervous system etc.
 - b) **Psychological growth** : encompasses cognitive abilities i.e., perception, attention, learning memory,

problem solving, thinking, decision making, creativity, judgement, conative abilities, like wish, will, motivation and emotive or affective abilities i.e., feeling emotions sentiments etc.

- c) **Socio-cultural growth** : emphasizes in individuals growing ability to adopt with the societal regulations and to achieve Cultural competence.

1.11 Major Development Period : Infancy to Oldage

The major developmental period can be divided into the following :

- a. Pre-birth–Prenatal Period (conception to birth)

Before birth, development is extremely rapid. It is mainly physiological and consists of the growth of all the bodily structures.

- b. Postnatal Development

i. Infancy–(Birth to 10-14 days)

- Subdivisions of Infancy

- a) Period of the Parturate

- This period covers the first 15 or 30 minutes after birth.
- With the cutting of the umbilicalcord, the infant becomes as eparate, distinct, and independent individual.

- b) Period of the Neonate

- This period covers the remainder of the infancy period.
- According to medical criteria, it ends with the falling off of the umbilicalcord, about 2 weeks after birth.
- According to psychological criteria, it sends with there gaining of lost birth weight and indications of a resumption of development.
- Adjustments essential to a life free from the protection of the intrauterine environment are successfully made.

This is the period of the new born, or the neonate (derived from the Greek wordneos “New” and the Latin Verbnascor, “to be born”). During this time, the infantmust adjust to a totally new environment outside the mother’s body. Growth is temporarily stand still.

ii. Babyhood (2 weeks to 2 years)

In the beginning, the baby is completely helpless. Gradually he learns to control his muscles so that he can become increasingly self – reliant. There is a growing tendency to become independent.

iii. Childhood (2Years to Adolescence)

According to Hurlock this period is divided into two sub-divisions :

- a) **Early childhood (2-6years) :** It is the pre-school or pre-gangage. The child seeks to gain control over his environment and starts to learn to make social adjustments.
- b) **Late childhood–(6 to approx imately 13 years in girls and 14 years in boys) :** Is the period in which sexual maturity occurs and adolescence begins. The major development is socialization. This is the elementary school age or gang age.

iv. Puberty (11-16 Years) Adolescence

This is a never lapping period, approximately 2 years overlap the end of childhood and 2 years overlap the beginning of the adolescence. Puberty extends from 11 to 15 years in girls and from 12 to 16 years in boys. Children attain their adult body size during this period. This is a specificst age of development that both boys and girls go through when developing secondary sexual characteristics like voice changes, body shape, growth of pubichair, facial hair (beard and moust ache). These characteristics are not directly involved with reproduction.

v. Adolescence (13 to 18 Years)

The period of “Stormand Stress”–The teen age years are also called adolescence. It is the time for growth spurt and puberty changes. An adolescent can grow several inches in several months followed by a period of very slow growth, then have another growth spurt. Changes with puberty (sexual maturation) may occur gradually or several signmay become visible at the sametime. There is a great amount of variation in the rate of changes that may occur. Sexual and other physical maturation during puberty are there sult of hormonal changes (growth hormone secreted by Pituitary, and gonadotropic hormones)

Adolescence, the transitional phase of growth and development in any person extends from the age of 10-19 according to the definition of World Health Organization (WHO2019)

Adolescence can be divided into three stages :

- a) Early adole scence (13 to 15 years)
- b) Middle adole scence (15 to 17 years)
- c) Late Adole scence (17 to19 years)

All the sest ages are filled with drastic, physical, psychological, emotional, moraland social changes.

vi. Adulthood (End of late adolescence)

The onse to fadul thood varies from person to person and the successful passage into adulthood depends on the satisfactory resolutions of childhood and adolescent crises.

Adulthood may be divided into three major periods :

- 1) Early Adulthood (end of adolescence to 40 years)
- 2) Middle Adulthood (40 years to 65 years)
- 3) Late adulthood or old age (65 years onwards)

vii. Middle Adulthood (40 to 65 years)

Jung referred to age 40 as the noon of life. It involves reviewing the past, considering the demands of the present of deciding what the future will be like. With regard to occupation, many individuals begin to experience the gap between early aspirations and current achievements. Erikson pointed out this stage as—the stage of Generativity Vs Stagnation.

viii. Late Adulthood or Old Age (65 years and onwards)

The aging process is called Senescence (Latin senescere)—meaning to grow “old”. It is characterized by gradual decline in functioning of all bodily systems.

1.12 Conclusion

Human growth and development are influenced by two leading factors i.e., heredity or genetic factors and environmental factors. They are also known as ‘Nature’ and ‘Nurture’ concepts. All children are born with a kind of prearrange of biological patterns made of genes and chromosomes which determine the physical existence and effect the growth. It exists in the human cell of parents which is transformed in the offspring and known as ‘heredity’. The inherited characteristics interact with the environmental forces and shape the further development of the individual throughout the life span. The term “individual Difference” in the discussion of Growth and Development claims highest importance due to the variable nature of these two extremely important contributors i.e., Heredity and Environment.

1.13 Self-Assessment Questions

1. What are the differences between human growth and development?
2. Define the two terms growth and development. Mention the principles of growth and development.
3. Explain with illustration the general manifestation of growth.
4. What do you mean by maturation and learning?
5. What is developmental psychology?
6. Discuss in brief the principles of human development.
7. Discuss in a nutshell the stages of human development.

8. Discuss the concept of 'nature vs nurture' from human growth and development perspective.
9. What is Pre-natal Development? Mention its stages.
10. What is Post-natal Development. Name the stages of development from birth to oldage.
11. Noteson :
 - (a) Sequence of development
 - (b) Rate of development
 - (c) Maturation and learning.
 - (d) Human development
 - (e) Stages of postnatal development
 - (f) Internal and external factors of growth and development.

1.14 Suggested Readings and References

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Stages of Human Development

Content Structure

2.0 Learning Objectives

2.1 Introduction

2.2 Concept of Life span Development

2.2.1 Developmental Psychologists have divided the total lifespan of human development in the following stages

2.3 Developmental Tasks during the Life Span

2.4 Stages of Human Development

2.4.1 Prenatal Stage

2.4.2 Infancy

2.4.2.1 Motor Development during Infancy

2.4.2.2 Sensory Abilities during Infancy

2.4.2.3 Cognitive Development during Infancy

2.4.2.4 Socio-emotional Development during Infancy

2.4.2.5 Personality Development during Infancy

2.4.2.6 Hazards during Infancy

2.4.3 Babyhood

2.4.3.1 Physical Development during Babyhood

2.4.3.2 Speech Development during Babyhood

2.4.3.3 Emotional and Social Development during Babyhood

2.4.3.4 Play Development during Babyhood

2.4.3.5 Personality Development during Babyhood

2.4.3.6 Hazards in Babyhood

2.4.4 Early Childhood

2.4.4.1 Physical Development during Early Childhood

2.4.4.2 Motor Development during Early Childhood

2.4.4.3 Skills of Early Childhood

2.4.4.4 Cognitive Development during Early Childhood

2.4.4.5 Speech Improvement during Early Childhood

2.4.4.6 Emotions during Early Childhood

2.4.4.7 Social Development during Early Childhood

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2.0 Learning Objectives

After completion of this unit, the students would be able to understand :

- Definition of Development
- Concept of Life Span Development
- Developmental Tasks during the Life Span
- Stages of Human Development
- Health and Nutrition required for Growth and Development at each level

2.1 Introduction

From the moment the human child is first conceived, to the day the individual dies, they keep changing constantly and developing. While some of the changes in human beings are the result of chance incidents and personal choices, the vast majority of life changes and stages of human development are due to certain common biological and psychological factors partly inherited and partly environmental and are all shared by all people.

Life span development deals with important common developmental stages that human being pass through : birth, infancy, adolescence, adulthood, old age and finally death. As the humans grow up from stage to stage, they learn to make use of their body parts, learn how to express themselves and communicate with others, how to form relationship with others, how to love and how to work. Here an attempt will be made to present the meaning and concept of humand evelopment, characteristics and principles of development.

2.2 Concept of Life span Development

Life span development explore show we change and grow from conception to death. This field of psychology is studied by developmental psychologists. They view development as a life long process that can be studied scientifically across three developmental domains: physical, cognitive development, and psychosocial.

Life span Development referst othefull process of human development from conception to death. It is a holistic approach to under standing all of the physiological, cognitive, emotional, and social changes that people go through. Boyd and Bee (2009) explain that psychologists who study human development have recently adopted the life span perspective which “maintains that important changes occur during every period of development and that these changes must be interpreted in terms of the culture and context in which they occur”

Developmental Psychology is the branch of psychology that studies individual changes and inter-individual changes with in these intra-individual changes. Some developmental psychologists’ study developmental change covering the life span from conception to death. By so doing, they attempt to give a complete picture of growt hand decline. Other covers only a segment of the life span- childhood, adulthood, or oldage.

Today, developmental psychologist shave six major objectives :

- (1) to find out what are the common characteristic age changes in appearance, in be haviour an dinterests, and goals from one developmental period to another;
- (2) to find out whether these changes occur;
- (3) to find out what causes them;
- (4) to find out how they influence behaviour;
- (5) to find out whether they can or cannot be predicted; and
- (6) to find out whether they are individual or universal.

2.2.1 Developmental Psychologists have divided the total lifespan of human development in the following stages:

Periods	Key Features	Characteristics
Pre-birth	Potential	The child who has not yet been born could become anything – a Michelangelo, a Shakespeare, a Martin Luther King – and thus holds for all of humanity the principle of what we all may yet become in our lives.
Birth	Hope	When a child is born, it instills in its parents and other caregivers a sense of optimism; a sense that this new life may bring something new and special into the world. Hence, the newborn represents the sense of hope that we all nourish inside of ourselves to make the world a better place.
Infancy (Ages 0-3)	Vitality	The infant is a vibrant and seemingly unlimited source of energy. Babies thus represent the inner dynamo of humanity, ever fueling the fires of the human life cycle with new channels of psychic power.
Early Childhood (Ages 3-6)	Playfulness	When young children play, they recreate the world anew. They take what is and combine it with what is possible to fashion events that have never been seen before in the history of the world. As such, they embody the principle of innovation and transformation that underlies every single creative act that has occurred in the course of civilization.
Middle Childhood (Ages 6-8)	Imagination	In middle childhood, the sense of an inner subjective self develops for the first time, and this self is alive with images taken in from the outer world, and brought up from the depths of the unconscious. This imagination serves as a source of creative inspiration in later life for

Periods	Key Features	Characteristics
		artists, writers, scientists, and anyone else who finds their days and nights enriched for having nurtured a deep inner life.
Late Childhood (Ages 9-11)	Ingenuity	Older children have acquired a wide range of social and technical skills that enable them to come up with marvelous strategies and inventive solutions for dealing with the increasing pressures that society places on them. This principle of ingenuity lives on in that part of us that ever seeks new ways to solve practical problems and cope with everyday responsibilities.
Adolescence (Ages 12-20)	Passion	The biological event of puberty unleashes a powerful set of changes in the adolescent body that reflect themselves in a teenager's sexual, emotional, cultural, and/or spiritual passion. Adolescence passion thus represents a significant touchstone for anyone who is seeking to reconnect with their deepest inner zeal for life.
Early Adulthood (Ages 20-35)	Enterprise	It takes enterprise for young adults to accomplish their many responsibilities, including finding a home and mate, establishing a family or circle of friends, and/or getting a good job. This principle of enterprise thus serves us at any stage of life when we need to go out into the world and make our mark.
Midlife (Ages 35-50)	Contemplation	After many years in young adulthood of following society's scripts for creating a life, people in midlife often take a break from worldly responsibilities to reflect upon the deeper meaning of their lives, the better to forge ahead with new understanding. This element of contemplation represents an important resource that we can all draw upon to deepen and enrich our lives at any age.

Periods	Key Features	Characteristics
Mature Adulthood (Ages 50-80)	Benevolence	Those in mature adulthood have raised families, established them in their work life, and become contributors to the betterment of society through volunteerism, mentorships, and other forms of philanthropy. All of humanity benefits from their benevolence. Moreover, we all can learn from their example to give more of ourselves to others.
Late Adulthood (Age 80+)	Wisdom	Those with long lives have acquired a rich repository of experiences that they can use to help guide others. Elders thus represent the source of wisdom that exists in each of us, helping us to avoid the mistakes of the past while reaping the benefits of life's lessons.
Death & Dying	Life	Those in our lives who are dying, or who have died, teach us about the value of living. They remind us not to take our lives for granted, but to live each moment of life to its fullest, and to remember that our own small lives form of a part of a greater whole.

2.3 Developmental Tasks during the Life Span

Development is commonly described in terms of periods or stages. Human life proceeds through different stages. For example, suppose some one is at present in the stage of adolescence and after a few years she/he will enter the stage of adulthood. Developmental stages are assumed to be temporary and are often characterized by a dominant feature or a leading characteristic, which gives each period its uniqueness. During a particular stage, individuals progress towards an assumed goal-state or ability that they must achieve in the same order as other persons before progressing to the next stage in the sequence. Of course, individuals vary with respect to the time or rate of development from one stage to another. It may be noted that certain patterns of behaviour and certain skills are learned more easily and successfully during certain stages. These accomplishments of a person become the social expectations of that stage of development. They are known as developmental tasks.

Havighurst's Developmental Tasks during the Life Span

Robert Havighurst emphasized that learning is basic and that it continues throughout life span. Growth and Development occurs in six stages.

1. Babyhood and Early Childhood

- Learning to take solid foods
- Learning to walk
- Learning to talk
- Learning to control the elimination of body wastes
- Learning sex differences and sexual modesty
- Getting ready to read
- Learning to distinguish right and wrong and beginning to develop a conscience

2. Late Childhood

- Learning physical skills necessary for ordinary games
- Building wholesome attitude towards oneself as a growing organism
- Learning to get along with age-mates
- Beginning to develop appropriate masculine or feminine social roles
- Developing fundamental skills during reading, writing and calculating
- Developing attitudes towards social groups

3. Adolescence

- Achieving personal independence
- Achieving new and more mature relations with age-mates of both sexes
- Achieving a masculine and feminine social role
- Accepting one's physique and using one's body effectively
- Desiring, accepting, and achieving socially responsible behaviour
- Achieving emotional independence from parents and other adults
- Preparing economic career
- Developing an ideology

4. Early Adulthood

- Getting started in an occupation
- Selecting a mate
- Learning to live with a marriage partner
- Starting a family
- Rearing children
- Managing a home

- Taking responsibility
- Finding a congenial social group

5. Middle Age

- Achieving adult civic responsibility
- Developing adult leisure time activities
- Relating one's self to one's spouse as a person
- Accepting and adjusting to the physiological changes of middle age
- Maintaining satisfactory performance in one's occupational career
- Adjusting to aging partners

6. Old Age

- Adjusting to decreasing physical strength and health
- Adjusting to retirement and reduced income
- Adjusting to death of spouse
- Establishing satisfactory physical arrangements
- Adapting to social roles in a flexible way

2.4 Stages of Human Development

2.4.1 Prenatal Stage :

The period from conception to birth is known as the prenatal period. Typically, it lasts for about 40 weeks. The prenatal period is also considered an important part of the developmental process. Prenatal development is a time of remarkable change that helps set the stage for future psychological development. The brain develops over the course of the prenatal period, but it will continue to go through more changes during the early years of childhood.

The first two weeks after conception are known as the germinal stage, the third through the eighth week is known as the embryonic period, and the time from the ninth week until birth is known as the fetal period.

a. Germinal Stage (first two weeks after conception)

The germinal stage begins at conception when the sperm and egg cell unite in one of the two fallopian tubes. The fertilized egg, known as a zygote, then moves toward the uterus, a journey that can take up to a week to complete. Cell division begins approximately 24 to 36 hours after conception.

Cell division continues at a rapid rate and the cells then develop into what is known as a blastocyst.

The blastocyst is made up of three layers :

1. The ectoderm (which will become the skin and nervous system)
2. The endoderm (which will become the digestive and respiratory systems)
3. The mesoderm (which will become the muscle and skeletal systems).

Finally, the blastocyst arrives at the uterus and attached to the uterine wall, a process known as implantation. Implantation is not always an automatic and sure-fire process.

b. Embryonic Stage (third through the eighth week)

At this point, the mass of cells is now known as an embryo. The beginning of the third week after conception marks the start of the embryonic period, a time when the mass of cells becomes distinct as a human. The embryonic stage plays an important role in the development of the brain. The embryo begins to divide into three layers each of which will become an important body system.

c. Fetal Stage (ninth week until birth)

Once cell differentiation is mostly complete, the embryo enters the next stage and becomes known as a fetus. The fetal period of prenatal development marks more important changes in the brain. This period of development begins during the ninth week and lasts until birth.

Both genetic and environmental factors affect our development during different periods of prenatal stage. Prenatal development is also affected by many things, like :

- 1) **Maternal Nutrition :** In order to grow, the fetus needs nutrients which in turn come from the mother. Mother's dietary intake must be balanced. Care must be given to include vitamins and minerals (such as calcium, phosphate, iron) water, proteins, fats and not carbohydrates alone. Vegetables, green leaves, seasonal fruits, pulses and cereals in addition to milk, eggs and meat or fish provide a diet adequate for the baby and the mother.
- 2) **Maternal age :** Between the ages of 21 to 29 years is the ideal age of the mother to have children. Below this bracket the mother is too immature physiologically and psychologically with a high risk of infant death. Beyond 30, risk of incidence of mental retardation and other genetic abnormalities is very high.
- 3) **Rest and exercise of the mother :** These are essential especially during pregnancy. When the mother is tired and overworked the fetal activity increases and beyond limits it can cause still birth or irritability of the child. At the same time mother must have adequate exercise.
- 4) **Rh+ blood group :** Majority of us are Rh+ while some have Rh- blood group. If the mother is Rh- and the fetus is Rh+ then it is an incompatible condition. The mother must be aware of it and at the time of delivery, if precautions are not adequate then complication such as jaundice can occur and may result in infant death.

- 5) **Addictions** : If the mother is addicted to alcohol, cigarettes or drugs the waste materials passed onto the fetus. Risk of irritability, low birth weight or prematurity, even still birth or child being born with addictions are very high.
- 6) **Maternal diseases** : The diseases of them other can significantly affect the fetus. Especially during the initial critical times during pregnancy German measles or Rubella can cause deafness, mental retardation or even heart trouble. AIDS, Syphilis or other sexually transmitted diseases can cause miscarriage.
- 7) **Maternal stress** : When the mother has emotional problems, tensions and anxieties, blood supply to the fetus is not adequate, but is diverted. Therefore, growth is hindered. This also can result in prematurity, still birth or the child being irritable.

2.4.2 Infancy

Infancy or the period of new born is according to standard dictionaries, the beginning or the early period of existence as an individual rather than as a parasite in the mother's body. Dictionaries also define an infant as a child in the first period of life. Many psychologists use the word infant in much the same way as members of the medical profession do and, like them, fail to set a limit on infancy. They give this period an ambiguous pattern of life span. The word infant suggests extreme helplessness. During this period, the newborn's complete helplessness gradually gives way to increasing independence.

Following are the most important characteristics of infancy :

- a) Infancy is the shortest of all developmental periods
- b) Infancy is a time of radical adjustments
- c) It is a plateau in development
- d) It is the preview of later development
- e) It is a hazardous period

2.4.2.1. Motor Development during Infancy

The newborn's movements are governed by reflexes—which are automatic, built-in responses to stimuli. They are genetically-carried survival mechanisms, and are the building blocks for subsequent motor development. Before the newborn has had the opportunity to learn, reflexes act as adaptive mechanisms. Some reflexes present in the newborn—coughing, blinking, and yawning persist through out their lives. Others disappear as the brain functions mature and voluntary control over behaviour starts developing.

As the brain is developing, physical development so progresses. As the infant grows, the muscles and nervous system mature which lead to the development of finer skills. Basic physical (motor) skills include :

Reflex	Description	Developmental Course
Rooting	Turning the head and opening the mouth when touched on the cheek	Disappears between 3 and 6 months
Moro	If there is a loud noise, the baby will throw her/his arms outward while arching her/his back, and then bring the arms together as if grasping something	Disappears in 6 to 7 months (although reaction to loud noises is permanent)
Grasp	When a finger or some other object is pressed against the baby's palm, the baby's fingers close around it	Disappears in 3 to 4 months; replaced by voluntary grasping
Babinski	When the bottom of the baby's foot is stroked, the toes fan out and then curl	Disappears in 8 to 12 months

2.4.2.2 Sensory Abilities during Infancy

During infancy, the infant can able to recognize their mother's voice just a few hour safter birth and have other sensory capabilities. Newborns prefer to look at some stimuli rather than others such as faces, although these preferences change over the first few months of life. The newborn's vision is estimated to belower than the adult vision. By 6 months it improves and by about the first year, visionisal most the same as that of an adult (20/20).

2.4.2.3 Cognitive Development during Infancy

Jean Piaget stressed that children actively construct their under standing of the world. Information doesnot simply enter their minds from the environment As children grow, additional information is a cquiredand they adapt their thinking to includene wideas, as this improves their under standing of the world. Piaget believed that a child's mind passes through a series of stages of thought from infancy to adolescence. The child during in fancy, i.e., the first two years of life, experiences the world throughsenses and interactions with objects — through looking, hearing, touching, mouthing, and grasping.

