

CONCEPTS AND THEORIES OF AGING

DEFINITION •

Aging can be defined as the time-related deterioration of the physiological functions necessary for survival and fertility. • Aging process is the process of growing old or developing the appearance and characteristics of old age

Functionally, aging refers to the capabilities of the individual to function in society.

Young Old (60 – 74 yrs), middle old (75-84 years), and old-old (above 85 years). The life expectancy of Indians are 65- 67 years • Subjectively, aging is marked by changes in behaviour and self- perception and reaction to biologic changes. • Objectively, ageing is a universal process that begins at birth and is specified by the chronological age criterion

CONCEPTS OF AGING •

CHRONOLOGIC AGING • BIOLOGIC AGING • PSYCHOLOGIC AGING •
SOCIAL AGING • COGNITIVE AGING

CHRONOLOGIC AGING • Chronological age refers to the actual amount of time a person has been alive. • In other words, the number of days, months or years a person has been alive

BIOLOGIC AGING • Senescence or biological ageing is the gradual deterioration of function characteristic . • Biological aging refers to the physical changes that “slow us down” as human get into middle and older years. • For example: arteries might clog up, or problems with lungs might make it more difficult for us to breathe. • This aging is also known as physiologic aging.

PSYCHOLOGIC AGING • Psychological aging refers to the psychological changes, including those involving mental functioning and personality, that occur as human age. • chronological age is not always the same thing as biological or psychological age. • Some people who are 65, can look and act much younger than some who are 50. •

Psychological ageing may be seen as a continuous struggle for identity, i.e. for a sense of coherence and meaning in thoughts, feelings and actions. • Success depends on a lucky synchronization of changes through life in different parts of the personal self.

SOCIAL AGING • Social aging refers to changes in a person's roles and relationships, both within their networks of relatives and friends and in formal organizations such as the workplace and houses of worship. • Social aging differ from one individual to another. • It is also profoundly influenced by the perception of aging that is part of a society's culture. • If a society views aging positively, the social aging experienced by individuals in that society will be more positive and enjoyable than in a society that views aging negatively.

COGNITIVE AGING • Cognitive ageing is the decline in cognitive processing that occurs as people get older. Age-related impairments in reasoning, memory and processing speed can arise during adulthood and progress into the elder years. • Cognitive aging is concerned with the basic processes of learning and memory as well as with the complex higher- order processes of language and intellectual competence or executive functioning. • The concept of cognitive aging, a term that describes a process of gradual, longitudinal changes in cognitive functions that accompany the aging process.

Developmental theories → Psychosocial theories → Biologic theories → THEORIES OF AGING Each theory of aging attempts to provide a framework in which to understand aging from different perspectives. Each theory is useful to the clinician because a framework and insight into differences among elderly patients are provided. The theories of aging are classified into

BIOLOGIC THEORIES • Biologic theories of aging attempt to explain why the physical changes of aging occur. • Researcher try to identify which biologic factor have the greatest influence on longevity.

BIOLOGIC THEORIES • The programmed theory/ Biological clock theory • The run out of program theory • Gene theory • Molecular theory • Cellular theories

THE PROGRAMMED THEORY/ BIOLOGICAL CLOCK THEORY • The programmed theory proposes that every person has a "Biologic clock" that starts ticking at the time of conception. • In this theory each individual has a genetic program specifying an unknown but predetermined number of cell divisions. • As the program plays out, the person experiences predictable changes such as atrophy of the thymus, menopause, skin changes and graying of the hair • Aging has a biological timetable or internal biological clock.

THE RUN OUT OF PROGRAM THEORY • Every person has a limited amount of genetic material that will run out over time. • All events are specifically programmed into genome and are sequentially activated. • After maturation genes have been activated there are no more programs to be played and as cells age there may be chance of inactivation of genes that cannot be turned on.

GENE THEORY • The gene theory proposes the existence of one or more harmful genes that activate overtime, resulting in the typical changes seen with aging and limiting the life span of the individual. • Organism failure occurs in later life because of the presence of imperfect genes activated over lengthy periods of time. • Two gene types, one supports growth and vigor, and the other supports senescence and deterioration.

MOLECULAR THEORIES The aging is controlled by genetic materials that are encoded to predetermine both growth and decline. • The error theory • The somatic mutation theory

THE ERROR THEORY • The error theory proposes that errors in ribonucleic acid protein synthesis cause errors to occur in cells in the body, resulting in a progressive decline in biologic function. • Error theory Aging is a result of internal or external assaults that damage cells or organs so they can no longer function properly.

THE SOMATIC MUTATION THEORY • The somatic mutation theory proposes that aging result from deoxyribonucleic acid (DNA) damage caused by exposure to chemicals or radiation and this damage causes chromosomal abnormalities that lead to disease or loss of function later in life. • Exposure to x-ray radiation and or chemicals induces chromosomal abnormalities.