2.4.2.4 Socio-Emotional Development during Infancy

Babies from birth are social creatures. An infant starts preferring familiar faces and responds to parent's presence by cooing and gurgling. They become more mobile by 6 to 8 months of age and start showing a preference for their mother's company. When frightened by a new face or when separated from their mother, they cry or show distress. On being reunited with the parent or caregiver they reciprocate with smiles or hugs. The close emotional bond of affection that develops between infants and their parents

(caregivers) is called attachment. According to Erik Erikson (1968), the first year of life is the keytime for the development of attachment. It represents the stage of developing trust or mistrust. A sense of trust is built on a feeling of physical comfort which builds an expectation of the world as a secure and good place. An infant's sense of trust is developed by responsive and sensitive parenting. If the parents are sensitive, affectionate, and accepting, it provides the infant a strong base to explore the environment. Such infants are likely to develop a secure attachment.

2.4.2.5 Personality Development during Infancy

Infancy period extends from birth to 18 months of age. This is called the age of trust v/s mistrust. The infant who comes to the new environment, from mother's womb needs only nourishment. If the child's caretaker, the mother anticipates and fulfills these needs consistently, the infant learns to trust others, develops confidence. Inevitably the child will experience moments of anxiety and rejection. If the infant fails to get needed support and care, it develops mistrust which affects the personality in later stages of life.

2.4.2.6 Hazards during Infancy

The physical hazards can affect the entire life span of the child. Complications at the time of birth have a high possibility of causing physical harm to the child. A caesarean birth is likely to cause more harm than a normal delivery. In certain cases, it results in a hypoxia which means a temporary loss of oxygen to the brain. If this temporary loss of oxygen to the brain is for a longer duration, the infant is likely to have brain damage which would be severe. Therefore, it can be said that more complicated the birth and the more damage to the brain due to anoxia, greater will be the effect on the infant's postnatal life. Another situation that causes severe effects due to anoxia is a pre-mature delivery which can even cause death of the infant. Anoxia is a major problem because a pre-mature infant's respiratory mechanism is not fully developed. Its effect may be long lasting.

Psychological hazards of infancy include the traditional beliefs associated with birth. For example – Some people believe that the children born with birth complications lead a difficult life. Also, the attitude of parents towards the infant due to gender preferences, complications at the time of birth, unexpected arrival of twins or triplets etc. affects his growth.

2.4.3 Babyhood

Babyhood is the stage that follows infancy and extends between two weeks to two years. During babyhood months, there is a gradual but pronounced decrease in helplessness.

The characteristics of babyhood are as follows :

- 1) Development during babyhood is the foundation for the development during the entire life span.
- 2) During babyhood rapid physical and intellectual development takes place as evidenced by increase in height, weight and body proportions.

- 3) Increased independence and individuality mark babyhood.
- 4) Socialization begins during babyhood as the baby shows increasing desire to be a part of the social group of the family and extend the basic relationship with them other or mother substitute to others as well.
- 5) Sex-role typing begins during babyhood. Boys and girls are dressed sex appropriately and are treated in subtly different ways. Culturally relevant sex-appropriate clothes, games, behaviour or even interactions are gradually brought in.
- 6) There are hazards faced by a baby who maybe physical or psychological. Physical hazards such as in illness, accidents and psychological hazards can interfere with positive development of the baby.

During babyhood, the baby is expected to learn to walk by two years, to take solid foods, to gain partial control over elimination, learn the foundation of receptive and expressive speech and to emotionally relate to parents and others.

2.4.3.1 Physical Development during Babyhood

- Rapid growth takes place during babyhood. Height and weight increase.
- The birth weight is doubled by four months and tripled by one year. On an average the height of the baby at four months is 23 to 24 inches and at one year 28 to 30 inches and by two years 32 to 34 inches.
- Social smile which is a response to recognizing a face is the first clear milestone which happens around 2 months.
- The baby can roll over from side to back at 2 months and from back to side at 4 months. At 6 months, it can roll over completely.
- The baby begins to pull the body to a sitting position and sit up without support around 8 months.
- Hands and palm scoop up an object which is called palmar scoop around 5 months.
- Around 9 months it can use the fingers in a pincer-grip to pick up even fine objects.
- The baby hitches or moves in a sitting position around six months, crawls and creeps around 8 months.
- Walk on all fours, pulls up and stands by 10 months.
- He/she learns to stand with support by 11 months and without support, for longer time around a year.
- Also, he/she learns to walk with support initially and without support around 14 months.
- These milestones, which indicate movement, are also called as motor development. The motor

skills of babyhood are not integrated initially but when they are integrated later, they are of importance to the baby and its developing personality.

- At first, the baby's body is more or less constant motion similar to the mass activity of the new born infant. This is true even during sleep.
- Gradually, this random, meaningless movement becomes more coordinated, thus making control over the muscle possible.
- Maturation and learning work together in the development of muscle control. As a result of maturation of the muscles, bones and nerve structures, and because of the change that take place in the body proportions, babies are able to use their bodies in a coordinated manner. They must, however, be given an opportunity to learn how to do so. Until this state of readiness is present, teaching will be of little or no value.

Some common motor control patterns are given below:

Head Region	Eye Control	Optic nystagmus, or the response of the eyes to a succession of moving objects, begins about twelve hours after birth; ocular pursuit movements, between the third and fourth weeks; horizontal eye movements, between the second and third months; circular eye movements, several months later.
	Smiling	Reflex smiling, or smiling in response to a tactual stimulus, appears during the first week of life; social smiling, or smiling in response to the smile of another person, begins between third and fourth months.
	Head holding	In a prone position, babies can hold their heads erect at one month; when lying on their backs, at five months; and when held in sitting position, between four and six months.
Trunk Region	Rolling	Babies can roll from side to back two months and from back to side at four months; at six months, they can roll over completely
	Sitting	The baby can pull to a sitting position at four months, sit with support at five months, sit without support momentarily at seven months, and sit up without support for ten or more minutes at nine months

Arm and Hand Region	Hands	Thumb Opposition-the working of the thumb opposition to the fingers-appears in grasping between three and four months and in picking up objects between eight and ten months
Leg Region	Arms	The baby can reach for objects by six or seven months and can pick up a small object without random movements by one year Shifting of the body by kicking occurs by the end of the second week

2.4.3.2 Speech Development during Babyhood

As the baby develops, the important bridge into the world of other is also developed in the form of speech which aids communication. It has two aspects: receptive speech to understand what others are communicating and expressive speech to make oneself understood. The baby begins to babble or produces several sounds. Then she moves on to the stage of monosyllables (eg: Ma, Ma, Da, Da, Na, Na etc.) which gives way to two-syllable stage. Before two years, the baby speaks with words made of two syllables formed in a sentence which typically has no grammar.

2.4.3.3 Emotional and Social Development during Babyhood

Babyhood emotions such as joy, affection, curiosity, fear and anger are often expressed explosively and are out of proportion to the stimuli. They are also short lived. These emotions get conditioned or established much more in later years. Beginning with a social smile babies learn to respond to the social environment and are the foundations of the social skills valued greatly in later years. Some common emotional patterns in babyhood are as follows :

- 1) **Fear :** Certain fears are characteristically found at certain age and may, therefore, be called the “typical fears” for those age levels. The most common fear-provoking stimuli in babyhood are loud noises, animals, dark rooms, highplaces, sudden displacement, being alone pain and strange persons, places, and objects. Among older children fears are concentrated on fanciful supernatural, or remote dangers; on the dark and on imaginary creatures associated with the dark; on death or injury; on the elements; especially thunder and lightning; and; and on characters recalled from stories, movies, comics, and television.
- 2) **Anger :** Anger is a more frequently expressed motion in childhood than fear in its different forms. The reason for this is that anger-provoking stimuli are more numerous and children discover at an early age that anger is an effective way of getting attention or what they want. Each year, the number of anger-arousing situations increases and children tend to display more anger.

- 3) **Jealousy** : Jealousy is a normal response to actual, supposed, or threatened loss of affection. It is outgrowth of anger, giving rise to an attitude of resentment directed toward people. Often some fear is combined with anger in the jealousy pattern. The jealous person feels insecure in relationship with a loved one and is afraid of losing status in that person's affection. The situation that calls forth jealousy is always a social one. There are three major situational sources of jealousy. First, most childhood jealousies are homegrown; that is they originate in conditions that exist in the home environment. Because the new baby takes much of the time and attention older children have become accustomed to receiving, they feel neglected.
- 4) **Curiosity** : Maw and Maw have described the curious child in the following way. The child a) reacts positively to new, strange, incongruous, or mysterious elements in his environment by moving toward them, exploring them or manipulating them; b) exhibits a need or a desire to know more about himself and/or his environment; c) scans his surroundings seeking new experiences; and/ or d) persists in examining and/or exploring stimuli in order to know more about them.
- 5) **Joy, Pleasure and Delight** : Joy is a pleasant emotion. In its milder forms, it is known as pleasure, or happiness. Among babies, the pleasant emotions of joy, happiness, and delight come from physical well-being. In older children, the stimuli that aroused pleasant emotions at the younger ages continue to bring pleasure.
- 6) **Affection** : Affection is an emotional reaction directed toward a person, an animal, or a thing. It indicates warm regard, friendliness, sympathy, or helpfulness, and it may take a physical or verbal form. Learning plays an important role in determining the particular persons or objects to which affection is directed.

2.4.3.4 Play Development during Babyhood

Play activities may be classified on the basis of the content of play, what the child does. In terms of content, the play activity may be sense pleasure play, skill play, dramatic play, ritual and competitive games. The second classification of play is in terms of the social character of play that is, who is the child playing with and the nature of their relationship : Under this play with adult, solitary play, parallel play, associative play and cooperative play are the different types.

2.4.3.5 Personality Development during Babyhood

Babyhood is often referred to as a "critical period" in the development of personality because this time the foundations are laid upon which the adult personality structure will be built. The baby's environment is limited almost exclusively to the home and because the mother is most constant companion, the kind of person she is and the kind of relationship they share will have a profound effect on the baby's personality. Sex differences in personality begin to appear as early as the first year of life. There is little evidence that these differences are due to heredity and much evidence that they are result of environmental pressures, which are different for boys and for girls. These environmental pressures are

likely to increase with time, and thus the foundations laid in babyhood will persist. Studies also revealed that the pattern established early in life remain most unchanged as the child grows older. Certain personality traits do change, even in babyhood years. These changes may be either quantitative, in that there is strengthening or weakening a trait already presents, or qualitative, in that a socially undesirable trait is replaced by one that is socially more desirable. For the most part, personality changes tend to be quantitative in nature. Young children who have been shy in babyhood will seek the kind of environment that will encourage the development of this trait. At the same time, they avoid situations that would make them feel self-conscious. As a result their shyness tends to become stronger than weaker with age, but the core personality pattern-the self-concept-remains fundamentally the same.

2.4.3.6 Hazards in Babyhood

Physical hazards range from mortality as in cot or crib death, due to various illnesses, accidents or malnutrition. Psychological hazards include delay in motor or speech development and their subsequent disadvantages. Delay in developmental milestones hinders social relation and in turn becomes a threat to emotional development. Social hazards include lack of opportunities and experiences to learn to become social. Hazards in personality development occur because self-concept is largely a mirror image of what babies believe significant people in their lives think of them. Unfavourable attitudes reflected in resentfulness, negativism or withdrawal behaviour from parents and others, therefore, can cause damages to the developing personality.

2.4.4 Early Childhood

Childhood extends from 2 to 12 years and is generally divided as early and late childhood. Early childhood can be taken to range from the completion of 2 years to 6 years. Early childhood is also called as preschool stage. The young child is eager to gain control over knowledge about the environment. He/she tries to explore the environment; so, this stage is called the exploratory stage. They tend to imitate others usually the adults around them. Thus, this age is called the 'imitative age'. Their play activity includes a great deal of creativity and imagination, so this stage also earns the additional name 'creative age'. Some characteristics of early childhood are as follows :

- 1) **Names used by parents :** Most parents consider early childhood a problem age or troublesome age. With the dawn of childhood, behaviour problems become more frequent and more troublesome than the physical-care problems of babyhood. Parents often refer to early childhood as the toy age because young children spend much of their waking time playing with toys.
- 2) **Names used by Educators :** Educators refer to the early childhood years as preschool age to distinguish it from the time when children are considered old enough, both physically and mentally, to cope with the work they will be expected to do when they begin their formal schooling.
- 3) **Names used by Psychologists :** Psychologists use a number of different names to describe the

outstanding characteristics of the psychological development of children during the early years of childhood. One of the commonly applied names is “pregang age”, the time when children are learning the foundations of social behaviour as a preparation for the most highly organized social life they will be required to adjust to when they enter the first grade.

2.4.4.1 Physical Development during Early Childhood

Early development follows two principles :

- (i) Development proceeds cephalocaudally, i.e. from the cephalic or head region to the caudal or tail region. Children gain control over the upper part of the body before the lower part. This is why you would notice that the infant’s head is proportionately larger than her/his body during early infancy or if you see an infant crawling, s/he will use the arms first and then shift to using the legs.
- (ii) Growth proceeds from the centre of body and moves towards the extremities or more distal regions — the proximodistal trend, i.e. children gain control over their torso before their extremities. Initially infants reach for objects by turning their entire body; gradually they extend their arms to reach for things. These changes are the result of a maturing nervous system and not because of any limitation since even visually impaired children show the same sequence. As children grow older, they look slimmer as the trunk part of their bodies lengthens and body fat decreases. The brain and the head grow more rapidly than any other part of the body. The growth and development of the brain are important as they help in the maturation of children’s abilities, such as eye hand coordination, holding a pencil, and attempts made at writing.

Common patterns of physical development in Early Childhood

Height	The average annual increase in height is three inches. By the age of six, the average child measures 46.6 inches.
Weight	The average annual increase in weight is 3 to 5 pounds. At age six, children should weigh approximately seven times as much as did at birth.
Body Proportions	Body proportions changed markedly, and the “baby look” disappears. Facial features remains small but the chin becomes more pronounced and the neck elongates. There is a gradual decrease in the stockiness in the trunk, and the body tends to become cone-shaped, with a flattened abdomen, a broader and flatter chest, and shoulders that are broader and squarer.
Body Build	Differences in body build become apparent for the first time in early childhood. Some children have an endomorphic or flabby, fat body build, some have a mesomorphic or sturdy, muscular body build, and some have an ectomorphic or relatively thin body build.

Bones and Muscles	The bones ossify at different rates in different parts of the body, following the laws of developmental direction. The muscles become larger, stronger and heavier, with the result that children look thinner as early childhood progresses, even though they weigh more.
Fat	Children who tend toward endomorphy have more adipose than muscular tissue; those who tend toward mesomorphy have more muscular than adipose tissue; and those with an ectomorphic build have more small muscle and little adipose tissue.
Teeth	During the first four to six months of early childhood, the last four baby teeth- the back molars-erupt. During the last half year of the early childhood, the baby teeth begin to be replaced by permanent teeth.

2.4.4.2 Motor Development during Early Childhood

Gross motor skills during the early childhood years involve the use of arms and legs, and moving around with confidence and more purposefully in the environment. Fine motor skills — finger dexterity and eye-hand coordination — improve substantially during early childhood. During these years the child's preference for left or right hand also develops.

Age in Years	Gross Motor Skills	Fine Motor Skills
3 years	Hopping, jumping and running	Build blocks, pick objects with forefinger and thumb
4 years	Climb up and downstairs with one foot on each step	Fit jigsaw puzzle precisely
5 years	Run hard, enjoy races	Hand, arm, and body all coordinate with eye movement

2.4.4.3 Skills of Early Childhood

The young children learn and master a variety of skills because their immense curiosity gets them to manipulate and learn; they feel no inhibition or fear of ridicule as older children would; in addition, their bodies are pliable and fingers dexterous and they are 'teachable'-an essential quality for learning skills.

2.4.4.4 Cognitive Development during Early Childhood

The child's ability to acquire the concept of object permanence enables her/him to use mental symbols to represent objects. However, the child at this stage lacks the ability that allows her/him to do mentally what was done physically before. Cognitive development in early childhood focuses on Piaget's stage of preoperational thought. The child gains the ability to mentally represent an object that is not physically

present. You may have observed children draw designs/figure store present people, trees, dog, house, etc. This ability of the child to engage in symbolic thought helps to expand her/his mental world. The progress in symbolic thought continues. A salient feature of pre-operational thought is egocentrism (self-focus), i.e., children see the world only in terms of their own selves and are not able to appreciate others' point of view. Children because of egocentrism, engage in animism-thinking that all things are living, like one. They attribute life-like qualities to inanimate objects. For example, if a child while running slips on the road, she might show animism by saying "road hurt me". As children grow and are approximately between 4 and 7 years of age, they want answers to all their questions like : Why is the sky blue? How do trees grow and soon? Such questions help the child to know why things are as they are. Piaget called this the stage of intuitive thought. Another feature of thought during preoperational stage is characterized by children having a tendency for centration, i.e., focusing on a single characteristic or feature for understanding an event. For example, a child may insist on drinking a "big glass" of juice, preferring a tall narrow glass to a short broad one, even though both might be holding the same amount of juice.

2.4.4.5 Speech Improvement during Early Childhood

Both receptive and expressive communication improves as babbling of babyhood and crying are largely reduced. Normal speech development gains significant strides where they learn proper pronunciation, making of sentences (even though with poor grammar) and building of vocabulary. Also, the content of speech takes shape. From talking about self, self-interests and self-needs the child moves on to socialized speech around six years wherein others and their concerns are spoken of.

2.4.4.6 Emotions during Early Childhood

Emotions during early childhood are intense with frequent emotional outbursts. These are associated with temper tantrums, intense fears or jealousies and can be traced to the cause of long and tiring play and too little food intake.

Common Emotions of Early Childhood

Anger	The most common causes of anger in young children are conflicts over playthings, the thwarting of wishes, and vigorous attacks from another child. Their expressions are characterized by crying, screaming, kicking, jumping up and down, or striking.
Fear	Conditioning, imitation, and memories of unpleasant experiences play important roles in arousing fears, as do stories, pictures, radio and television programs, and movies with frightening elements.
Jealousy	Young children become jealous when they think parental interest and attention are shifting toward someone else in the family, usually a new sibling. They may openly express their jealousy by reverting to infantile behaviour, such as bed-wetting, pretending to be ill, or being generally naughty.

Curiosity	Children are curious about anything new that they see and also about their own bodies and bodies of others.
Envy	They are often envious of the abilities and material possessions of another child.
Joy	Young children derive joy from such things as a sense of physical well-being, sudden or unexpected noises etc. They express their joy by smiling and laughing or hugging the person or object that has made them happy.
Grief	Young children are saddened by the loss of anything they love or that is important to them, whether it be person, object or inanimate object, such as toy.
Affection	Young children learn to love things-people, pets, or objects-that give them pleasure. They express their affection verbally as they grow older.

2.4.4.7 Social Development during Early Childhood

A. Relationship with Significant Others

- a. Parental relationship :** Children experience it with their father and mother or parent substitute. Poor relationships lead to devastating effects since young children depend on parents to a great extent. Therefore, poor relationship with parents, or their absence or death can severely traumatize the young child and affect the developing personality.
- b. Sibling relationship :** The child progressively moves on to independence and disengage the 'baby'. Siblings often start frictions when a young child wants his/her way. This is called sibling rivalry. However, siblings may also enjoy a good relationship. Especially when the older children serve as role models for the young children to learn socially approved and sex appropriate behaviour through imitation.

2.4.4.8 Social vs. Unsocial Behaviour Pattern during Early Childhood

Social Patterns	Unsocial Patterns
Imitation : To identify themselves with the group, children imitate the attitudes and behaviour of a person whom they specially admire and want to be like.	Negativism : Negativism or resistance to adult authority reaches its peak between three and four years of age and then declines. Physical resistance gradually gives the way to verbal resistance.
Rivalry : The desire to excel or outdo others is apparent as early as the fourth year.	Aggressiveness : It increases between the ages of two and four and then declines. Physical attacks begin to be replaced by verbal attacks in the form of name-calling or blaming others.

Social Patterns	Unsocial Patterns
Cooperation : By the end of third year, cooperative and group play activities begin to develop and increase in both frequency and duration.	Ascendant Behaviour : Ascendant behaviour or “bossiness”, begins around the age of three and increases as opportunities for social contact increase, girls tend to be bossier than boys.
Sympathy : Because sympathy requires an understanding of the feelings and emotions of others, it appears only occasionally before the third year.	Selfishness : While young children’s social horizons are limited mainly to the home, they are often selfish and ego-centric.
Empathy : Empathy requires an understanding of feelings and emotions of others but, in addition, it requires the ability to imagine oneself in the place of other person.	Ego-centricism : Ego-centricism is gradually replaced by an interest in concern for others. It depends on the number of contacts young children have people with people outside the home and how anxious they are to win their acceptance.
Social Approval : As early childhood draws to a close, peer approval becomes more important than adult approval.	Destructiveness : A common accompaniment of temper outbursts in young children is destroying anything within their reach, whether their own or someone else’s possessions.
Sharing : Young children discover, from experiences with others, but the one way to win approval is to share what they have—especially toys—with others.	Sex Antagonism : Until they are four years old, boys and girls play together harmoniously. After that, boys come under social pressures that lead them to shun play activities that might be regarded as “sissyish”.
Attachment Behaviour : Young children, who, as babies, discovered the satisfaction that comes from warm, close, personal associations with others, gradually attach their affection to people outside the home or to some inanimate object. These then become known as attachment objects.	Prejudice : Most preschool children show a preference for playmates of their own race, but they seldom refuse to play children of another race.

2.4.4.9 Play Activities during Early Childhood

The beginning in go fearly childhood finds children playing extensively with toys but slowly they grow out of it towards the completion of this stage. The number of toys or play equipment, the opportunities for manipulation, well developed motor skills, creativity, higher IQ—all these factors or their lack influence the pattern of playing. Play includes a great deal of imitation and dramatizing. For example, young children behave like mothers, teachers and others. The imaginative play often merges reality and fantasy and is enjoyed by young children.

2.4.4.10 Personality Development during Early Childhood

This stage ranges from 18 months to 3 years. By second year of life, the muscular and nervous systems have developed markedly, and the child is eager to acquire new skills, is no longer content to sit and watch. The child moves around and examines its environment, but judgement develops more slowly. The child needs guidance. In the crisis of autonomy v/s doubt faced during this period, the critical issue is the child's feeling of independence. In an extremely permissive environment, the child counters difficulties that it cannot handle, and the child develops doubt about its abilities.

2.4.4.11 Conditions shaping the self-concept in Early Childhood :

- The child-training method used in home is important in shaping the young child's developing self-concept.
- The ordinal position of children in a family has an effect on their developing personalities.
- Environmental insecurity, whether due to death, divorce, separation, or mobility, affects young children's self-concepts unfavorably because they feel insecure and different from peers.

2.4.4.12 Increase in Individuality during Early Childhood

Individuality, which is apparent at birth and becomes increasingly more so in babyhood, is one of the outstanding characteristics of young children. By the time early childhood is over and children are ready to enter school, the patterns of their personality can be readily distinguished, like some are leader and some are followers. Individuality is greatly influenced by early social experiences outside the home. When these experiences are unfavourable, children are likely to become unsocial in their relationships with people and to compensate in unsocial ways, such as spending their playtime, watching television and imagining themselves as martyrs who are picked on by others.

2.4.4.13 Moral Development during Early Childhood

Moral development in early childhood is on a low level. Early childhood has been characterized by what Piaget has called "morality by constraint". In this stage of moral development, children obey rules automatically, without using reason or judgement, and they regard adults in authority as omnipotent.

2.4.4.14 Hazards in Early Childhood

Unlike earlier ages, physical hazards such as illness, accident so raw weakness have physical as well as psychological repercussions. Mortality rate reduces steeply as compared to earlier phases. Young children are highly susceptible to infections and illnesses. With improved health care facilities, generally illnesses are taken care of. Accidents of everyday such as cuts, bruises, falls or burns are common and are more common among boys than girls. Serious or prolonged illness restricts the child and deprives his/her of opportunities and hence affects him/her psychologically by affecting adjustments made by the child.

2.4.5 Late Childhood

The period of late childhood ranges from 6 years to the attainment of sexual maturity, around 12- 13 years. During this stage children develop marked negativism and because of their desire for independence seldom obey the parents. The child begins going to school and learns the rudiments of knowledge essential for successful adult life. The peer group assumes great significance and children of this age 'crowd together' or 'gang LIP', thus earning the name 'gang age'. This age is marked by conditions that profoundly affect a child's personal and social adjustments.

2.4.5.1 Characteristics of Late Childhood

Parents, educators and psychologists apply various names to late childhood and these names reflect the important characteristics of the period.

- 1) **Names used by parents :** To many parents, late childhood is the trouble some age the time when children are no longer willing to do what they are told to do and when they are more influenced by their peers than by their parents and other family members.
- 2) **Name by Educators :** Educators call late childhood elementary school age. It is the time when the child is expected to acquire the rudiments of knowledge that are considered essential for successful adjustment to adult life. It is also the time when the child is expected to learn essential skills, both curricular and extracurricular.
- 3) **Names used by Psychologists :** To the Psychologist, late childhood is the gang-age-the time when children's major concern is acceptance by their age-mates and membership in the gang, especially a gang with prestige in the eyes of their age-mates. This led the psychologists to label late childhood as the age of conformity.

2.4.5.2 Physical Development during Late Childhood

There is relatively uniform but slow physical development. The weight gain is almost even throughout late childhood and the child gains 2-3 inches every year. Body proportions are more elongated with long arms and legs giving an awkward appearance. Face also becomes angular with the loss of baby teeth. Teeth that begin to fall during the sixth year are all replaced with permanent teeth except for the wisdom teeth.

2.4.5.3 Pattern of Physical Development in Late Childhood

Height	The annual increase in height is 2 to 3 inches. The average 11 year old girl is 58 inches tall, and the average boy of the same age is 57.5 inches tall.
Weight	Weight increases are more variable than height increases, ranging from 3 to 5 more pounds annually.

Body Proportions	Although the head is still proportionally too large for the rest of the body, some of the facial disproportions disappear as the mouth and jaw become larger, the forehead broadens and flattens, the lips fill out, the nose become larger and acquires more shape. The trunk elongates and becomes slimmer, the neck becomes longer, the chest broadens, the abdomen flattens, the arms and legs lengthen and hands and feet grow larger, but slow rate.
Homeliness	The body disproportions, so pronounced during late childhood, are primarily responsible for the increase in homeliness at this time.
Muscle-fat ratio	In this time fat tissue develops more rapidly than muscle tissue which has a marked growth spurt beginning at puberty.
Teeth	By the onset of puberty, a child normally has twenty-eight of thirty two permanent teeth. The last four, wisdom teeth, erupt during adolescence

2.4.5.4 Skills of Late Childhood

Children develop a numbers of skills during this stage. These-skills also differ from boys to girls.

- Self help skills of eating, dressing, bathing grooming become almost as adept as that of an adult, with very little concentration required.
- Social skills include helping others. Cleaning and helping in daily activities at home and helping teacher at school, sharing responsibilities with age mates at play are important achievements of the child.
- School skills of writing reading, drawing, painting, clay modeling, crayoning become n1ol.e proficient.
- Play skills such as throwing and catching the ball, bicycling, skating and swimming re developed. Fine motor skills of painting and needlework are well developed among girls while boys achieve gross motor skills of throwing a ball, kicking football or jumping.

2.4.5.5 Speech Improvement during Late Childhood

Older children are increasingly a ware of speech as a tool for being accepted by their peer group members. There fore speech is consciously improved from immature, unacceptable ways of communication suchas crying and gesturing which are avoided. Proper pronunciation and grammar are learnt.

2.4.5.6 Emotions during Late Childhood

Older children learn to control emotional out bursts as these are looked down up on by peer members, as immature and in appropriate be haviour. Happy and pleasant expressions on the other hand are expressed freely as seen in laughing, giggling or jumping. While the child tends to curtail expressions of negative emotions, he/she may show moodiness or resort to sulking. Inexpressing emotions,

sexappropriateness can be noticed. Boys tend to show anger or curiosity while girls experience fears, worries and feelings of affection. There are times during late childhood when children experience frequent and intense emotions. Because these emotions tend to be more unpleasant than pleasant, periods of heightened emotionality become periods of disequilibrium—times when children are out of focus and difficult to live with. It may come from physical and environmental causes or from both. Another important characteristic of emotional development of late childhood is emotional catharsis. As children learn to curb the external expressions of their emotions, they discover that they are doing so; they become nervous, tense and ready to fly off the handle in a temper outburst at the slightest provocation. They are said to be in a “baby mood” or in a “bad humor”. Clearing the system of pent-up emotional energy—emotional catharsis—once discovered, becomes a new way of older children to handle their emotional expressions to conform to social expectations. Through strenuous play, hearty laugh or even by crying they can clear their systems.

2.4.5.7 Social Development during Late Childhood

The older child shows a strong desire to be an accepted member of the peer group. Staying at home or playing with siblings is disliked by them. The gangs are not delinquent groups but play groups. Their main activity is to play games, sports or simply chatting. The gangs are also strictly segregated, that is, members of a gang often come from the same sex. Those who are accepted by the gang members gain social status and feel self-confident while the opposite is true of those who are rejected. Belonging to a gang helps children to become socialized. This comes primarily from conforming to patterns of behaviour, the values and the attitudes of gang members (Denzin, 1975). Group belonging is not without some unfavourable effects on children. It often results in friction with parents and rejection of parental standards. It also invites sex antagonism among the children.

2.4.5.8 Cognitive Development during Late Childhood

As the child grows and is approximately between 7 and 11 years of age (the period of middle and late childhood) intuitive thought is replaced by logical thought. This is the stage of concrete operational thought, which is made up of operations—mental actions that allow the child to do mentally what were done physically before. Concrete operations are also mental actions that are reversible. In a well-known test, the child is presented with two identical balls of clay. One ball is rolled by the experimenter into a long thin strip and the other ball remains in its original shape. On being asked which has more clay, the child of 7 or 8 years, would answer that both have the same amount of clay. This is because the child imagines the ball rolled into a thin strip and then into a ball, that means he/she is able to imagine a reversible mental action on concrete/real objects. He/she is likely to focus on only one aspect—length or height. Concrete operations allow the child to focus on different characteristics and not to focus on one aspect of the object. This helps the child to appreciate that there are different ways of looking at things, which also results in the decline of her/his egocentrism. Thinking becomes

more flexible, and children can think about alternatives when solving problems, or mentally retrace their steps if required. Even though the preoperational child develops the ability to see relationships between different properties of an object, he/ she cannot do abstract thinking, i.e., s/he still cannot manipulate ideas in the absence of objects. For example, step required to complete algebraic equations, or imagining line of longitude or latitude of the earth.

2.4.5.9 Play activities during Late Childhood

Play for the older child is not a mere amusement, it is the chief instrument of socializing which provides opportunities for social skills. Various games, sports or activities such as collecting items (shells, stamps and pictures) are enjoyed. While these activities may be used, acceptance and popularity are the social goals of play.

2.4.5.10 Personality Development during Late Childhood

This period ranges from 6-12 years. During this period the child develops greater attention span, needs less sleep, and gains rapidly in strength; therefore, the child can expend much more effort in acquiring skills, and needs accomplishment, regardless of ability. The crisis faced during this period is industry v/s inferiority. The child aims to develop a feeling of competence, rather than inability. The success in this endeavor leads to further industrious behaviour, failure results in development of feelings of inferiority. Hence, the caretakers should guide the child to take up appropriate tasks.

As the child's social horizons broaden when they enter school, new factors begin to influence the development of their personalities. As a result, they must frequently revise their self-concepts. Since, until now they have seen themselves almost exclusively through the eyes of their parents, it is not surprising if their self-concepts are biased. Now they see themselves as their teachers, their classmates and their neighbors see them.

2.4.5.11 Factors Affecting the Self-Concept in Late-Childhood

- 1) **Physical Condition** : Poor health or physical defects that cut children off from play with their peers make them feel inferior.
- 2) **Body Build** : Children who are over weight or very small for their ages may be unable to keep their peers and, as a result, they develop feelings of inferiority.
- 3) **Socio-economic Status** : If children feel that they have better homes, better clothes and better play equipment than their age-mates, they will feel superior. On the other hand, they sense that their socio-economic status is inferior to that of their age-mates it is likely to lead feelings of inferiority.
- 4) **School Environment** : Competent, understanding teachers do much to bring about good adjustment in their pupils, while teachers who use this discipline that children consider unfair or that otherwise antagonize them have the opposite influence.

- 5) **Social Acceptance** : Acceptance or lack of it on the part of peers influences the child's personality through its effect on the self-concept. Very popular children and isolates are especially affected, and other less so.
- 6) **Success and Failure** : Success in the tasks the child sets out to achieve leads to a feeling of confidence and self-acceptance, while failure makes for a feeling of inadequacy.
- 7) **Sex** : Girl recognizes that the sex roles they are expected to play are inferior to male roles, and this realization results in a corresponding decrease in self-evaluation. They incorporate society's evaluations of their roles as inferior and so value themselves less.
- 8) **Intelligence** : Children's personalities are adversely affected if their intelligence deviates markedly from the norm. Children who are duller than average sense their inferiority and their jealously attitude of their group. As a result, they may become shy, introverted and apathetic-or they may become aggressive to those who reject them. Children with very high intelligence are likely to have poor self-concepts.
- 9) **Development of Ideal Self-Concepts** : As childhood draws to a close, children begin to hero-worship characters in history or fiction, on the stage or on the screen, or in the world of sports or national affairs. They then form concepts of the ideal self, the kind of person they would likely to be. At first, ideal self-concept is patterned along the lines set by parents, teachers, and others from their immediate environments. Later, as their horizons broaden, people they do not know but have heard of or read about from the nucleus for this ideal self.
- 10) **Search for Identity** : The search for identity begins in the latter part of a childhood and reaches its stage in adolescence. To achieve a sense of identity, children must have an inner assurance that they are able to function independently. Until, they get this feeling of assurance they are insecure. To cope with this problem, older children try to associate themselves emotionally with peers and try to cut parental apron strings.

2.4.5.12 Improvement of Understanding during Late Childhood

The older child is now in a stage where concepts become specific and concrete. They reflect a stage of cognitive development termed as 'concrete operations'. The school plays an important role in building, improving and clarifying concepts. The child begins to understand social dimensions in concepts—types of groups, differences, similarities etc are perceived by the child.

2.4.5.13 Moral Development during Late Childhood

Between the age of five and twelve, children's concepts of justice change, as explained by Piaget. Their rigid and inflexible notion of right and wrong, learned from parents, become modified and they begin to take into account the specific circumstances surrounding a moral violation. This, according to Piaget, moral relativism replaces moral inflexibility. For example, to a five-year-old lying is always

bad, while older child realizes that in some situations lie is justified, and therefore, not necessarily bad (Piaget, 1970).

2.4.5.14 Hazards in Late Childhood

The child is susceptible to many physical and psychological hazards. They include illness and accidents which are the physical hazards encountered by older children. Improved Medicare takes care of several illnesses but accidents are a major cause of death among older children. Children who experience lack of peer acceptance are dissatisfied leading to personality adjustments in later life.

2.4.6 Adolescence :

Adolescence literally means ‘to grow to maturity’. It is an intermediary stage between childhood and adulthood characteristically possessing qualities of both stages, although not fully in either of them. The age range is from 12-19 years. It is the threshold to adulthood. There are rapid physical changes taking place including sexual maturity which is attained during adolescence. Consequently, there are also psychological and social changes. Adolescence is a crucial stage for the person. In addition, it usually encounters problems of different kinds. Adolescents are very sensitive. The term adolescence derives from the Latin word *adolescere*, meaning “to grow into maturity”. It is the transitional period in a person’s life between childhood and adulthood.

Adolescence is commonly defined as the stage of life that begins at the onset of puberty, when sexual maturity or the ability to reproduce is attained. It has been regarded as a period of rapid change, both biologically and psychologically.

2.4.6.1 Characteristics of Adolescence

- 1) Adolescence is an important period
- 2) Adolescence is a period of change
- 3) Adolescence is a problem age
- 4) It is a time of search for identity
- 5) It is a dreaded age
- 6) It is a time of unrealism
- 7) Adolescence is the threshold of Adulthood

2.4.6.2 Physical Development during Adolescence

Puberty or sexual maturity marks the end of childhood and signifies the beginning of adolescence, which is characterized by dramatic physical changes in both, growth rate, and sexual characteristics. However, puberty is not a sudden event, but is part of a gradual process. The hormones released during puberty result in the development of primary and secondary sexual characteristics. The primary sex characteristics include those directly related to reproduction and the secondary sex characteristics include features or signs of achieving sexual maturity. Pubertal changes in boys are marked by acceleration

in growth, facial hair, and changes in voice. In girls, rapid growth in height usually begins about two years before menarche, the onset of menstruation. The growth spurt generally begins at the age of 12 or 13 for boys and at the age of 10 or 11 for girls. It is normal to have variations in the pubertal sequence. For example, among two boys (or two girls) of same chronological age, one may complete pubertal sequence before the other has begun it. Both genetics and environment play a part in this. For example, identical twins reach menarche closer in time than do fraternal twins; on an average, girls from affluent families go through menarche earlier than girls from poor families; and historical trends show that the age of menarche is declining in industrialized nations reflecting better nutrition and advances in medical care.

Physical development during adolescence is also accompanied by a number of psychological changes. Around puberty adolescents show an increase in interest in members of the opposite sex and in sexual matters and a new awareness of sexual feelings develops. This increased attention to sexuality is caused by factors such as individual's awareness of the biological changes taking place and the emphasis is placed on sexuality by peers, parents, and society. Even then, many adolescents lack adequate knowledge or have misconceptions about sex and sexuality. The development of a sexual identity defines the sexual orientation and guides sexual behaviour. As such it becomes an important developmental task for adolescents. Adolescents are preoccupied with what they are like and develop individual images of what they look like. Another important developmental task during adolescence is accepting one's physical self-maturity. Adolescents need to develop a realistic image of their physical appearance, which is acceptable to them. It is important to keep in mind that puberty also involves cognitive and social changes along with physical changes.

2.4.6.3 Body changes during Adolescence

External Changes	Height	The average girl reaches her mature height between the ages of seventeen and eighteen and the average boy, a year or so later.
	Weight	Weight changes follow a timetable similar to that for height changes, with weight now distributed over areas of the body where previously there was little or no fat.
	Body Proportions	The various parts of the body gradually come into proportion. For example, the trunk broadens and lengthens, and thus the limbs no longer seem too long.
	Sex Organs	Both male and female sex organs reach their mature size in late adolescence, but are not mature function until several years later.

	Secondary Sex Characteristics	The major secondary sex characteristics are at a mature level of development by late adolescence.
Internal Changes	Digestive System	The stomach becomes longer and less tubular, the intestines grow in length and circumference, the muscles in the stomach and intestinal wall become thicker and stronger, the liver increases in weight, and the esophagus becomes longer.
	Circulatory System	The heart grows rapidly during adolescence; by the age of seventeen or eighteen, it is twelve times as heavy as it was at birth. The length and thickness of the walls of the blood vessels increase and reach a mature level when the heart does.
	Respiratory System	The lung capacity of girl is almost at a mature level at age seventeen; boys reach this level several years later.
	Endocrine System	The increased activity of gonads at puberty results in a temporary imbalance of whole endocrine system in early adolescence. The sex glands develop rapidly and become functional, though they do not reach their mature size until late adolescence or early adulthood.
	Body Tissues	The skeleton stops growing at average age of eighteen. Tissues, other than bones have reached their mature size.

2.4.6.4 Cognitive Developmental Changes during Adolescence

Adolescents' thought becomes more abstract, logical, and idealistic; they become more capable of examining their own thoughts, others' thoughts, and what others are thinking about them. Adolescents' developing ability to reason gives them a new level of cognitive and social awareness. Piaget believed that *formal operational thought* appears between the age of 11 and 15. During this stage adolescent thinking expands beyond actual concrete experiences and they begin to think more in abstract terms and reason about them. In addition to being abstract, adolescent thought is also idealistic. Adolescents begin to think about ideal characteristics for themselves and others and compare themselves and others with these ideal standards. For example, they may think what an ideal parent is like and compare their parents with these ideal standards. This may at times make adolescents wonder which of the new-found ideal standards they should adopt. In contrast to trial and error approach used by

children in earlier stages of development, adolescent thinking becomes more systematic in solving problems — they think of possible courses of action, why something is happening the way it is, and systematically seek solutions. Piaget called this type of logical thinking — **hypothetical deductive reasoning**. Logical thought also influences the development of moral reasoning. Social rules are not considered as absolute standards and moral thinking shows some flexibility. The adolescent recognizes alternative moral courses, explores options, and then decides on a personal moral code. For example, individuals at this age might participate in a protest march for a cause rather than adhere/ conform to college norm. Adolescents also develop a special kind of egocentrism. According to David Elkind, **imaginary audience** and **personal fable** are two components of adolescents' egocentrism. Imaginary audience is adolescent's belief that others are as preoccupied with them as they are about themselves. They imagine that people are always noticing them and are observing their each and every behaviour.

2.4.6.5 Emotional Development during Adolescence

Traditionally, adolescence has been thought of as a period of “storm and stress”—a time of heightened emotional tension resulting from the physical and glandular changes that are taking place. Most of the adolescents, experiences emotional instability from time to time, which is a logical consequence of the necessity of making adjustments to new pattern of behaviour and to new social expectations. Instead of having temper tantrums, however, adolescents express their anger by sulking, refusing to speak, or loudly criticizing those who angered them. They are also found to be envious of those with more material possessions. By the end of adolescence, boys and girls are said to be more emotionally mature. They do not “blow up” emotionally when others are present, but wait for a convenient time and place to let off emotional steam in a socially acceptable manner. Finally, emotionally mature adolescents are stable in their emotional responses and they do not swing from one emotion or mood to another.

2.4.6.6 Social Development during Adolescence

The peer group influence increases. The adolescent begins to notice and take interest in the opposite sex. Making friends and adjusting to new social situations in school, search for career are learnt during this time. Great deal of interest is shown in personal grooming, looks and clothes. Adolescents also ponder over several philosophical issues and try to find an answer to questions such as “Who am I? What is the purpose of life?” The search for identity when it takes a meaningful turn enables the adolescent to adjust well and in contrast in identity, crisis leads to confusion and diffidence in future. Of all the changes that take place in social attitudes and behaviour, the most pronounced is in the area of heterosexual relationships. In a short period of time adolescents make the radical shift from disliking members of their opposite sex to preferring their companionship to that of members of their own sex. Not only that, they no longer select their friends on the basis of ready availability at school or in the neighbourhood, as they did during childhood, and the enjoyment of the same activities is not such an important factor for friendship selection. They want to selects those as friends whose values and interests are similar to their standards and who understand them and make them feel secure. They also expect that the leaders of their gangs with whom

they want to belong must possess certain qualities like good physique, well groomed, be attractive, belongs to higher socio-economic status etc.

2.4.6.7 Moral Development during Adolescence

By adolescence, boys and girls have reached what Piaget has called the stage of formal operations in cognitive ability. They are now capable of considering all possible ways of solving a particular problem and can reason on the basis of hypotheses or propositions. They can look their problems from several points of view and can take many factors into account when solving them.

According to Kohlberg, the third level of moral development, post-conventional morality should develop during.

2.4.6.8 Personality Development during Adolescence

This is a period of transition from childhood to adulthood which extends from 12-20 years. During this period the individual attains puberty leading to many changes. These changes have enormous implications for the individual's sexual, social, emotional and vocational life; that is why Stanley Hall has rightly described this period as a "period of storm and stress". These changes make the individual to find an identity, which means developing an understanding of self, the goals one wishes to achieve and the work/occupation role. The individual craves for encouragement and support of caretakers and peer groups. If he is successful he will develop a sense of self or identity, otherwise he will suffer from role confusion/identity confusion.

By early adolescence, both boys and girls are well aware of their good and bad traits, and they appraise these in terms of similar traits in their friends. They are also well aware of the role of personality plays in social relationships and thus are strongly motivated to improve their personalities-by reading books or articles on the subject, for example-in the hope of increasing their social acceptance. Many adolescents use group standards as the basis for their concept of an "ideal" personality against which they assess their own personalities. This is difficult, often impossible task. First, the personality pattern established during childhood, has begun to stabilize and take the form it will maintain with few modifications during the remaining years of life. Second, many of the conditions that are responsible for molding the personality pattern are not within the adolescent's control since they are a product of the environment in which the adolescent lives and thus will continue to affect the self-concept-the core of personality pattern-as long as environment remain stable.

2.4.6.9 Conditions influencing Adolescent's Self-Concept

- a. Age of Maturing :** Early Matures, who are treated as near-adults, develop favorable self-concepts and thus make good adjustments. Late matures, who are treated like children, feel misunderstood and thus are predisposed to maladjusted behaviour.
- b. Appearance :** Being different in appearance makes the adolescence feel inferior, even if difference adds to physical attractiveness.

- c. **Sex : Appropriateness :** Sex appropriate appearance, interests, and behaviour help adolescents achieve favorable self-concepts. Sex appropriateness makes them self-conscious and this influences their behaviour unfavorably.
- d. **Family Relationships :** An adolescent who has a very close relationship with family member will identify with this person and want to develop a similar personality pattern.
- e. **Peers :** Peers influences the adolescent's personality pattern in two ways. First, the self-concept of adolescent's are reflections of what they believe their peers' concepts of them are and, second, they come under peer pressures to develop personality traits approved by the group.
- f. **Creativity :** Adolescents who have been encouraged to be creative in their play and academic work as children develop a feeling of individuality and identity that has a favorable effect on their self-concepts. On the other hand, who have been forced to conform to an approved pattern since earliest childhood suffers from lack of feeling of identity and of individuality.
- g. **Level of Aspiration :** If adolescents have unrealistically high levels of aspiration, they will experience failure. This will lead to feelings of inadequacy and to defensive reactions in which they blame others for their failures. Adolescents who are realistic about their abilities will experience more success than failures.

2.4.6.10 Consequences of attempts to improve Personality during Adolescence

How successful adolescents will be in their attempts to improve their personalities depend on many factors. First, they must set ideals that are realistic and attainable for them. Second, they must make realistic assessment of their strength and weaknesses. Third, they must have stable self-concept. Fourth, they must be reasonably more satisfied with their achievements and eager to make improvements in any area in which they feel deficient.

2.4.6.11 Hazards in Adolescence

While illness rates may be low, accidents and conflicts leading to suicide are high. Psychological hazards arise out of inability to make the transition into maturity. Social disapproval is still a major source of hazard especially with the opposite sex.

2.5.7 Adulthood

An adult is generally defined as someone who is responsible, mature, self-supporting, and well integrated into society. There is a variation in developing these attributes, which suggests that there is a shift in timing when an individual becomes an adult or assumes adult roles. Some people take up jobs along with their college studies or may get married and not pursue their studies. Others may continue to live with their parents even after getting married and being financially independent. The assumption of adult roles is directed by an individual's social context. The best time for some of the most important life events (i.e.

marriage, job, having children) might be quite different in different cultures but within a culture there is similarity in the course of adult development. In early adulthood, two major tasks are, exploring the possibilities for adult living and developing a stable life structure. Gradually, a transition from dependence to independence should occur. This could be marked by an image of the kind of life the young person wants, especially in terms of marriage and a career.

2.4.7.1 Career and Work during Adulthood

Earning a living, choosing an occupation, and developing a career are important themes for people in their twenties and thirties. Entering work life is a challenging event in anyone's life. There are apprehensions regarding different adjustments, proving one's competence, performance, dealing with competition, and coping with expectations both of the employers and one. It is also the beginning of new roles and responsibilities. Developing and evaluating a career becomes an important task of adulthood.

2.4.7.2 Marriage, Parenthood, and Family during Adulthood

The adjustments that young adults have to make when entering a marriage relate to knowing the other person if not known earlier, coping with each other's likes, dislikes, tastes, and choices. If both the partners are working, adjustments are required regarding sharing and performing roles and responsibilities at home. In addition to getting married, becoming a parent can be a difficult and stressful transition in young adults, even though it is usually accompanied by the feeling of love for the baby. As the family grows and children are added, one must realize that it involves great responsibility. Adjustment to parenthood depends on several factors including the desire for children, number of children, time when they are born, sex of children, spacing between children, ability to support them, child rearing practices used by parents, acceptance of children. Children can contribute greatly to the emotional well being of parents if brought LIP with loving care provided with overall acceptance. The parental role must be played with commitment and creativity. Adjustment to parenthood may become elusive if children are rebellious, sick or uncaring. Those who are childless by choice, although enjoy greater freedom, forfeit the joys of child's affection and companionship.

2.4.7.3 Personality Development during Adulthood

This stage extends from 20-30 years. As an adult, the individual takes a firmer place in society, usually holding a job, contributing to community and maintaining a family and care of offspring. These new responsibilities can create tensions and frustrations, and one solution involves is, an intimate relationship with family. This situation leads to a crisis called intimacy v/s isolation. If these problems are solved effectively by the love, affection and support of family the individual leads a normal life, otherwise he will develop a feeling of alienation and isolation which in turn affects his personality negatively.

2.4.8 Middle Age

Middle age is an intermediary stage between adulthood and old age. Beginning around 45 years it ends

when old age begins. It is a period of transition from adulthood to old age. It is characterized by achievements professional and otherwise. It is a time when life is evaluated by introspection. It is called empty- nest period as children leave home. Many observers view it as a time of stress, often termed as 'Middle age' crises.

The developmental tasks of the middle aged adult are centered on success in career adjusting well in marriage and finding satisfaction in children. At work the person attains great achievements and experiences a climax. Depending on the foundations the marriage may be shaken up or strengthened. The relationship with children assumes a new dimension as they too start early adult life.

2.4.8.1 Physical Changes during Middle Age

With active reproductive stage behind them, men and women undergo the experience of a physical decline. Women go through menopause, the end of menstrual cycle. As a result, she cannot have children any more. With the decline in hormones leading to a menopause in women several other features appear. Weight gain around the abdomen, joint pains, changes in appearance with grey hairs and sagging muscles, problems with teeth and vision, slow down the pace of life. Men too experience reduced sexual drive and motivation; hence they may question their own virility. As the youthfulness begins to fade away refocusing the relationship between husband and wife become essential.

2.4.8.2 Emotional Changes during Middle Age

The drastic physical changes brought in by reduced hormones, lead to emotional ups and downs. Periods of moodiness, loneliness or blues affect the middle age adult. The feelings of reduced function, unattractiveness and the like cause negative feelings and stress which if left uncared for, can escalate to full blown crisis situation. Emotional stability can be achieved in meaningful work, interests and relationships. Frequently people turn to religion and God for peace, strength and meaning.

2.4.8.3 Social Changes during Middle Age

During middle age social activities and responsibilities assume increased significance. Children and their families are a source of satisfaction. Friends and peer- group members are very important in helping one realize he/she is not alone.

Happiness comes from accepting the journey of life with its many twists and turns. Developing and experiencing career goals and achieving them, renewed family intimacy and social contributions provide added value to the person.

2.4.8.4 Personality Development during Middle Age

This period ranges from 30-65 years. It is otherwise called middle age. During this stage of life, the crisis encountered is generativity v/s stagnation. This requires expanding one's interests beyond oneself to include the next generation. The positive solution to the crisis lies not only in giving birth to children, but

also in working, teaching and caring for the young, in the products and ideas of the culture, and in a more general belief in the species. This response reflects a desire for wellbeing of the humanity rather than selfishness. If this goal is not achieved the individual will be disappointed and experience a feeling of stagnation.

2.4.9. Old Age

Just when “old age” begins, is not easy to determine. Traditionally, the age of retirement was linked to old age. Now that people are living longer, age of retiring from work is changing, and the cut-off point for the definition of “old age” is moving upward. Some of the challenges, which the aged have to cope with, include retirement, widowhood, illness, or death in the family. The image of old age is changing in certain ways. Now there are people who have crossed seventy years of age or so and are quite active, energetic, and creative. They are competent and are therefore, valued by society in many walks of life. Of course, the experience of old age also depends on the socio-economic conditions, availability of health care, attitude of people, expectations of society and the available support system. The age of 60 or 65, roughly equivalent to retirement ages in most developed countries is said to be the beginning of old age.

2.4.9.1 Physical Marks of Old Age

- **Bone and joint** : Old bones are marked by “thinning and shrinkage.” This results in a loss of height (about two inches by age 80), a stooping posture in many people, and a greater susceptibility to bone and joint diseases such as osteoarthritis and osteoporosis.
- **Chronic diseases** : Older persons have at least one chronic condition and many have multiple conditions. In 2007-2009, the most frequently occurring conditions among older persons in the United States were uncontrolled hypertension (34%), diagnosed arthritis (50%), and heart disease (32%).
- **Dental problems** : Less saliva and less ability for oral hygiene in old age increase the chance of tooth decay and infection.
- **Digestive system** : About 40% of the time, old age is marked by digestive disorders such as difficulty in swallowing, inability to eat enough and to absorb nutrition, constipation and bleeding.
- **Eyesight** : Diminished eyesight makes it more difficult to read in low lighting and in smaller print. Speed with which an individual reads and the ability to locate objects may also be impaired.
- **Falls** : Old age spells risk for injury from falls that might not cause injury to a younger person. Every year, about one third of 65 years olds and over half of 80 years old fall. Falls are the leading cause of injury and death for old people.
- **Hair** : Usually becomes thinner and grayer.
- **Hearing** : By age 75 and older, 48% of men and 37% of women encounter impairments in hearing.
- **Hearts** are less efficient in old age with a resulting loss of stamina. Less efficient immune function

(Immuno system) is a mark of old age. Lungs expand less well; thus, they provide less oxygen. Pain afflicts old people at least 25% of the time, increasing with age up to 80% for those in nursing homes. Most pains are rheumatological or malignant.

- **Sexual activity** decreases significantly with age, especially after age 60, for both women and men. Sexual drive in both men and women decreases as they age.
- **Skin** loses elasticity, becomes drier, and more lined and wrinkled.
- **Sleep** trouble holds a chronic prevalence of over 50% in old age and results in daytime sleepiness.
- **Taste buds** diminish so that by age 80 taste buds are down to 50% of normal. Food becomes less appealing and nutrition can suffer. Urinary incontinence is often found in old age.
- **Voice** : In old age, vocal chords weaken and vibrate more slowly.

2.4.9.2 Mental marks of Old Age

- **Adaptable** describes most people in their old age. In spite the stressfulness of old age; they are described as “agreeable” and “accepting.” However, old age dependence induces feelings of incompetence and worthlessness in a minority.
- **Depressed mood** : According to Cox, Abramson, Devine, and Hollon (2012), old age is a risk factor for depression caused by prejudice (i.e., “deprejudice”). When people are prejudiced against the elderly and then become old themselves, their anti-elderly prejudice turns inward, causing depression. “People with more negative age stereotypes will likely have higher rates of depression as they get older.” Old age depression results in the over-65 population having the highest suicide rate.
- **Fear** of crime in old age, especially among the frail, sometimes weighs more heavily than concerns about finances or health and restricts what they do. The fear persists in spite of the fact that old people are victims of crime less often than younger people.
- **Reduced mental and cognitive ability** afflicts old age. Memory loss is common in old age due to the decrease in speed of information being encoded, stored, and received. It takes more time to learn new information. Dementia is a general term for memory loss and other intellectual abilities serious enough to interfere with daily life. Its prevalence increases in old age from about 10% at age 65 to about 50% over age 85. Alzheimer’s disease accounts for 50 to 80 percent of dementia cases. Demented behavior can include wandering, physical aggression, verbal outbursts, depression, and psychosis.

2.4.9.3 Social, emotional and Vocational changes during Old Age

Retirement from active vocational life is quite significant. Some people perceive retirement as a negative change. They consider it as a separation from an important source of satisfaction and self-esteem. Others view it as a shift in life with more time to pursue their own interests. It is seen that older adults who show openness to new experiences, more striving and achievement oriented behaviour prefer to

keep busy and are better adjusted. Older adults also need to adjust to changes in the family structure and new roles (grand parenting) that have to be learnt. Children usually are busy in their careers and families and may set up independent homes. Older adults may depend on their children for financial support and to overcome their loneliness (after children have moved out). This might trigger-off feelings of hopelessness and depression in some people. In old age feeling of loss of energy, and dwindling of health and financial assets, lead to insecurity and dependency. The elderly tend to look towards others to lean on and to care for them. In fact, parents in most oriental cultures rear their children with the fond hope that they will care for them during old age. It is important to give the elderly a sense of security and belonging, a feeling that people care for them (especially in the time of crisis), and to remember that we all have to grow old one day. Although death is more likely to occur in late adulthood, death can come at any point in development. The deaths, especially of children and younger adults, are often perceived to be more tragic than those of others. In children and younger adults, death is more likely to occur because of accidents but in older adults it is more likely to occur because of chronic disease. The death of a spouse is usually seen as the most difficult loss. Those left behind after the death of their partner suffer deep grief, cope with loneliness, depression, financial loss and are also at risk of many health related problems. Widows by far outnumber widowers, because studies show that women live longer than men and tend to marry men older than themselves. During such times, support from children, grandchildren, and friends can help the individual cope with the loss of spouse. People in different cultures view death differently. It is brief sketch of different spheres of human development, though there are variations but most of the individuals have to follow the above-mentioned pathways during their life time.

2.5 Health and Nutrition required for Growth and Development at each level

Time Period	Nutrition required at each stage of Growth and Development
Infants and Pre-school children	<p>Many studies have proven that maintaining a balanced diet in the infancy life stage is paramount for long-term health and well-being.</p> <p>For the first six months of a baby's life, the Department of Health recommends that mother's breastfeed their babies as breast milk is full of nutrients and antibodies that infants need.</p> <p>Breastfeeding might not be for everyone, so bottle feeding formula milk offers a great alternative. Typically, cow's-milk-based formulas are recommended.</p>
Nutritional requirements for Children	<p>The nutritional requirements for children aged one to five progresses from their first 12 months. By then, they need all of the essential nutrients to aid a growing body.</p>

Time Period	Nutrition required at each stage of Growth and Development
	<p>In these early years they needed help managing their meals - cutting food and helping with feeding - and by the age of five, preferably earlier, they should be able to manage mealtimes independently.</p> <p>Key food groups to incorporate in a pre-school child's diet include carbohydrates, fruit and vegetables, milk and dairy foods, protein and good quality fats. Ensuring the child has a balanced diet containing the essential food groups and nutrients - vitamin A, C, calcium, iron and zinc - can be difficult if your child is a fussy eater.</p>
<p>Early Childhood</p>	<p>Starting school can be very daunting - not only for children, but for parents too. This is the time where, for at least one meal, a child may be in charge of what they eat. This also starts the life stage where they might stay round a friend's house for dinner, or ask for pocket money with the aim of spending it on fizzy drinks and sweets.</p> <p>For parents who do not opt for their child to have school dinners, choosing what they have in their packed lunch can be a tough task. Take a look at our healthy eating for kids and lunch box ideas pages to get some inspiration on how to supply balanced meals that kids will enjoy.</p> <p>Nutritional tips for children belonging to the age group of early childhood:</p> <p>Advise against snacking on crisps, biscuits and chocolate. Offer healthy snacks such as fruit, popcorn or home-made biscuits instead.</p> <p>Encourage three set meal times - breakfast, lunch and dinner - with healthy snacks between meals.</p>
<p>Late Childhood</p>	<p>When a child enters their teenage years, they tend to start making their own choices about their own social life, nutrition and education. Although this can be seen as a positive step, physiological changes and peer pressure can affect the way a teen acts.</p> <p>Teenagers may refuse certain types of food. They may skip breakfast and start eating a diet of fast food that won't give them essential fiber, vitamins and minerals a growing body needs.</p> <p>In this instance, parents can only set a good example at home. Stock the fridge with healthy snacks and serve balanced meals when they decide to stay in.</p>

Time Period	Nutrition required at each stage of Growth and Development
	<p>Due to the accelerated growth period a teenager goes through, they need a balanced diet packed full of nutrients including calcium, iron and protein. You may want to consider a vitamin and mineral supplement designed specifically for teenagers. This will ensure they are getting these essential nutrients.</p> <p>It's common for teenagers, particularly girls, to have a distorted view of their body image that might lead them to think they need to lose weight. Unfortunately the most common avenues that they might explore to achieve this include unhealthy fasting, skipping meals and avoiding all sugary foods and snacks.</p>
Adulthood	<p>The majority of our body's growth and development will be over when they enter adulthood. Now we can shift our focus on nutrition and maintaining a physically active and healthy lifestyle. This will help reduce the risk of weight, age and lifestyle related diseases.</p>
Old age	<p>It is important to focus on good nutrition for the elderly as our bodies' change and face a number of limitations when one is growing older. With reduced mobility to get to the shops to buy ingredients for balanced meals, and other social aspects like a lower food budget, single elderly people may lose the motivation to cook balanced meals or even lack the cooking skills to complete such tasks.</p> <p>Freezing food, snacking and purchasing long life foods all can be great ways to introduce and maintain the dietary requirements and nutritional needs of an older adult or elderly person.</p>

2.6 Self-Assessment Questions

Essay Type Questions :

1. Define the concept of development. Write in detail about the different stages of development.
2. Write on detail about the different stages of prenatal development.
3. 'Adolescence is the period of storm and stress' - Discuss.
4. Discuss about the nutritional requirement of each stage of life.
5. Explain about the social and unsocial pattern of behaviour during Early Childhood.

6. Briefly mention about Havighrurst's Developmental Tasks during the Life Span.
7. Discuss in details about the different aspects of the following stages of life-
 - a. Infancy
 - b. Babyhood
 - c. Early Childhood
 - d. Late Childhood
 - e. Adolescence
 - f. Adulthood
 - g. Middle Age
 - h. Old Age

Short Notes :

1. Life –span development.
2. Social development in Late Childhood.
3. Physical changes during Old age.

Objective type questions :

1. Give any definition of development.
2. Define phallic stage.
3. Define pre-operational stage.

2.7 Suggested Readings and References

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Health, Hygiene and Health Management

Content Structure

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3.0 Learning Objectives

After studying this Unit, you should be able to understand

- Meaning of Health
- Concept of hygiene
- Concept of disease
- Types of diseases
- Causes, mode of transmission of diseases

3.1 Introduction

An understanding of health is the basis of all health care. Health has evolved over the centuries as a concept from an individual concern to the world-wide social goal and encompasses the whole quality of life. Health is a common theme in most cultures. Health continues to be neglected entity despite lip service. At individual level, it cannot be said that health occupies an important place; it is usually subjugated to other needs defined as more important e.g. wealth, power, prestige, knowledge and security. Health is often taken granted and its values are not fully understood. Thus in this unit we are trying to understand the meaning of health, the needs of hygiene, and the importance of Primary Health Care and Community Health.

3.2 Concept of Health

WHO (1948) defines health is a state of complete physical, mental and social well-being and not merely an absence of disease or infirmity.

This definition has been criticized as being too broad. Some argue that health cannot be defined as a state at all but must be seen as a process of continuous adjustment to the changing demands of living and of the changing meanings we give in life. In spite of the limitations, the concept of health as defined by WHO is broad and positive in its implications. The WHO definition envisages three specific dimensions likely physical, the mental and the social.

The state of physical health implies the notion of perfect functioning of the body. The physical health in an individual includes a clear skin, bright eyes, a sweet breath, lustrous hair, a good appetite, sound sleep, regular activity of bowels, bladder and smooth, and coordinated bodily movements. The state of mental health implies a state of balance between the individual and the surrounding world, a state of harmony between oneself and others, a coexistence between the realities of the self and that of other people and that of the environment. A mentally healthy person is free from internal conflicts, he is well-adjusted, he has good self-control -balances between rationality and emotionality, he has a strong sense of self-esteem, and he knows himself: his needs, problems and goals.

The state of social well-being implies the quantity and quality of an individual's interpersonal ties and the extent of involvement with the community. It includes the positive material environment and positive human environment. It emphasizes the levels of social skills one possesses, social functioning and the ability to see oneself as a member of a larger society.

3.3 Hygiene and Health Management

The word "hygiene" is derived from Hygeia, the goddess of health in Greek mythology. Hygiene is defined as the science of preserving and promoting health which embraces all factors that contribute to healthful living.

3.3.1 Understanding Hygiene

The word "hygiene" is derived from Hygeia, the goddess of health in Greek mythology. Hygiene is defined as the science of preserving and promoting health which embraces all factors that contribute to healthful living. The outward sign of good hygiene includes the absence of visible dirt including dust and stains on clothing, or bad smell, since the development of the germ theory of disease hygiene has come to mean any practice leading to the absence of harmful levels of bacteria. Good hygiene is an aid to health, beauty, comfort, and social interactions; it directly aids in disease prevention and/ or disease isolation.

3.3.2 Types of Hygiene

Hygiene can be looked at two aspects :

- personal hygiene,
- mental hygiene and
- environmental hygiene.

3.3.2.1 Understanding of personal and mental hygiene

It refers the physical health and mental health aspects which is an important component of total health. Physical personal hygiene includes the care of different parts of the body such as the skin, hair, teeth, eyes, ears, hands, feet, rest and sleep, exercise, recreation and posture, respiratory, cardiovascular and other parts of the body. Thus, it is essential to take care of structures and functions of the different parts of the body and maintained in a state of optimum health.

3.3.2.2 Main objectives of personal and mental hygiene

1. Maintenance and promotion of individual health both mental and physical that involves her into certain practices and enables her to lead a healthy life.
2. To regulate her activities according to physical and mental make-up and guards against the adverse effect of the environment where she lives.

3.3.3 Maintenance of personal health and hygiene

The practice of personal hygiene is as old as the origin of mankind and is the oldest form of Preventive Medicine. Practice of personal hygiene is common to us and our children generally learn it subconsciously from their parents at home, teachers at schools. Thus, cleanliness is the first step of healthful living.

3.3.3.1 Care of skin

Skin is one of the vital organs of the body. It protects the body against physical, chemical and biological agents of disease. It regulates the body heat temperatures and removes the waste products of the body. If the skins are not maintained properly, it results dirt which consists of solids left from evaporated sweat, bacteria and dead epithelial cells. This may lead to skin infections and can even impair the normal functioning of the body. Thus, a daily bath with soap and water is essential to remove not only the dirt, but free the body from all odours. Bathing not only keeps the skin clean but also improves the blood circulation and gives a sense of freshness to the body and mind.

3.3.3.2 Care of hair

The condition of hair reflects to some extent the nutritional status and general health of the body.

Cleanliness of hair is essential to keep away the dirt, louse infections and fungal infections and dandruffs. Thus, daily bathing of hair and regularly brushed and combed keeps the hair supple and shining.

3.3.3.3 Care of teeth

Oral hygiene is an important aspect of the personal health of an individual. Good oral hygiene implies sound teeth and healthy gums with healthy surrounding tissues. The act of chewing and tasting is called mastication. The physical act of chewing food promotes saliva and gastric secretions and helps in digestion. Teeth are essential not only for mastication of food but also for good appearance and clear speech. The term halitosis is used for bad breath. It is due to poor oral hygiene, gum disease, sinus infections, tonsillitis and infections of nose and throat. There are two most common dental ailments i.e. dental caries and periodontal disease (gum disease or pyorrhea). Dental caries is the most destructive of all dental diseases, leading to cavity formation and tooth decay. Once damages the tooth enamel cannot repair itself. Periodontal disease, pyorrhea or pockets of pus around the teeth acts as “septic foci” and undermine the general health of the body. Hygiene of the mouth is therefore, essential for the control and prevention of dental disease. The care of teeth comprise tooth brushing at least twice a day, use of fluorides that decreases enamel solubility in acids, regular dental check-up-twice a year is recommended, the intake of diets that promote dental caries like refined carbohydrates such as sugar, sweets, pastries, cakes, biscuit should be reduced and care of dentures.

3.3.3.4 Care of eyes

Eyes are the windows of learning. The eyes are a delicate and sensitive organ. The conditions that may affect the eyes are infections (conjunctivitis, trachoma, styles), injuries (corneal ulcers), malnutrition (night blindness), errors of refraction and others. The care of the eyes consists of prevention and control of infection, regular check-up, good diet and avoiding eye strain. Thus, hygiene of the eyes is essential. The skin around the eyes should be kept clean by washing with soap and clean water. Washing eyes at bed time is a good practice as it removes the dust and dirt that collected during the day. Use of common towels for wiping face and eyes should be discouraged. Eyes should not be touched with unclean fingers or any cloth. Eyes should not be exposed the dust, too bright light or direct sunlight. Exercise is good for the eyes.

3.3.3.5 Care of the ears

The ear is an important sense organ of the body. It is not only responsible for hearing but also for the body equilibrium. The commonest presenting signs and symptoms which suggest ear disease are earache, ear discharge and foreign bodies in the ear. This may be due to infection by bacterial or fungal, obstruction of foreign bodies and injury. The care of the ear comprises keeping the ear clean, removal of excessive wax carefully, preventing water entering the ear during bathing, protection of the ear from exposure to loud noise, preventing and treating all nose and throat infections.

3.3.3.6 Care of hands

Hand, nails get dirty easily as they come in contact with a number of things. Disease agents such as typhoid bacilli may be directly conveyed into the mouth if the hands are contaminated. They therefore, should be kept clean at all times, especially before eating food and after defecation or urination with soap and water. Nails should be cut short and kept clean by gentle scrubbing with a nail brush. The habit of nails biting, putting fingers in the nose or ears is unhygienic and should be discouraged.

3.3.3.7 Menstrual Hygiene

Menstruation is a normal physiological process. It is the manifestation of womanhood. But often people find the subject of menstruation embarrassment, shame and resentment. They are considered as unclean, and prevented from taking part in normal daily activities in some communities. It is therefore necessary to make people aware that it is a normal process and there is no harm in bathing, washing the hair and in doing anything to which one is accustomed. The menstrual discharge is usually controlled by means of absorbent sanitary pad, tampon and clothes. They need to be frequently changed. Clothes should be washed properly and dried under the sunlight. Regarding sexual intercourse during menstruation, there is no sound medical reason for advising against it in a healthy couple.

3.3.3.8 Rest and sleep

Our body needs proper rest and sleep for the maintenance of health. During sleep, the body and mind are relaxed; repair and growth takes place; fatigues for the day disappear. We feel fresh and work better after the rest and sleep. The amount of sleep required differs with age, sex, environment and the nature of work and the temperament of each individual. Infants under one month sleep all the time; a child may need 12-14 hours; a school boy 9 to 10 hours and an adult person 7 to 9 hours.

3.3.4 Maintenance of mental hygiene

A sound mind in a sound body as mental health and physical health are interrelated. Mental health is the component of total health. The main aim of mental health is development of wholesome or integrated personalities i.e., people who are balanced and behaved properly towards other. The human personality is complex one and can be viewed from four angles- physical, emotional, intellectual and behavioural or social.

3.3.4.1 Physical

The physical aspect of human personality pertains to physical features such as height, weight, physique, appearance etc.

3.3.4.2 Emotional

The emotional aspect of personality deals with emotional stability or instability under conditions of stress and strain environment.

3.3.4.3 Intellectual

The intelligence of an individual also contributes to his overall performance and personalities.

3.3.4.4 Behavioural or social

The conduct or behaviour of an individual also reflects the personality.

Thus, we need to adjust or adapt with the situation and environment in a mature way. Life itself is a series of adjustments. A person who adjusts himself successfully to changing situations is a mentally healthy person. She does not get upset when things go wrong and make everyone around comfortable. Adjustment therefore, is a characteristic or an attribute of mentally healthy person.

3.3.5 Environmental Hygiene

The term environment implies all the external factors that include living and non-living, material and non-material which surround man. Environment can be divided into three components, they are :

3.3.5.1 Physical

Water, air, soil, housing, wastes, radiations etc.

3.3.5.2 Biologic

Plant and animal life including bacteria, viruses, insects, rodents and animals.

3.3.5.3 Social

Customs, culture, habits, income, occupation and religion.

3.3.6 Maintenance of environmental health

Environmental sanitation has been defined by WHO as “the control of all those factors in man’s physical environment which exercise or may exercise a deleterious effect on his physical development, health and survival”. The term environmental sanitation is now being replaced by the term environmental health, which is an important component of community health.

Much of ill health is due to poor environmental sanitation. The high death rate, infant mortality rate, sickness rate and poor standards of health are in fact largely due to defective environmental sanitation like unsafe water, polluted soil, air pollution, unhygienic disposal of human excreta and refuse, poor housing, insects and rodents.

3.3.6.1 Water pollution

Water pollution is one of the major problems in modern days. The sources of water pollution are mainly from sewage, industrial waste and agricultural products which contains decomposable organic matter, pathogenic agents, and toxic agents. This can lead to water borne diseases. They may be classified as below :

- i. Viral : Viral hepatitis, poliomyelitis
- ii. Bacterial : Diarrhoea, dysentery, typhoid and Para-typhoid.
- iii. Protozoal : Amoebiasis
- iv. Worms : Round-worm, whipworm, thread worm
- v. Others : Guinea-worm disease, Leptospirosis

3.3.6.2 Air pollution

Air pollution is one of the present-day health problems throughout the world. The term “air pollution” is applied when there is an excessive concentration of foreign matter in the outdoor atmosphere which is harmful to man. The main sources are as follows :

- i. Domestic sources : burning of coal, wood, oil.
- ii. Industrial sources : factories and industries
- iii. Automobiles : motor vehicles, railways
- iv. Others : nuclear explosion

The health effects of air pollution are both immediate and delayed. The effects are borne by the respiratory system, especially lungs which can result acute bronchitis. If the pollution is intense; it may result even death from suffocation.

3.3.6.3 Excreta disposal

Human excreta are the source of infection. It contains pathogenic bacteria, viruses, protozoa, helminthic parasites. The human excreta of a sick person or a carrier of disease is the main source of infection. It contains the disease agent. The infection is carried to a new host through water, food, fingers, soil and flies. The health hazards of improper excreta disposal are :

- i. soil pollution
- ii. water pollution
- iii. contamination of food
- iv. fly breeding

The diseases associated with improper excreta disposal are typhoid, paratyphoid, diarrhea, dysentery, cholera, poliomyelitis, viral hepatitis and a host of others. Proper disposal of human excreta, therefore is a basic environmental health service, without which, there cannot be any improvement of community health.

3.3.6.4 Housing

Housing meant the physical structure that provides shelter; it includes all necessary facilities, services,

equipment and devices needed for the physical and mental health and social well-being of the individual and the family. The following are the necessary needs for a safety house:

- i. Physical needs :** It comprises proper environment that includes pure air, adequate lighting and ventilation, facilities for rest, recreation and exercise.
- ii. Psychological needs :** Proper cleanliness, privacy for leading family life that is essential particularly for the promotion of mental health.
- iii. Health needs :** It comprises of safe and supportive environment that includes safe and adequate water supply, facilities for safe disposal of excreta and other wastes; facilities for washing and bathing; facilities for storage, preparation and cooking of food; and freedom from insects, rodents and vermin.
- iv. Protective needs :** The house must be safe from accidents, fire, gas and other hazards.

The adverse effects of poor housing can lead to respiratory infections like common cold-tuberculosis, diphtheria, bronchitis, influenza; skin infection-scabies, ring worm, leprosy; accidents, mortality and morbidity-high death rates and sickness are found.

Thus, improvement of environmental sanitation is therefore crucial for the prevention of disease and promotion of health of individuals and communities. It includes :

- Improvement of environmental sanitation
- Purification and boil of water for safe drinking.
- Protection against flies by covering the containers.
- Prevention and control of air pollution.
- Maintenance of sanitary latrine.
- Maintaining the standard of housing while construction.
- Health education.

It is well known that disease, or for that health matter is not uniformly distributed to human populations. Disease results from a complex interaction between men, an agent and the environment. Each disease has its own unique of natural history which is not necessarily the same in all individuals. Thus, in this unit we try also to understand the meaning of disease, its causative factors, and the common types of disease of both communicable and non-communicable diseases.

3.4 Concept of Disease

The term “disease” literally means “without ease” (uneasiness) - disease, the opposite of ease –when something is wrong with body function. So, disease is a physiological or psychological dysfunction. It is important to understand the meaning of the disease, types and it causes.

- Webster defines disease as “a condition in which body health is impaired, a departure from a state of health, an alteration of the human body interrupting the performance of vital functions”.
- The Oxford English Dictionary defines disease as “a condition of the body or some part or organ of the body in which its functions are disrupted or deranged”.
- From a sociological point of view, disease is considered a social phenomenon, occurring in all societies and defined and fought in terms of the particular cultural forces prevalent in the society.
- From the ecological point of view, disease is defined as “a maladjustment of the human organism to the environment”.

Diseases have many shades ranging from inapparent cases to sever manifest illness. Some disease commences acutely and some insidiously. In some cases, the same organism may cause more than one clinical manifestation and, in some cases, the same disease may be caused by more than one organism. Some disease has a short course, and some a prolonged course.

3.4.1 Causes of diseases

Epidemiological enhances understanding of how diseases spread and how they may be managed both in the individual and community. Lilienfeld (1980) defined epidemiology is concerned with the patterns of disease occurrence in human populations and of the factors that influence these patterns.

Three important factors are responsible for the occurrence of a disease in man namely Agent, Host and Environment. These factors are referred to as epidemiological triad.

(i) Agent factors : The disease agent may be living or non-living. The disease agents have been classified into 5 broad groups :

- Biological agents :** These are the living agents that include viruses, bacteria, fungi, protozoa etc. They are found in the reservoir of infection (man, animal, insect and soil)
- Nutrients agents :** These are proteins, fats, carbohydrates, vitamins, minerals and water. An excess or deficiency of nutrients may lead to nutritional disease.
- Physical agents :** These are heat, cold, pressure, radiation, electricity.
- Chemical agents :** These may be metals (e.g., lead), fumes, dusts, gases etc.
- Mechanical agents :** chronic friction and other mechanical forces that may cause injuries, trauma, bruise and fractures.

(ii) Host factors : The host-related factors are :

- Age :** Certain diseases are more frequent in certain age groups than in others, e.g., measles in childhood, cancer in middle age, atherosclerosis in old age.

- b. Sex :** There are sex differences in disease occurrence. Diabetes is more frequent in females, and heart disease in males because of smoke, excessive job tension.
- c. Heredity :** Harmful genes in the constitution may give rise to disease e.g., Haemophilia, colour blindness, albinism. A number of congenital defects (e.g., cleft palate, spinal bifida) are due to genetic factors. Essential hypertension, diabetes, mental illness can also be genetic predisposition.
- d. Nutrition :** Poor nutrition is frequently associated with nutritional deficiency diseases (e.g., Kwashiorkor, anemia). There are also diseases associated with over eating such as obesity and diabetes.
- e. Occupation :** The occupation of the host may predispose him to certain occupational diseases e.g., lead poisoning, silicosis, accidents, cancer due to excessive exposure to sun.
- f. Customs and habits :** Certain customs are prejudicial to health. Smoking, chewing tobacco is related to oral and lung cancer.
- g. Human behaviour :** Lack of physical exercise, indulgence in alcohol and certain drugs can affect health adversely.

(iii) Environmental factors : It is divided into three components, they are :

- a. Physical environment :** Much of the ill health in India is due to poor environment-unsafe water, contaminated soil, poor housing, lack of disposal facilities for human excreta and solid wastes.
- b. Biological environment :** The causes of disease may be found in the biological environment; e.g., animals, insects, rodents etc.
- c. Social environment :** The customs, habits, cultures, education, standard of living are all implicated in disease occurrence directly or indirectly.

3.4.2 Types of diseases

In broader aspects we can categorise the common diseases into two. They are :

- (i) Communicable and
- (ii) Chronic non-communicable disease

3.4.2.1 Communicable diseases

It can be defined as an illness due to a specific infectious agent or its toxic products capable of being directly or indirectly transmitted from man to man, animal to animal, or from the environment (through air, dust, soil, water, food etc) to man or animal. Communicable disease may be transmitted from the reservoir or source of infection to a susceptible individual in many different ways, depending upon the infectious agent, portal of entry and the local ecological conditions. The mode of transmission of infectious disease may be classified into two :

A. Direct transmission

- i. Direct Contact :** infection can be transmitted by direct contact from skin to skin, mucosa or mucosa to skin of the same or another person. This implies direct transfer of infectious agents from the reservoir or source to a susceptible individual, without an intermediate agency.
- ii. Droplet infection :** This is direct projection of a spray of droplets of saliva and nasal-pharyngeal secretions during sneezing, coughing, speaking and spitting to the surrounding atmosphere. The droplet spread is usually limited to a distance between sources and host. Diseases transmitted by droplet spread include many respiratory infections, eruptive fever, common cold, tuberculosis etc. The potential for droplet spread is increased in conditions of close proximity, overcrowding and lack of ventilation.
- iii. Contact with soil :** The disease agent may be acquired by direct exposure of susceptible tissue of the disease agent in soil, compost or decaying vegetable matter which has hookworm larvae, tetanus, mycosis etc.
- iv. Inoculation into skin or mucosa :** The disease agent may be inoculated directly into the skin or mucosa e.g., rabies virus by dog bite, HIV/AIDS, hepatitis virus through contaminated needles and syringes.
- v. Transplacental (vertical) :** Some of the living and non-living agents can transmit vertically. In these cases, the disease agent produces malformations of the embryo by disturbing its development e.g., HIV/AIDS, toxoplasma gondi, rubella virus, cytomegalovirus, herpes virus (TORCH) etc.

A. Indirect transmission

The indirect transmission is of three types :

1. Vehicle-borne
2. Vector-borne
3. Air-Borne
4. Formite-Borne
5. Unclean Hands and Fingers

1. Vehicle-borne :

It implies transmission of the infectious agent through the agency of water, food, ice, blood, serum, plasma or other biological products such as tissues and organs. It is found that water and food are the most frequent vehicles of transmission because they are used by everyone.

2. Vector-borne :

Vector is defined as an arthropod or any living career that transports an infectious agent to a susceptible individual. It is of two types they are :

a. Mechanical : The infectious agent is mechanically transported by a crawling or flying arthropod through soiling of feet or passage of organisms through its gastro-intestinal tract and passively excreted. There is no development or multiplication of the infectious agent on or within the vector.

b. Biological : It is of three types :

- **Propagative :** The agent merely multiplies in vector, but no changes in form e.g., plague bacilli in rat fleas.
- **Cyclo-propagative :** The agent changes in forms and numbers e.g., malaria parasites in mosquitoes.
- **Cyclo-developmental :** The disease agent undergoes only development but no multiplication e.g., microfilaria in mosquito.

3. Air-borne

This is of two types :

a. Droplet nuclei : It is a type of particles implicated in the spread of airborne infection. They are tiny particles that present the dried residue of droplets. They may be formed by evaporation of droplets, coughed, or sneezed into the air or generated purposively by a variety of atomizing devices. The droplet nuclei can be remained airborne for long period of time. Diseases spread by droplet nuclei include tuberculosis, influenza, chickenpox, measles and many respiratory infections.

b. Dust : some of the larger droplets which are expelled during coughing, sneezing, they are settled down by their sheer weight on the floor, carpets, furniture, clothes and other objects in the immediate environment and become part of the dust. During the act of sweeping, dusting and bed-making, the dust is released into the air and becomes once again airborne. Sometimes the dust may be blown by wind and airborne dust is primarily inhaled.

4. Fomite-borne

They are inanimate articles or substances other than water or food contaminated by the infectious discharges from an infected person and capable of harbouring and transferring the infectious agent to a healthy person. Fomites include soiled clothes, handkerchiefs, towels, linen, taps, syringes, and other hospital equipment. It plays a very important role in indirect infection. The types of diseases transmitted by fomites include typhoid fever, hepatitis A, skin infections, eye infections like conjunctivitis etc.

5. Unclean hands and fingers

The transmission takes place by unclean hands and fingers directly and indirectly. Hands are the most common medium by which pathogenic agents are transferred to food from the skin, nose, bowel and from foods. Lack of personal hygiene and poor sanitation favour transmission of infection that include typhoid fever, dysentery, hepatitis A, intestinal parasites.

3.4.2.2 Chronic Non-communicable diseases

This term is applied to such disease as cancer, cardiovascular disease and diabetes which is not communicated from person to person, objects to person. The chronic non-communicable diseases are assuming increasing importance among the adult population in both the developed and developing countries. Cardiovascular and cancer are present at the leading causes of death especially in developed countries.

The risk factors of non-communicable diseases may be as following :

- i. Tobacco use
- ii. Alcohol abuse
- iii. Failure or inability to obtain preventive health services
- iv. Life-style changes
- v. Environmental risk factors like occupational hazards, air and water pollution and possession of destructive weapons
- vi. Stress factors
- vii. Physical inactivity
- viii. Decreased fruits and vegetables intake

3.4.2.3 Causes of non-communicable disease

Multifactorial causation : There are gaps in our knowledge about the natural history of chronic non-communicable diseases. The absence of a known agent makes both diagnosis and specific prevention difficult. But it is seen that most chronic non-communicable disease are the results of multiple causes- rarely there is simple one to one cause-effect relationship. In the absence of a known agent, the term risk factors is used to describe certain factors in a person's background or life-style that make the likelihood of the chronic condition more probable.

A further obstacle to our understanding of the nature of history of chronic non-communicable disease is the long latent (incubation) period between the first exposures to suspected cause. This makes it difficult to link suspected causes with the outcomes. Most chronic non-communicable diseases are slow in onset and development, and the distinction between diseased and non-diseased states may be

difficult to establish. Thus, the underlying pathological processes are well established long before the disease manifests itself. By the time patient seeks medical advice, the damage already caused maybe irreversible or difficult to treat. However, it has now become increasingly evident that the factors favoring the development of chronic disease are often present early in life, preceding the appearance of chronic disease by many years e.g., in case of hypertension, diabetes, stroke etc.

3.4.2.4 Prevention and control of non-communicable diseases

Millions of deaths can be prevented by stronger implementation of measures that exist today. These include policies that promote government wild against non-communicable diseases :

- Stronger anti-tobacco controls
- Promoting healthy diets
- Physical activity
- Reducing harmful use of alcohol
- Along with improving people's access to essential Healthcare.

Thus, the understanding of communicable and non-communicable diseases and roadmap for taking action in preventing these diseases would help us to enjoy a healthy life and prevent any epidemic or even pandemic. (A detailed understanding of various diseases has been discussed in unit 5 of this course).

3.5 Health Care System

The important role of the health care system is to focus on the prevention of diseases and promotion of Wellnesses. This occurs through addressing individual-level competencies within a community and also through working to change systems and contexts. The core belief is that taking early action can prevent more serious problems from developing in the future. the concept of prevention comes from the field of Public Health. This is very different from the medical model which refers to the framework of treating social problems in the same manner that we treat illnesses. the two key aspects of the Public Health approach to problems include measuring the incidence and prevalence of the disease. Public Health approach focuses on measuring the incidence or prevalence of a social issue. Valence is the total number of cases in a population.

3.6 Levels of Prevention of Diseases : Promotion of Health

Prevention related to health is in actuality to avoid disease before it starts. It is well-defined plans and measures taken to prevent the onset of a disease or other health problem before the occurrence of the undesirable health event. There are three distinct levels of prevention :

- **Primary prevention** : Those preventive measures that prevent the onset of illness or injury before the disease process begins. Examples include immunization and taking regular exercise.
- **Secondary prevention** : Those preventive measures that lead to early diagnosis and prompt treatment of a disease, illness, or injury to prevent more severe problems to be developed. Include training for high blood pressure and breast self-examination to prevent breast cancer.
- **Tertiary prevention** : Those preventive measures aimed at rehabilitation following a significant illness. At this level, health service workers can work to retrain, reeducate and rehabilitate those who have already developed an impairment or disability.

Health education is an important aspect that can be applied at all three levels of disease prevention and maximize the gain from preventive behaviour.

- At the primary prevention level social workers can educate people to practice some of the preventive behaviours such as having a balanced diet so that they can protect themselves from developing diseases in future.
- At the secondary level the social worker I could educate people to local Health Centre when they experience symptoms of illness such as fever so that they can get early treatment for their health issues.
- At the tertiary level the social worker can educate people to take the medication appropriately and find ways of walking towards rehabilitation from significance illnesses or disability.

3.7 Conclusion

From this unit we have understood about diseases, its types, common causes and mode of transmission of communicable and non-communicable diseases. We have understood the main difference between the communicable and non-communicable diseases in their prevention and control. The communicable diseases are mainly associated by bacterial, viral, protozoa infections whereas non-communicable diseases are associated with one's lifestyle, food habits, occupation and genetics. Thus, social worker needs to play a very important role in developing people in a favourable environment and to prepare and equip the people of appropriate reaction towards the different types of diseases.

3.6 Self-Assessment Questions

1. Define the term Health.
2. Define Hygiene. Discuss the types of hygiene.
3. What are agent factors, host factors and environmental factors?

4. Differentiate between Direct and Indirect transmission.
5. Discuss the epidemiological of Communicable diseases.
6. Discuss the epidemiological of chronic non-Communicable diseases such as Coronary Heart Diseases, Diabetes Mellitus, and Cancer.
7. Discuss the prevention and Control of Communicable diseases.
8. Discuss the prevention and Control of Non-Communicable diseases.

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Reproductive and Child Health

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4.0 Learning Objectives

Objectives of the study is to realize :

- The importance of reproductive health.
- Understand the maternal and child health problems, reasons for maternal and infant morbidity and mortality.
- Importance of reproductive health education to adolescents.
- Various Health Programmes and Schemes.

4.1 Introduction

Maternal Health refers to the health of women during pregnancy, child birth and post-partum period. Public health activities are concerned with welfare of all people irrespective of age, sex, race etc. The protection of health of expectant mother and her children is of prime importance for building of a healthy nation while motherhood is often a positive and fulfilling for too. For many women it is associated with suffering, ill health and death. They are a vulnerable group subjected to considerable physical and psychological stress. Mother during pregnancy and young children during growth and development are two categories of individuals who are exposed to risks of infection, poor nutrition, delivery under unhygienic conditions. These can be responsible for maternal and child morbidity (impairment of health) and mortality. The importance of Reproductive Health awareness for adolescents have been recognized. They are also vulnerable group and should be helped in raising awareness, guidance and promoting behavioral changes.

4.2 Mother and Child : A Single Unit

For the organization of special health services mother and child are considered as one unit as :

- (i) During the course of pregnancy (antenatal period) which is about 40 weeks or 280 days the growing fetus is an integral part of the mother. It is total dependent on mother for supply of oxygen and nutrients through mothers' blood.
- (ii) The health of the mother can affect the health of the growing fetus. e.g., A malnourished or anemic mother will not only suffer from ill health and complications of pregnancy but will also adversely affect the growing fetus giving birth to low weight baby. Optimum birth weight is essential for child survival.
- (iii) A pregnant mother suffering from many diseases can have an adverse effect on the growing fetus. e.g., A mother with high blood pressure, diabetes or some viral infections.
- (iv) In the first year of life newborn is totally dependent on mother for all this needs.
- (v) During first few years of life child accompanies the mother everywhere, so ideally health services for both should be under the same roof.

All these reasons justify the need and importance for Maternal and Child Health Services (MCH).

4.3 Maternal Morbidity and Mortality

4.3.1 Definitions :

Some important terms in content of Maternal and child health are :

- (i) **Maternal Mortality :** Maternal mortality in India is the maternal death of a woman in India during pregnancy or after pregnancy, including post-abortion or post-birth periods.
- (ii) **Maternal Mortality Rate (MMR) :** Maternal Mortality Rate (MMR) is defined as the number of maternal deaths per 100,000 live births due to pregnancy or termination of pregnancy, regardless of the site or duration of pregnancy. The maternal mortality rate is used to represent the risk associated with pregnancy among women.
- (iii) **Women of reproductive age group :** Women in age group between 15 to 44 years.
- (iv) **Infant :** A child from birth to completion of first year of life.
- (v) **Neonate :** A baby from birth to 4 weeks of age is neonate.
- (vi) **Post neonatal period :** It is from 2nd month to completion of 12 months.
- (vii) **Preschool children :** It is in age group 1 year to 4+ year or under 5 years.
- (viii) **Prenatal (Antenatal) Period :** It is the from fertilization to the time of delivery.

- (ix) **Postnatal Period** : It is the time after delivery till 42 days the time when the organs are coming back to near normal condition.
- (x) **Infant Mortality Rate (IMR)** : Number of infant deaths per 1000 live births in one year in a community.
- (xi) **Neonatal Mortality Rate** : The number of neonatal (0 to 4 weeks) per 1000 live births in a year.
- (xii) **Maternal Morbidity** : The World Health Organization defines maternal morbidity as any health condition attributed to and/or aggravated by pregnancy and childbirth that has negative outcomes to the woman's well-being.

4.3.2 Causes of Maternal Morbidity and Maternal Mortality

Maternal and child status is assessed through measurements of mortality, morbidity and growth and development. Due to poor standardization, mortality data are the main sources of information. Maternal and child health problems are different in developing countries as compared to developed nation that contributes to the mortality and morbidity. In developing nations, the major health problems are :

(a) **Malnutrition** : Pregnant women, nursing mothers and children are particularly vulnerable to the effects of malnutrition. The adverse effects of maternal malnutrition responsible for are also frequently more serious during the formative years of growth and development. The intrauterine period of life is a very important period from the nutritional standpoint. Infants born with inadequate birth weight have relatively high mortality. Measures to improve nutritional status of mothers and children are Direct interventions cover a wide range of activities viz. supplementary feeding programs, distribution of iron and folic acid tablets and enrichment of foods, nutrition education etc. Indirect nutrition interventions includes measures such as control of communicable diseases through immunization, improvement of environmental sanitation, provision of clean drinking water, family planning, food hygiene, education and primary health care. The primary health worker (community worker) can play a vital role in improving the nutritional status of mothers and children.

(b) **Infection** : Maternal infections may cause a variety of adverse effects such as fetal growth retardation, low birth weight, embryopathy, abortion and puerperal sepsis. Baby is concerned, infection may begin with labour and delivery and increase as the child grows older. Children may be ill with diarrhoeal diseases, respiratory and skin infections. Chronic infections as malaria and tuberculosis. The occurrence of multiple and frequent infections may precipitate in the children a severe protein energy malnutrition and anemia. When the child becomes ill, traditions, beliefs and taboos enter into play like withholding or restricting certain foods, hygienic practices etc. The indirect effect of infections may be more important than the direct one in traditional societies.

(c) **Consequences of uncontrolled reproduction** : The health hazards for the mother and the child resulting from unregulated fertility have been well recognized increased prevalence of low-birth-weight babies, severe anemia, abortion, antepartum haemorrhage and a high maternal and prenatal mortality, which have shown a sharp rise after the 4th pregnancy. A high birth rate is associated with a high infant

mortality rate under five death rates. Family planning has a striking impact on the health of the mother and the child.

Maternal mortality includes all deaths associated with pregnancy, delivery and postnatal (upto 42 days after labour) period. As mentioned earlier Maternal Mortality Rate (MMR) is the number of such deaths per 1000/100000 live births in a year. Maternal Mortality in many cases is due to preventable pregnancy related complications.

In rural areas women are more at risk. Maternal deaths are mainly caused by hemorrhage, blood clot, infection, unsafe abortion, high blood pressure and obstructed labour. Unsafe abortions can also cause complication like hemorrhage, infection and sepsis. The following table explains about the different contributing factors or causes of Maternal Mortality in India.

Medical Causes	Social Factors
<p>Obstetric causes or related to Pregnant state</p> <ol style="list-style-type: none"> 1) Toxemias of pregnancy High BP 2) Haemorrhage Bleeding 3) Sepsis Infection 4) Vascular accidents(air or amniotic embolism) 5) Anaesthesia 6) Transfusion reaction, etc. 7) Shocks and accidents 	<ol style="list-style-type: none"> i) Age at child birth ii) Parity iii) To close pregnancies iv) Family v) Malnutrition vi) Poverty vii) Illiteracy viii) Ignorance prejudices ix) Lack of Maternity services
<p style="text-align: center;">Non –Obstetric causes : Medical conditions</p> <ol style="list-style-type: none"> 1) Anaemia 2) Associated diseases e.g., cardiac, renal, hepatic metabolic and infectious 3) Malignancy 4) Accidents 	<ol style="list-style-type: none"> i) Shortage of health manpower ii) Delivery by untrained dais iii) Poor environmental sanitation iv) Poor communications and transport facilities v) Social Customs

4.4.3 Determinants of Maternal Mortality in India Measures to reduce Maternal Mortality

The Three E to reduce maternal Mortality are :

- (i) Essential obstetric care for all;
- (ii) Early detection of complications;
- (iii) Emergency services for those who need it;

(i) Essential Obstetric care for all :

All pregnant women are at risk of complications. One or more risk factors are observed in 50% of the maternal death. Therefore, all pregnancies should be treated as potentially at risk and essential obstetric care is provided to all pregnancies. This includes :

- Early registration of pregnancy.
- Three or more ante natal checkups during pregnancy.
- Anaemia prevention and treatment. For anaemia iron and folic acid tablets are given for 100 days at least. Deworming for women with history of passing worms.
- Two doses of Tetanustoxoid.
- Skilled care at birth Institutional deliveries and/or by trained birth attendants observing cleanliness
- Birth spacing and birth timing
- To avoid pregnancy before 20 years and after 30 years.
- Birth interval should be at least 3 years.
- Home based prenatal and postnatal care along with the care of newborn.

This is provided various health workers. Home visits are backbone of all Maternal and Child Health services in rural areas.

Home visits by health worker or public health nurse are also important during antenatal period. It gives health worker to observe the social and environmental conditions at home and also advice the mother about various aspects including mother craft. It is also a confidence building exercise with mother. During postnatal visits the health of newborn and mother can be observed. Advice can also be given about child rearing practices.

(ii) Early detection of complication :

This will be through regular checkup, self-reporting based on danger signals or timely referrals by TBS and health workers. Institutional deliveries are a must. Prompt treatment to reduce the complication is necessary.

(iii) Emergency care :

The complications should be managed at First Referral Units.

4.4 Infant Mortality and Infant Morbidity**4.4.1 Definitions**

Preserving the lives of newborns has been a long-standing issue, public health, social policy and

humanitarian endeavors. Demographers describe infant mortality as a most sensitive index of health and level of living of a community. It is an important marker of the overall health of a society.

- **Infant Mortality** : It is the number of infant deaths (1st year of life) for every 1000 live births. Infant Mortality continues to be high in developing countries as compare to the developed countries.
- **The mortality rate under five years** : The mortality rate under 5 is also an important statistic, considering infant mortality only focuses children under 1 year of age.

Infant Mortality is given a separate treatment because :

- (a) The infant mortality is the largest single age category of mortality.
- (b) Deaths at this age are due to particular set of diseases and conditions to which adult population is less exposed or less vulnerable. For ex Malnutrition, diarrhoeal diseases, childhood infections.
- (c) Infant mortality is affected rather quickly and directly by specific health programs and hence may change more rapidly than the general death rate. During the past 50 to 60 years there has been a steady decline in infant mortality all over the world.

4.4.2 Infant Mortality Rate

It is an age-specific ratio used by epidemiologist, demographers, physicians and social scientists to better understand the extent and causes of infant deaths.

To compute a given years infant mortality rate in a certain area, one need to know how many babies were born alive in the area during the period and how many babies who were born alive died before they become one year old during that time.

$IMR = \text{No of infant deaths} / \text{No. of live births} * 1000$ in a given year.

So that weight reflects the number of infant deaths per 1000 births in a standardized manner. Alternately the rate can be multiplied by 10,000 or 10,00,000 depending on the desired comparison level.

4.4.3 Types of Infant Mortality

- Infant Mortality which occurs within first four weeks is called Neonatal Mortality or Early Infant Mortality. It is primarily due to causes related to the mother during her pregnant state, labour or after pregnancy.
- Infant Mortality between 1 to 12 months is called Post Neonatal Mortality or Late Infant Mortality.

4.4.4 Cause of Infant Mortality and Infant Morbidity

In developing countries, the high infant mortality rates are mainly due to combined effects of infection and malnutrition. A comparative picture on various causes of infant mortality are as follows :

Neonatal mortality (0-4 Weeks)	Postneonatal mortality (1-12 months)
(1) Immaturity Prematurity	(1) Enteritis and other diarrhoeal disease
(2) Birth injury and difficult labour	(2) Acute respiratory infections
(3) Congenital anomalies	(3) Other communicable diseases, like, whooping cough, influenza, pneumonia
(4) Haemolytic diseases of newborn RH incompatibility	(4) Malnutrition
(5) Conditions of placenta and cord	(5) Congenial anomalies
(6) Enteritis and other diarrhoeal diseases	(6) Accidents
(7) Acute respiratory infections	

4.4.5 Factors Influencing Infant Mortality

The factors which contribute to infant mortality rate are classified as :

- (a) Biological
- (b) Economic
- (c) Cultural and social factors

An elaboration on all these factors is :

A. Biological Factors :

The Biological determinants of infant mortality are :

- (i) **Birth weight** : A satisfactory birth weight is important for infant survival
- (ii) **Age of the mother** : There is a definite relationship between age of the mother and infant death. The infant mortality rate is higher when the mother is very young under 20 or relatively older.
- (iii) **Interval between births** : The shorter the time interval between two births the greater the risk to the survival of infant.
- (iv) **Order of birth** : The highest mortality is found among first births and the lowest among second.
- (v) **Multiple births** : Greater risk of death in multiple pregnancy (twins etc.) as more chances of low birth rates.
- (vi) **Family size** : The risk of infant death increases with the size of the family. In large families there is higher risk of infectious diseases and deprivation of maternal care.

B. Economic factors :

One of the most important factors affecting infant mortality rates directly and indirectly is the socio-economic status of a family. The availability and quality of healthcare and the nature of the child's environment are closely related to socio economic status.

C. Cultural Factors :

- (i) **Breast feeding :** Breast feeding is an important life saving measure in developing countries. It prevents the child from getting infectious diseases.
- (ii) **Cultural practices :** The socio-cultural patterns of living involving age old habits and customs, traditions affecting cleanliness, eating, clothing and child care also have an effect on child survival. Illiteracy and ignorance of child care can also be responsible for mortality.
- (iii) **Sex of the child :** In many parts of India a female child is unwelcome than male. But fortunately, female infants are biological better suited for survival.
- (iv) Broken families and illegitimacy can also contribute to higher infant mortalities.
- (v) Lack of trained medical personnel
- (vi) **Poor environmental sanitation :** Infant are highly susceptible to bad environmental sanitation, lack of safe drinking water, poor housing condition, bad drainage, overcrowding all increase the risk of infant mortality.

4.4.6 Decline of Infant Mortality

The decline infant mortality in recent years is or has been contributed to :

- (a) Improvement in standards of living
- (b) Better control of communicable diseases
- (c) Advances in Drugs, antibiotics
- (d) Better nutritional awareness
- (e) Improvement in health care services

4.4.7 Prevention of Infant Mortality and Infant Morbidity

Strategies require to take care of children and bring down mortality rates are :

- (1) Monitoring of growth and development of children to detect malnutrition and take appropriate measures.
- (2) Proper coverage of Immunizations.
- (3) Treatment of common ailments.
- (4) Referral cases to higher centers.
- (5) Implementation of national health policies and programmes.

4.5 Maternal and Child Health Programmes and Schemes

Maternal and Child Health Services at the foremost priorities of Community Health programs. According to Indian culture is the foundation of the family and children are the future of the country.

According to the WHO, Maternal and Child Health Services can be defined as “promoting, preventing, therapeutic or rehabilitation facility or care for the mother and child”.

4.5.1 Objective of MCH

Those are as follows :

- To reduce maternal and child mortality and morbidity.
- Promoting satisfying and safe sex life.
- Regulate fertility.
- Child survival.
- Promote and protect health of mothers.
- To promote reproductive health.
- Ensure birth of healthy child.
- Promote healthy growth and development.

4.5.2 Goals of MCH

Those are as follows :

- To ensure the birth of a healthy infant to every expectant mother.
- To promote the healthy growth and development of children.
- To identify health problems in mothers and children.
- To prevent malnutrition in mothers and children.
- To promote family planning services.
- To prevent communicable and non-communicable diseases in mothers and children.
- To educate the mothers on the improvement of their own and their children’s health.

4.5.3 The current scenario of India

- Every year more than 2 crores 70 lakh women become pregnant.
- Only 48.3 % of deliveries are conducted by trained health personnel.
- Only 36% of mothers are getting postnatal care from skilled professionals.
- About 33% of women’s body mass index is below normal.
- 57.9 % of pregnant women between the age group of 15 to 49 years are suffering with anaemia.

- Only 57 % of women are familiar with HIV AIDS.
- 45.9 % of children below the age of 3 years has low weight than normal.
- Out of total deliveries, only 40% are institutional deliveries.

4.5.4 Maternal health problems

The different maternal health problems are :

- Nutritional problem-malnutrition and nutritional anaemia.
- Infection problems and reproductive tract infection (RTIs)/ Sexually transmitted infection (STI), infection in general, and puerperal Sepsis.
- Disturbances and mensuration.
- Mature gravida (pregnant women)
- Adolescent Gravida
- Adolescent parents' problems
- Unregulated fertility
- Abortions.
- Complications of deliveries.
- Infertility
- Uterine prolapse.
- Cancer of the cervix.

4.5.5 Indicators of MCH

The different indicators of MCH are :

- MMR
- IMR
- Neonatal mortality rate
- Under 5 mortality rates
- Child survival rate
- Knowledge, Attitude, and Practice indicators.

4.5.6 Recent trends in MCH

The recent trends in MCH care are :

- Integration of care
- Risk approach

- Manpower changes
- Primary Health Care
- Reproductive and child health.

4.5.7 Targets of MCH

The targets of MCH are as follows :

- i. MMR: below 2.
- ii. IMR: below 60.
- iii. Death rate of 1 to 4 age group: Below 10
- iv. Size of Family: 2 to 3 members.
- v. Birth weight of Child -minimum 2500 grams
- vi. Weight of minimum 90% of total children – according to height/weight.

4.5.8 Organizational activities of MCH services

The organizational activities of MCH services are as follows :

- a. Complete health check-ups and care of the child and mother from conception to birth.
- b. Studying the health problems of mothers and children.
- c. Providing health education to parents for taking care of children.
- d. Training of professionals and assistant workers.

4.5.9 Maternal and Child Health Services

The maternal and Child Health Services includes the following services :

- i. Prenatal or antenatal care services
- ii. Intra-natal care services
- iii. Postnatal care services
- iv. Under five Child Health Services.

4.5.10 National Family Welfare Programmes (1952)

- Started in 1951 as a 100 per cent centrally sponsored program to be implemented at state levels
- At 1961 family welfare department was created in 3rd Five Year Plan (FYP).
- In 4th FYP there is integration of family planning services with maternal and child health (MCH) services.
- MTP act was introduced in 1972.
- In 5th Five Year Plan 1975 to 80: The Ministry of Family Planning was renamed as Family Welfare.

The evolution of Maternal and Child Health Programs in India can be briefed as follows :

Year	Milestones
1952	Family Planning Program adopted by Government of India (GOI)
1961	Department of Family Planning created to Ministry of Health
1971	Medical Termination of Pregnancy Act (MTP Act)1971
1977	Renaming of Family Planning to Family Welfare
1978	Expanded Program on Immunization (EPI)
1985	Universal Immunization Program (UIP)
	National Oral Rehydration Therapy (ORT) program
1992	Child Survival and Safe Motherhood Program (CSSM)
1996	Target free approach
1997	Reproductive and Child Health Program 1 (RCH 1)
2005	Reproductive and Child Health Program (RCH 2)
2005	National Rural Mission

4.5.11 Integrated Child Development Services (ICDS) : A scheme for children by GOI

Integrated Child Development services scheme is one of the flagship programmes of Government of India and represents one of the world's largest and unique programme for early childhood care and development. It was started in 1975 to 76. It is to take care of children of nursing mother to break the vicious cycle of malnutrition, morbidity, reduce learning capacity and mortality. It takes care of children below six years of age and essential needs of pregnant women, nursing mother, adolescent girls and women between 15 to 45 years of age living in socially backward villages and urban slums.

4.5.11.1 Objectives of ICDS

ICDS schemes have following objectives :

- (a) To improve the nutrition and health status of children age between 0 to 6 years
- (b) To lay foundation for proper Psychological, Physical and social development of child.
- (c) To reduce the incidence of mortality, morbidity and malnutrition.
- (d) To achieve effective coordination of policies and implementation among various departments to promote child development
- (e) To enhance the capacity of mother to look after normal health and nutritional requirements of the family through proper nutrition and health education.

4.5.11.2 ICDS beneficiary and Services

- Children under 3 years: Supplementary nutrition, growth monitoring, immunization, health checkup, referral services.
- Children below 3 to 6 Years: Non formal preschool education, supplementary nutrition, growth monitoring, immunization, health checkups, referral services.
- Expectant women and nursing mothers: Supplementary nutrition, health checkups, referral services, Tetanustoxoid Immunization to pregnant women, nutrition and health education.
- Other women 15 to 45 years old: Nutrition and health education, home based skill training, vocational training.
- Adolescent girls between 11 to 18 years: Nutrition and health education, Iron and Folic acid supplementation, deworming interventions, vocational training, home based skill training.

4.5.12 Delivery of ICDS Services

It is provided in an Anganwadi-a child care center run by an Anganwadi worker and a helper usually covering a population of 400 to 800 in Rural and Urban areas. Besides the services are also provided by midwife, Auxiliary nurse and medical officer as and when required. Anganwadi provides a link between a village and primary health care center and sub centers where medical officers, nurse midwives and health visitors are there.

4.5.13 National Health Mission (NHM)

NHM was launched by government of India in 2013 including both National Rural Health Mission and National Urban Health Mission. It was further extended in 2018. It is headed by mission director and monitored by national level monitors appointed by government of India.

4.5.13.1 National Rural Health Mission (NRHM):

NRHM is now under NHM addressing the health needs of underserved rural areas, although it was launched in 2005. The thrust of the mission is on establishing a fully functional community owned decentralized health delivery system with intersectoral convergence at all levels to ensure simultaneous action on wide range of determinants of health such as water, sanitation, education, nutrition, social and gender equality. Institutional integration within the fragmented health sector was expected to provide a focus on outcomes.

4.5.13.2 Urban Health Mission

In 2013 the launch Urban Health Mission was also included in NHM.

4.5.14 Initiatives of NHM

Some of the major initiative under National Health Mission (NHM) are as follows:

(1) Accredited Social Health Activist (ASHA)

Community health volunteers are called ASHA's have been engaged under the mission for establishing a link between the community and the health system. ASHA is the first to know health related demands of deprived section of the population specially women and children who find it difficult to access health services in rural areas. ASHA's help in the utilization of outpatient services, diagnostic facilities, institutional deliveries and inpatient care.

(2) Janini Suraksha Yojana(JSY)

JSY is a safe motherhood intervention scheme. It was launched in 2005 by government of India aiming to promote institutional deliveries among poor pregnant women and to reduce neonatal mortality and maternal mortality. It is operated under Ministry of Health and Family welfare as a part of National Rural Health Mission.

(3) Janini Shishu Suraksha Karyakram(JSSK)

JSSK as a part recent initiative and moving in a direction of universal health care JSSK was introduced to provide free to and fro transport, free drugs, free diagnostic, free blood and diet to pregnant women who come for delivery in public health institutions and sick infants up to 1 year.

(4) Rashitrya Bal Swasthya Karyakram(RBSK)

It is a child health screening and early intervention service launched in 2013. It screens diseases specific to childhood, developmental delays, disabilities, birth defects and deficiencies. It also provides free treatment including surgery for health problems for children between 0 to 18 years of age.

There are many other initiatives under this scheme like improvement of sub centers by united grants for improvement in health care and involvement of local communities.

Some of the initiatives are :

National Mobile Medical Units, National Ambulance Services, Free Drug and Diagnostic Services etc. As a new initiative district hospitals are being strengthened to provide multispeciality health care personnel and routine health system strengthening activities.

4.5.15 RMNCHA

Government of India adopted the Reproductive Maternal Newborn Child and Adolescent Health (RMNCHA) framework in 2013. It essentially aims to address the major causes of mortality and morbidity among women and children. This framework also helps to understand the delays in assessing and utilizing health care services.

Based on the framework, comprehensive care is provided to women and children through 5 pillars or thematic areas of reproductive, maternal, neonatal child and adolescent health. The programmes and strategies developed various divisions are guided by central tenets of equity, universal care, entitlement and accountability to provide continuum of care ensuring equal focus on various life stages.

Following the strategy the Maternal Health Division strives to provide quality services to pregnant women and their newborns through various interventions and programmes, building capacity of health personnel and routine health system strengthening activities.

4.6 Other Health Programmes and Schemes in India

4.6.1 Reproductive, Maternal, Neonatal, Child and Adolescent health

- Janani Shishu Suraksha Karyakaram (JSSK)
- Rashtriya Kishor Swasthya Karyakram (RKSK)
- Rashtriya Bal Swasthya Karyakram (RBSK)
- Universal Immunisation Programme
- Mission Indradhanush / Intensified Mission Indradhanush
- Janani Suraksha Yojana (JSY)
- Pradhan Mantri Surakshit Matritva Abhiyan (PMSMA)
- Navjaat Shishu Suraksha Karyakram (NSSK)
- National Programme for Family planning

4.6.2 National Nutritional Programmes

- National Iodine Deficiency Disorders Control Programme
- MAA (Mothers' Absolute Affection) Programme for Infant and Young Child Feeding
- National Programme for Prevention and Control of Fluorosis (NPPCF)
- National Iron Plus Initiative for Anaemia Control
- National Vitamin A prophylaxis Programme
- Integrated Child Development Services (ICDS)
- Mid-Day Meal Programme

4.7 Conclusion

India has been working in handling various health issues specially those related to maternal and child health. This unit of the course gave a comprehensive idea on maternal and child health related issues and government's initiatives on handling the same. From time to time, different programmes and schemes have been launched by the GOI for the betterment of the vulnerable in our society.

4.8 Self Assessment Questions

1. Explain the reasons for organizing Maternal and Child Health (MCH) services as a single unit.
 2. Define Maternal Mortality Rate (MMR). Discuss the various causes of infant mortality and factors contributing to it.
 3. Describe how Maternal Morbidity and Mortality can adversely affect infant mortality. Discuss the sociocultural factors associated with maternal and infant mortality
 4. Define infant mortality. Explain the difference between neonatal and late infant mortality. Write the causes of infant mortality.
 5. Discuss the reasons for decline in maternal and infant mortality rates in recent years.
 6. Mention in brief the various health programmes for mother and child in our country.
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4.9 Suggested Readings and References

- B.K.Mahajan , M.C. Gupta, *Textbook of Preventive and Social Medicine*, Jaypee Brothers Medical Publishers; Fourth edition, 2013.
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Communicable and Non-Communicable Diseases

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5.0 Learning Objectives

Objectives of the study is to realize :

- To have the basic idea about different communicable diseases, their transmission and control measures.
- To have an understanding of noncommunicable diseases or lifestyle disorders and the basic factors responsible of the emerging rise to these diseases and their control measure.
- Basic knowledge of various health programmes in disease control.

5.1 Introduction

Communicable and non-communicable diseases have been responsible for a large number of mortalities and morbidity thru out the history. Medical care itself is not sufficient. It is important to be aware of the various factors involved in the occurrence of these diseases and how to control or bring down the incidence of these diseases. Any disease is a symptom of a wider social factors affecting the individual family and the community. Some of the general related factors in any diseases to develop are :

- i. Poor Hygienic Conditions (Personal and Sanitation)
- ii. Poverty
- iii. Illiteracy
- iv. Lack of health awareness and ignorance
- v. Large Families
- vi. Inadequate diet
- vii. Unhealthy traditional practices and taboos
- viii. Poor health care facilities and health systems
- ix. Social exploitation and many numerous others

So, treating the diseases alone is important but equally important is to realize the background interactions leading to the disease process. A doctor treats the disease but the role of a health/social/community worker is equally important in prevention of diseases. Even for implementation and success of any health programme. Health or social or community worker play an important role. Knowledge of community dynamics, community skills and cultural factors related to health are important and helpful to understand the disease process.

Any communicable disease is infectious disease. Infectious diseases are caused by micro-organisms such as bacteria, virus and parasites fungi or parasites. Communicable disease can be spread from one person to another either directly or indirectly. Communicable diseases in epidemic or endemic form have been responsible for human mortality thru out history. Their incidence has been reduced considerable due to :

1. Better understanding of disease process
2. Availability of specific drugs
3. Effective methods of prevention (immunization) and control.

It is the control of communicable disease which to some extent is responsible for increase in life expectancy at birth in India from 19.4 in 1911 through 41.9 in 1951 60 to 68.80 in 2017 and 69.50 in 2019.

5.2 Major Communicable diseases in India

India too has its share of infectious epidemics, though mortality due to these has reduced. The disease burden is still high—due to :

- (a) Poor Sanitation
- (b) Unsafe drinking water
- (c) Poor hygiene etc.

Some of the major communicable diseases are :

1. Malaria
2. Typhoid
3. Hepatitis
4. Diarrhea
5. Amoebiasis
6. Hookworm infection
7. Filaria
8. Cholera
9. Tuberculosis
10. Childhood infections like measles, chicken pox, diphtheria, whooping cough.
11. Dengue
12. Encephalitis etc.

5.2.1 Chain of events for Infectious Diseases to develop

It is of importance to realize the background interactions leading to any disease process. Disease occurs when the balance between the host (man) and agent changes favouring the agent, The entry of the disease agent (bacteria parasite, virus etc.) in human host is the only initial requirement for occurrence of an infectious disease, The infection in the community is maintained through a chain of five events :

1. Entrance of the agent into skin or mucous membrane of alimentary canal, respiratory tract or mucous or genitor urinary tract by direct or indirect contact.
2. Multiplication of agent in a favorable site (skin, respiratory tract, alimentary canal etc.) or organ(liver, spleen, brain etc) or tissue(blood, muscles etc).
3. Exit of agent thru body secretions or excretions or thru blood sucking arthropods (mosquito, fleas etc).

4. Survival of microorganisms in physical environment after their exit from host (air, water, soil) or biological environment (mosquito, rats, fleas, worms).
5. Propagation of another host through man, animal, food, air, water etc.

5.2.2 Important terms used in Communicable diseases

Some of the terms used in communicable disease epidemiology are :

- (a) Infection means entry, development and multiplication of a particular living pathogen in body.
- (b) Pathogen is a disease producing organisms like bacteria, virus etc.
- (c) Infection can be classified as three types :
 - (i) Typical
 - (ii) Subclinical or Latent
 - (iii) Atypical Infection plays an important role for spread of infection.
- (d) Carrier : A person or animal that carries a particular infectious agent in absence of clinical disease. Carrier state can be healthy or asymptomatic carrier or during, before disease or after convalescent state.
- (e) Communicable period : The time during which an infectious agent may be transferred directly or indirectly from a person to another or man to animal or animal to man. Tuberculosis, Leprosy, STD, or Typhoid exists for long and Malaria for limited period.
- (f) Contact : A person or animal that has been in association with infected person, animal or environment that might provide an opportunity to acquire the infective agent.
- (g) Contamination : Presence of infectious agent in clothes, body surface and other inanimate objects like bedding, towels, utensils, toys etc.
- (h) Incubation Period : Time interval between initial contact with infected agent and appearance of symptoms to disease.
- (i) Susceptibility : A person not having sufficient resistance against particular pathogen to prevent contacting disease or if exposed.
- (j) Herd Immunity : A group or community. The resistance of a group to invasion and spread of a microorganisms based on resistance to infection of a high proportion of individual members of the group.
- (k) Immunity : The resistance usually associated with the presence of antibodies or cells having specific action or microorganisms responsible for particular diseases humoral.

5.2.3 Transmission of infectious agents

For details, refer unit 3 of this course

5.2.4 Classification of Communicable Diseases

Communicable diseases can be classified according to their mode of spread. If we are able to control the mode of spread it will be easier to control the diseases. So, the measures for prevention and control of diseases belonging to a particular group would be the same.

Communicable diseases are grouped into the following :

1. Respiratory infections or airborne
2. Intestinal infections or water and food borne
3. Contact or surface infections
4. Arthropod infections.

(I) Respiratory infections : Are responsible for majority of illness in man. Children and aged are more susceptible in respiratory illness. The respiratory infection may either manifest as a respiratory disease ex common cold, Influenza, Tuberculosis, Diphtheria, whooping cough or as a non-respiratory disease ex chicken pox, measles, mumps, viral encephalitis, meningitis, leprosy etc.

(II) Intestinal Infections : These spread thru fecal contamination of water and food. Most of these organisms enter thru the mouth (Food or water) and multiplies in intestine and is passed out in stools. The infected stools further contaminate water, milk, food, hands or fomites which leads to further spread of infection. Dust and flies can also provide a link between feaces and food. Sometimes the infective organisms do not multiply in the intestine or enter by mouth or leave thru stools in case of some worms e.g., hook worm infections enter thru the skin and guinea worm infection comes out of the skin. There are some non-intestinal infections like polio and infectious hepatitis. Also come in the group of intestinal infections because of their mode of spread. Some of the common intestinal infections are cholera, typhoid fevers, various dysenteries and diarrheas, polio and infected hepatitis. Worms' infections like thread worm, round worm, tape worm, hook worm, guinea worm etc. also come in this group.

(III) Contact or surface Infections : In this group the infection comes out of the skin or mucus membrane of the patient and enters through the skin and mucus membrane of a healthy person thru bodily or sex contact. The infection can also transfer indirectly through handkerchief, towels, socks etc. Example are eye infections, leprosy, ringworm, scabies and finally sexually transmitted diseases.

(IV) Arthropod or borne Infections : Arthropod transmits disease agents through two ways :

- (a) **Mechanical carriers :** Here the infection is carried on by mouth parts wings, legs or flies etc. The flies infect the food and drinks when they sit on them. Cholera, Diarrheas and dysenteries are spread in this manner.

(b) **Biological vector** : The biological vectors can be mosquitoes, fleas, ticks, mites, sand fly etc. The disease organisms develop and multiplies in the body of such vector and after sometime it may be transferred to man by bite or infecting the skin examples of vector borne disease malaria, filarial, dengue, yellow fever, plague, typhus, kalazar.

5.3 Incubation Period, Sources of Infection, Mode of Transmission, Clinical Presentation and Prevention of major Communicable Diseases in India

DISEASE	INCUBATION PERIOD OR COMMUNICABILITY PERIOD	SOURCES OF INFECTION	MODE OF TRANSMISSION	CLINICAL PRESENTATION	PREVENTION
<p>MEASLES An acute and highly infectious disease caused by rubella virus</p>	<p>I.P. 8 to 16 days P.C. 4 days before and 5 days after appearance of rash</p>	<p>Secretion of respiratory tract during the period of communicability. Common in children after 6 months to 5 years. Severity of attack more in malnourished children. Seasonal variation more in winter</p>	<p>Droplet nuclei</p>	<p>4 to 5 days of fever, cough, sneezing, running of nose and red eyes then rashes appear all over the body. They are bright pink or red . After 6 days brownish discolouration. Malnourished children more complications like diarrhea, Pneumonia, Bronchitis, middle ear infection etc.</p>	<p>Measles Vaccine given after 9 months. In early months infants escape due to mothers circulating antibodies. Immunity 11 to 12 days after vaccination.</p>
<p>CHICKEN POX Is caused by varicella virus Chicken pox is an acute highly contagious disease but mild erupted fever. It is common among young children</p>	<p>I.P. is 14 to 21 days P.C. 1 to 2 days before to 4 to 5 days after the appearance of rash</p>	<p>Patient of chicken pox thru respiratory trap</p>	<p>Direct contact droplet or airborne spread by soiled articles from rashes and discharge</p>	<p>Sudden onset of mild or moderate fever with backache lasting for 2 to 3 days then rashes appear .The distribution is more on trunk than on face and they pass thru different stages</p>	<p>Prevention is a vaccine given to children at the 2 year of life and a booster is given around 4 to 5 years.</p>

DISEASE	INCUBATION PERIOD OR COMMUNICABILITY PERIOD	SOURCES OF INFECTION	MODE OF TRANSMISSION	CLINICAL PRESENTATION	PREVENTION
<p>WHOOPING COUGH It is caused by bacteria B. Pertussis it is an acute and highly communicable infection of respiratory tract .</p>	<p>I.P.is 7 to 14 days P.C. is upto 3 weeks after the onset of coughing</p>	<p>Source of infection is always a case</p>	<p>Droplet infection and droplet nuclei. It is disease of infant and children below 5 year it occurs in all season incidence is lower in tropical countries. Incidence is reduced due to immunization</p>	<p>It is characterized by symptoms of cough and cold, fever followed by severe bouts of coughing generally ending with a whoop.</p>	<p>Vaccination is available in form of DPT vaccine given in 1st year of life. 3 shots are given at a interval of 4 weeks. It is followed by booster dose at the 2 and 5 years.</p>
<p>MUMPS Viral infection of myxo virus it's an acute communicable diseases which damages the glands and nervous tissue</p>	<p>I.P. 2 to 3 weeks P.C. 8 days before onset of disease to 1 week after</p>	<p>Source of infection is saliva, blood, urine, its common in age group 5 to 15 years. One attack gives life long immunity. Peak incidence is in winter and spring.</p>	<p>Droplet infection and direct contact</p>	<p>Pain and swelling of one or both parotid(salivary gland) , there can be ear ache, pain and stiffness in opening of mouth. It can also effect testis, pancreas, ovaries, swelling subside in one to two weeks</p>	<p>Mumps vaccine is available in combined form as MMR vaccine to children between 12 to 15 months and a booster dose is given at the 5 years of age.</p>
<p>Tuberculosis is a chronic communicable disease caused by bacteria, Mycobacterium,</p>	<p>I.P. it is much variable P.C. also varies from few weeks to years.</p>	<p>Sputum,puss, stool and gastric contents of a patient can be a sources of infection. Organism can</p>	<p>Droplet infection, droplet nuclei by discharges from infected case</p>	<p>It can occur in any age but malnourished people are more susceptible to tuberculosis. It</p>	<p>BCG vaccine is given routinely to infants below 4 weeks. There are</p>

DISEASE	INCUBATION PERIOD OR COMMUNICABILITY PERIOD	SOURCES OF INFECTION	MODE OF TRANSMISSION	CLINICAL PRESENTATION	PREVENTION
Tuberculosis. It affects both lung and other tissues like glands, gut, bones, coverings of the brain(meningitis)etc.	I.P. 9 to 14 days after the mosquito bite.	remain alive for months in a dormant state but when conditions are favorable start multiplying causing the disease.		is a social disease. It can present as low grade persistent fever with cough, weakness etc.	specific drugs for tuberculosis patients but it requires long term treatment.
MALARIA is caused by a parasite that is transmitted through by the bite of an infected mosquito. There are two types: Falciparum and Vivax. Falciparum or malignant malaria is the severe type and can be fatal.		The malarial parasites are spread thru the bite of mosquito from an infected person to another non infected person. The anopheles mosquito are malaria vectors they bite between dusk and dawn. Incidence of malaria is common during rainy season.	The malarial parasites are spread thru the bite of mosquito from an infected person to another non infected person. The anopheles mosquito are malaria vectors they bite between dusk and dawn.	There is high fever with chills and shiver, severe headache, nausea and vomiting also can be there.	Malaria is preventable and curable There is no malaria vaccine available. It can be cured by using drugs.

In recent years some of the vector borne diseases have emerged like Dengue, Chikungunya, Japanese encephalitis.

□ **Dengue Haemorrhagic fever**

It is an acute viral infection transmitted by the bite of an infected mosquito *Aedes Aegypti* which bites during the daytime. These mosquitoes breed in stored and exposed water collection like water tanks, pots, buckets, flower vases, water cooler etc. It has an I.P. of 4 to 7 days after the bite of infected mosquito. It presents as high fever, pain behind the eyes and severe headache, bodyache and joint pains. In a hemorrhagic fever platelet count goes down and there can be bleeding from nose, mouth, gums or black stools. It can be fatal. There is no specific antiviral drug or vaccine.

□ **Chikungunya**

Chikungunya fever is a viral infection spread by the bite of infected mosquitoes. These mosquitoes bite only during the daytime. Chikungunya epidemics occur and disappear cyclically usually at a gap of 7 to 8 years. The disease resembles dengue fever characterized by fever, skin rash and joint pains. The condition rarely life threatening, sometimes recovery period can be prolonged and joint pain may persist. No specific vaccine or treatment is available. Treatment consists of symptomatic treatment for controlling fever, pain and require rest.

□ **Japanese Encephalitis (JE)**

JE is a viral disease transmitted by mosquito that breed in rice field. Its primarily a rural disease and can be fatal. Infected water birds and pigs who often shows no signs if sickness are most common JE reservoirs in the chain of transmissions to man. The killer disease mainly affects children and causes the infection of the brain and its covering membranes. The symptoms of the disease are acute onset of high fever, headache, neck stiffness, disorientation. It can also lead to coma, convulsions and paralysis. Those who survive the disease are often lived neurologically disabled. Intensive medical and nursing care may lead to complete recovery or minimize neurological complications. Vaccine against JE is available and given to children at the age of around 18 months of age.

5.4 Prevention and control of communicable disease (General measures)

Every disease has certain weak points susceptible to attack. The basic approach in controlling disease is to identify these weak points and break the weakened links in the chain of transmission. Frequently it may be necessary to have more than one method of control at the same time. Disease control involves all the measures designed to prevent and reduce as much as possible incidence, prevalence and consequences of disease. This includes community participation, Political and intersectoral co-ordination.

A. Controlling the reservoir

1. Early diagnosis
2. Notification
3. Epidemiological investigation
4. Isolation
5. Treatment
6. Quarantine

B. Interruption of transmission

C. Susceptible host

1. Immunization

2. Chemoprophylaxis
3. Nonspecific measures

A. Controlling the reservoir

The some of the measures for controlling the reservoir are :

- (a) Early diagnosis :** the first step in the control of ID is prompt diagnosis of cases and their treatment.
- (b) Notification :** Once the ID is being detected it should be notified to the local health authorities, their responsibility is to put into action control measures including medical care to the patients. The diseases which are considered to be serious threat to public health are included in the list of notifiable diseases. Notifiable diseases also include non-communicable diseases and conditions like cancers, congenital defects, accidents etc.
- (c) Epidemiological investigation :** It covers the identification the source of infection and the factors influencing its spread in the community. These also include geographical situation, Climatic conditions, social, cultural and behavioral patterns. But more important is the character of the disease agent, reservoir, vectors and vehicles and susceptible host population.
- (d) Isolation :** Isolation is the oldest ID control measure. It is defined as separation for the period of communicability of the infected person or animals from others, so as to prevent a limit direct or indirect transmission of infectious agent from infected person to susceptible. The duration of isolation is determined by communicability of the disease and the effect of chemotherapy on infectivity.

Disease	Duration of isolation
Chickenpox	Until all lesions crusted; usually about 6 days after onset of rash.
Measles	From the onset of catarrhal stage through 3rd day of rash
German Measles	None, except that women in the first trimester or sexually active, non immune women in child bearing years not using contraceptive measures should not be exposed.
Cholera Diphtheria	3 days after tetracyclines started, until 48 hours of antibiotics (or negative cultures after treatment)
Shigellosis Salmonellosis	Until 3 consecutive negative stool cultures
Hepatitis A	3 weeks
Influenza	3 days after onset.
Polio	2 weeks adult, 6 weeks paediatric.

Disease	Duration of isolation
Tuberculosis(sputum +)	Until 3 weeks of effective chemotherapy.
Herpes Zoster	6 days after onset of rash.
Mumps	Until swelling subsides.
Meningococcal Meningitis Streptococcal Pharyngitis	Until the first 6 hours of effective antibiotic therapy completed.

- (e) **Treatment** : Treatment of the infectious diseases include the specific measures by medical personnel.
- (f) **Quarantine** : Quarantine is the limitation of freedom of movement of person or animal exposed to communicable disease for a period of time longer than the longest incubation period of a disease. Quarantine measures are also applied by health authorities to ships, aircrafts, trains and road vehicles.

In contrast to isolation quarantine also applies to restrictions on healthy contacts of an infectious disease patient. Quarantine once a popular method of disease control has now declined in popularity.

B. Interruption of transmission

Controlling the source of transmission of an infectious agent is important in breaking the chain of spread it is dependent of source of transmission like contaminated water, contaminated food, vector control blocking the routes of transmission imply provision of safe drinking water, food sanitation, vector and its breeding places control measures, personnel hygiene, control of stray dogs, cattle, pets is also important to minimize the spread of infection.

C. Susceptible host

- a. **Immunization** : Immunization is the mass mean of protecting large number of people by reducing the number of susceptible by helping to strengthen the host defenses.

There are some diseases with very effective immunization like polio, diphtheria, tetanus, measles, whooping cough etc. Effective immunization programmes are able to considerably reduce the incidence of many infectious diseases.

- ii. **Chemoprophylaxis** : It implies the protection or prevention of disease. This is achieved by giving specific drugs to prevent clinical symptoms.
- iii. **Non-Specific measures** : Non-specific measures include measures to interrupt pathways of transmission, improvement in the quality of life, safe drinking water, sanitation, quality nutrition and health education fall into this group.

5.5 Non-Communicable Diseases in India

NCD is a medical condition or a disease that is not caused by infectious agent (noninfectious or non-transmissible) it is an impairment of bodily structure and/or function that necessitates a modification of the patients' normal life and has persisted over an extended period of time. An acute illness usually consists of a simple episode of fairly short duration from which patient returns to normal activity whereas a chronic illness is one of long duration in which the patient has to take some corrective measures and drugs.

5.5.1 Characteristics of NCD

NCD or chronic diseases have one or more of the following characteristics :

1. Are permanent
2. Leave residual disability.
3. Are caused by non-reversible pathological alteration.
4. Require special training of the patient for rehabilitation.
5. May be expected to require long term supervision or care.

5.5.2 Common NCD's

NCDs include cardiovascular, renal, nervous and mental diseases, musculoskeletal conditions such as arthritis and allied diseases, Chronic nonspecific respiratory diseases (e.g., Chronic bronchitis, emphysema, asthma), Permanent results of incidents, senility, blindness, cancer, diabetes, obesity and various other metabolic and degenerative diseases and chronic results of communicable diseases. Disorders of unknown cause and progressive course are often labeled "degenerative".

5.5.5 Problem of NCDs

Chronic NCDs are assuming increasing importance among the adult population. In both developed and developing countries. Cardiovascular diseases and cancer are present leading cause of death in developed countries. The prevalence of chronic diseases shows an upward trend in most countries. The reasons for the rise are :

- (i) Increase in life expectancy great number of people living to older ages so more risk of chronic diseases.
- (ii) Changing lifestyle and behavioral patterns making them more susceptible to early onset of NCDs.

5.5.6 Impact of chronic diseases

Impact of chronic diseases on life is serious in terms of :

- (a) Loss of life

- (b) Disability
- (c) Family hardship
- (d) Poverty due to loss of work
- (e) Economic losses to the country in terms of lost manpower and productive years of life

India is experiencing a rapid health transition with arising burden of NCDs causing significant morbidity and mortality both in urban and rural population. They are also responsible for 53% of deaths in the country.

5.5.7 Lifestyle diseases (LSD)

NCDs are also lifestyle diseases in contrast to the diseases of poverty which tend to be largely infectious diseases or the result of poor living conditions. These diseases include Tuberculosis, Asthma, Intestinal diseases, Malnutrition etc.

Diseases of affluence is a term given to NCDs which are thought to be as a result of increasing wealth in a society. The modern diet, sedentary lifestyle is to be blamed for the current levels of obesity, cardiovascular diseases, high blood pressure, diabetes, osteoporosis, depression and mental health conditions.

Lifestyle diseases are also related with overambitious outlook in corporate world with excessive aggressive competition (performance related to outdo others and survival, all these lead to stress and burnout syndrome. Along with these factors the irregular work hours, bad food habits, Lack of exercise, consumption of alcohol, smoking, drug abuse also play a role for NCDs.

5.5.8 Causes of Non-Communicable Diseases

Factors associated with the increase of NCDs appear to be things that are direct result of technological advancement. These includes :

- (1) Insufficient physical activity because of the better transport facilities.
- (2) Sedentary lifestyle as a result of office jobs involving no physical activity.
- (3) Unhealthy diet because of availability of low-cost food.
 - High fat and high sugar foods in the diet are common in the affluent societies.
 - Higher consumption of meat and dairy products.
 - Higher consumption of refined flours.
 - Availability of processed foods.
- (4) Use of tobacco leading to respiratory diseases and heart diseases.
- (5) Alcohol consumption

All these factors are responsible for obesity, high blood pressure, high cholesterol levels. Most chronic diseases are result of multiple causes or risk factors further they appeared to be cumulative effect of various risk factors. These factors can also be environmental like air and water pollution, occupational hazards. Some social factors like breakdown of joint family, migration rural to urban can also be responsible for isolation and behavioral changes.

5.5.9 Prevention of NCDs

- (1) Prevention of chronic diseases is based on a complex mix of interventions as they are multifactorial in origin. Some of the interventions are promoting healthy lifestyle with stress on healthy fresh food reducing salt intake and replacing trans-fat in food with poly saturated fats.
- (2) Promoting public awareness about diet and physical activity thru mass media.
- (3) National physical activity guidelines, school based physical activity programmes for children, work-based programmes for physical activity like yoga day.
- (4) Protecting people from tobacco smoke and banning smoking in public places, warning the danger of tobacco use.
- (5) Restricting excess to alcohol usage.
- (6) Regular health checkup
- (7) Protection against environmental or occupational risk factors for cancer.

5.5.10 Non-Communicable Diseases : Indian Scenario

India is a third world country by economic profile has emerged to morbidity(illness) profile to that of a First world Country. LSDs are rising with an alarming rate in our country.

The five most important LSD in India are :

- (1) Cardiovascular diseases(heart)
- (2) Diabetes
- (3) Hypertension (high BP)
- (4) Asthma
- (5) Respiratory Disease (COPD)

□ **Diabetes** is on the rise in our country, according to diabetes expert incidence of diabetes is also on the rise among poor because of bad and cheaper nutritional choices leading to malnutrition, Lack of vitamins, Proteins and micronutrients and more of carbohydrates and push up their insulin resistance and increase sugar. Diabetes is also associated with greater risk of high cholesterol, heart diseases and kidney diseases etc.

- ❑ **Chronic Obstructive Pulmonary Disease (COPD)** is a broad classification including number of lung conditions caused by chronic exposure to lung irritants (Air pollution, tobacco, occupational hazards). The condition is chronic and worsens overtime, for many in Indian cities there is no escape from air pollution even the rural population is exposed due to common use of wood and biomass for cooking in homes, burning crop residues and tobacco smoking. What makes COPD concerning is the rate at which the number of cases is rising. Number of cases of COPD in India increased from 28.1 million in 1990 to 55.3 million in 2016. All this also adds to the burden of disability and adjusted life years. It also claims 1 million life every year.

5.6 Various Health Programmes in India

Human health not only influence the health of the society but also social structure, culture, politics and economics, since India became independent several measures have been undertaken to improve the health of people. Union Ministry of Health and Family welfare is instrumental and responsible for implementation of various health programmes on a national level. In areas of health prevention of major communicable diseases and promotion of traditional and indigenous system of medicine. Several National Health Programmes have been launched by central govt. for the :

- (1) Control /Eradication of communicable diseases
- (2) Improvement of the environmental sanitation
- (3) Raising standard of nutrition
- (4) Control of population
- (5) Improving rural health
- (6) Improving maternal and child health

Various international agencies like WHO, UNICEF, UNFPA, World Bank and many foreign voluntary agencies have been providing technical and material assistance in the implementation of these programmes. The various programmes related to communicable and non-communicable diseases are as follows :

5.6.1 Communicable diseases

- Integrated Disease Surveillance Programme (IDSP)
- National Tuberculosis Elimination Programme
- National Leprosy Eradication Programme (NLEP)
- National Centre for Vector Borne Diseases Control
- Programme for Prevention and Control of leptospirosis
- National AIDS Control Programme (NACP)
- Pulse Polio Programme

- National Viral Hepatitis Control Program
- National Rabies Control Programme
- National Programme on Containment of Anti-Microbial Resistance (AMR)

5.6.2 Non-communicable diseases

- National Tobacco Control Programme (NTCP)
- National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases & Stroke (NPCDCS)
- National Programme for Control Treatment of Occupational Diseases
- National Programme for Prevention and Control of Deafness (NPPCD)
- National Mental Health Programme
- National Programme for Control of Blindness & Visual Impairment
- Pradhan Mantri National Dialysis Programme
- National Programme for the Health Care for the Elderly (NPHCE)
- National Programme for Prevention & Management of Burn Injuries (NPPMBI)
- National Oral Health programme
- National Programme on Climate Change & Human Health (NPCCHH)

5.6.3 Health system strengthening programs

- Ayushman Bharat Yojana
- Pradhan Mantri Swasthya Suraksha Yojana (PMSSY)
- LaQshya' programme (Labour Room Quality Improvement Initiative)
- National Health Mission
- Ayushman Bharat Digital Mission (ADHM)
- PM Ayushman Bharat Health Infrastructure Mission

A brief account of some of the programmes which are currently in operation are :

(a) NATIONAL VECTOR BORNE DISEASE CONTROL PROGRAMME (NVBDCP) :

The directorate of NVBDCP at central level is the nodal agency for planning, policy making and technical guidance and monitoring and evaluation of the programme. Planning and implementation and supervision of the programme is State/ Union Territory responsibility.

Vector borne diseases are major health problem in India. The prevention and control of vector borne diseases is as complex as there transmission. It is dependent upon interaction of numerous :

- (i) Ecological
- (ii) Biological
- (iii) Social
- (iv) Economic Factors
- (v) Rural to urban shift and migration

The major vector borne diseases in our country are (i) Malaria (ii) Philaria (iii) Japanese Encephalitis (iv) Dengue (v) Chikungunya All these transmitted by different strains of mosquito (vi) Kalazar transmitted by sandflies.

The transmission of vector borne diseases in any region is dependent upon the frequency of vector control.

(1) The various Vector Borne Disease programme are :

- (i) **National Malaria Control Programme :** Began in 1953 during the first 5-year plan. Due to its success, it was converted into Malaria Eradication programme in 1958, since then it was undergone many changes as there was resurgence of Malaria in early 1970s.
- (ii) **National Filaria Control Programme :** Has been in operation since 1955. The disease is endemic in 250 districts in 20 states/UT. According to recent estimates about 600 million people are exposed to the risk of infection. In 1978 the operational component of NFCP was merged with an Urban Malaria Scheme for maximum utilization of available resources.
- (iii) **Kalazar Control Programme :** It is now endemic in 31 districts of Bihar, 4 districts of Jharkhand, and 11 districts of West Bengal and 6 districts of UP. A centrally sponsored programme was launched in 1990 91, this has brought down in the incidence and death rates of the disease by 75% by year 2002
- (iv) **Japanese Encephalitis Control Programme :** JE is the disease of high mortality rate and those who survive end up with various degrees of neurological complication. In last few years it is become a major public health problem. States of WB, Assam, AP, Tamil Nadu, Kanyakumari, Bihar, Maharashtra, Manipur, Haryana, Kerela and UP are reporting maximum number of cases.
- (v) **Dengue Control Programme :** During 1996 an outbreak of Dengue was reported in Delhi. Since then, cases have been reported from other states also. Guidelines of preparation of contingency plan in case of outbreak was prepared and sent to all states. It includes all important aspects of control measures.
- (vi) **Chikungunya Fever :** It is a non-fatal viral illness reemerging in our country after a gap of 3 decades. The guidelines for prevention and control have been prepared and sent to States. Since vector involved in transmission of dengue and chikungunya are the same so the strategies for control are also similar.

(2) National Leprosy Control Programme (NLCP) :

The NLCP has been in operation since 1955 as a centrally aided programme. In 1983 the control programme was renamed National Leprosy Eradication Programme with the goal of eradicating the disease by the turn of century. The programme has been integrated with general healthcare systems 2002 2003.

(3) National Tuberculosis Control Programme (NTCP) :

The NTCP has been in operation since 1962. Initially the success rate was higher than there was the spread of drugs resistance cases. The Revised National Tuberculosis programme was formulated and implemented in phases from 1993 onwards. The RNTCP was also adopted. Treatment with DOTS (Directly Observed Treatment Short course) strategy as the most systematic and cost-effective approach.

(4) National AIDS Control Programme (NACO) :

National AIDS control programme was launched in 1957. The first HIV case was detected in 1986. The National AIDS Control Organisation was established in 1992 is a division of Ministry of Health and Family Welfare provides leadership to HIV/ AIDS control programme in India for formulation of policy and implementation programme.

(5) Universal Immunization Programme (UIP):

Is a Vaccination Programme launched by the Government of India in 1985. It became part of Child Survival and Safe Motherhood Programme in 1992 and is currently one of the key areas under National Rural Health Mission (NRHM) since 2005. The programme now consists of vaccination for twelve diseases :

- (i) Tuberculosis
- (ii) Diphtheria
- (iii) Whooping cough
- (iv) Tetanus
- (v) Polio
- (vi) Measles
- (vii) Hepatitis
- (viii) Diarrhea
- (ix) Japanese Encephalitis
- (x) Rubella
- (xi) Pneumonia (HIB) and
- (xii) Pneumococcal diseases (Pneumonia and meningitis). Hepatitis B and Pneumococcal disease were added to UIP in 2007 and 2017.

(6) National Health Mission (NHM) :

National Health Policy 2017 is to inform, clarify, strengthen and prioritize the role of Government of India in shaping health systems in all its dimensions. This policy emphasizes reorienting and strengthening public health institution across the countries, so as to provide universal excess to feed drugs, diagnostics and other health care.

National Health Mission (NHM) is effective from 1st April 2017. It has two submissions :

- (1) National Rural Health Mission (NRHM)
- (2) National Urban Health Mission (NUHM)

The main component of programmes includes health system strengthening in rural and urban areas in field of

- (1) Reproductive
 - (a) Maternal
 - (b) Neonatal
 - (c) Child
 - (d) Adolescent health
- (2) Communicable Diseases
- (3) Non-Communicable diseases

It aims achievement of universal access to equitable, affordable and quality health care services that are accountable and responsive to peoples, needs within the broad national parameters and priorities, states would have the flexibility to plan and implement state specific action plans.

5.7 Conclusion

To sum up we can say to control of communicable diseases effectively requires integrated measures :

- (1) Effective Integrated health programmes and their implementation.
- (2) Community involvement in disease control is also important to succeed. Laws regulations and policies measure alone will not help without active community participation.
- (3) Human Behavior and lifestyle changes are also a corner stone of any disease control either communicable or non-communicable.
- (4) However, it's worth considering some issues/obstacles in developing countries like scarcity of funds, lack of effective health infrastructure (equipment and supplies), trained personnel and public awareness for control of ID.

Present knowledge indicates NCDs require an overall integrated programme for prevention and control. The chronically ill require a wide spectrum of services :

- (1) Case finding thru screening and health examination techniques, application of improved methods of diagnosis, treatment and rehabilitation.
- (2) Control of food, water and air pollution
- (3) Influencing patterns of human behavior and lifestyles thru intensive education and mass media.
- (4) Political approaches are also required for enforcement of various laws and bills.

5.8 Self-Assessment Questions

1. Discuss the chain of events for a C.D to develop.
2. What are the factors involved in transmission of C.D. Discuss their mode of spread of C.D?
3. How C.D are classified?
4. What are the measures for the prevention and control of C.D. spread?
5. How NCD are different from C.D? Why they are called lifestyle disease?
6. Mention the importance of health programmes in reducing the incidence of C.D? How a community health worker can help in disease control?
7. Discuss the changing disease profile in our country. Why lifestyle disorders are on the rise?
8. Mention in brief about the various national health programmes in India.

5.9 Suggested Readings and References

- B.K.Mahajan , M.C. Gupta, *Textbook of Preventive and Social Medicine*, Jaypee Brothers Medical Publishers; Fourth edition, 2013.
- Park & Park, *Textbook of Preventive and Social Medicine*, Banarsidas Bhanot Publishers, 22nd Edition, 2017.