CELLULAR THEORIES • The cellular theories propose that aging is a process that occurs because of cell damage. • When enough cells are damaged, overall functioning of the body is decreased. • The free radical theory • The crosslink or connective tissue theory • Clinker theory • The wear and tear theory

THE FREE RADICAL THEORY • Denham Harman 1956. • The term free radical describes any molecule that has a free electron, and this property makes it react with healthy molecules in a destructive way. • Free radical molecule creates an extra negative

charge. • This unbalanced energy makes the free radical bind itself to another balanced molecule as it tries to steal electrons. • Balanced molecule becomes unbalanced and thus a free radical itself. • Diet, lifestyle, drugs (e.g. tobacco and alcohol) and radiation

THE CROSSLINK OR CONNECTIVE TISSUE THEORY/ GLYCOSYLATION

THEORY OF AGING • Cell molecules from DNA and connective tissue interact with free radicals to cause bonds that decrease the ability of tissue to replace itself. • The results in the skin changes typically attributed to aging such as dryness, wrinkles, and loss of elasticity. • Fibrous tendons, loosening teeth, diminished elasticity of arterial walls and decreased efficiency of lungs and GI tract. • It is the binding of glucose (simple sugars) to protein, (a process that occurs under the presence of oxygen) that causes various problems. • Senile cataract and the appearance of tough, leathery and yellow skin.

THE CLINKER THEORY • The clinker theory combines the somatic mutation, free radical and cross link theories to suggest that chemicals produced by metabolism accumulate in normal cells and cause damage to body organs such as the muscles, heart, nerves and brain.

THE WEAR AND TEAR THEORY • Body is similar to a machine, which loses function when its parts wear out. • As people age, their cells, tissues and organs are damaged by internal or external stressors. • Good health maintenance practices will reduce the rate of wear and tear, resulting in longer and better body function.

THE NEUROENDOCRINE THEORY • Prof Vladimir Dilman and Ward Dean • this theory elaborates on wear and tear by focusing on the neuroendocrine system. • This system is a complicated network of biochemicals that govern the release of hormones which are altered by hypothalamus. • The hypothalamus controls various chain-reactions to instruct other organs and glands to release their hormones etc. The hypothalamus also responds to the body hormone levels as a guide to the overall hormonal activity. Accordingly, as ages the secretion of many hormones declines and their effectiveness is also reduced due to the receptors down- grading.

IMMUNOLOGIC THEORY • The immunologic theory proposes that aging is a function of changes in the immune system. • The immune system weakens over time,

making an aging person more susceptible to disease, increase in autoimmune disease and allergies • Over time, cells involved in immune function are less self-regulatory, resulting in cells being misidentified as foreign material and being attacked by the immune system's own defenses. Eg: rheumatoid arthritis (RA) and lupus.

THE MITOCHONDRIAL DECLINE THEORY • The power producing organelles. • Their primary job is to create Adenosine Triphosphate (ATP) and they do so in the various energy cycles that involve nutrients such as Acetyl-L-Carnitine, CoQ10 (Idebenone), NADH and some B vitamins etc. • Enhancement and protection of the mitochondria is an essential part of preventing and slowing aging.

THE MEMBRANE THEORY OF AGING • Professor Imre Zs. • It is the age-related changes of the cells ability to transfer chemicals, heat and electrical processes that impair it. • As older the cell membrane becomes less lipid (less watery and more solid). This impedes its efficiency to conduct normal function and in particular there is a toxic accumulation.

CONCEPTS IN THE GENETIC THEORY OF AGING • Telomeres • Longevity genes • Cell senescence • Stem cells • Epigenetics

The subculture theory } The continuity theory } The activity theory } The
disengagement theory } PSYCHOSOCIAL THEORIES • Psychosocial theories of aging attempt to explain changes in behaviour, roles and relationship that occur as individual age. • This attempt to predict and explain the social interactions and roles that contribute to successful adjustment to old age in older adults.

DISENGAGEMENT THEORY • Cummings and Henry(1961) states that aging people withdraw from customary roles and engage in more introspective, self-focused activities. • The disengagement theory was developed to explain why aging process separate from the mainstream of society. • This theory proposes that older people are systematically separated, excluded, or disengaged from society because they are not perceived to be of benefit to the society as a whole. • This theory further proposes that older adults desire to withdraw from society as they age, so the disengagement is mutually beneficial.

THE ACTIVITY THEORY • This theory proposes that activity is necessary for successful aging. • Active participation in physical and mental activities helps maintain functioning well into old age. • Purposeful activities and interactions that promote self-esteem improve overall satisfaction with life, even at the older age. • The continuation of activities performed during middle age is necessary for successful aging (Lemon, Bengston and Peterson, 1972).

THE CONTINUITY THEORY • The continuity theory (Neugarten, 1964) state that personality remains the same and the behaviours become more predictable as people ages. • Personality and behaviour pattern developed during a life time determine the degree of engagement and activity in older adulthood. • Personality is a critical factor in determining the relationship between role activity and life satisfaction.

THE SUBCULTURE THEORY • Rose (1965) theorized that older adults form a unique subculture within society to defend against society's negative attitude toward aging and the accompanying loss of status. • Older adults are a subculture with their own norms and beliefs. The subculture occurs as a response to loss of status. • In the subculture, individual status is based on health and mobility, instead of on education, occupation and economic achievement.

CONCEPT OF PSYCHOSOCIAL THEORIES • Disengagement theory views aging as a process of mutual withdrawal in which older adults voluntarily slow down by retiring, as expected by society. Proponents of disengagement theory hold that mutual social withdrawal benefits both individuals and society. • Activity theory, on the other hand, sees a positive correlation between keeping active and aging well. Proponents of activity theory hold that mutual social withdrawal runs counter to traditional American ideals of activity, energy, and industry

Jung's theory } Peck's } Newman's } Havighurst's } Erikson's }

DEVELOPMENTAL THEORIES

■ Developmental theories or life-course theories -These theories trace personality and personal adjustment throughout a person's life. Many of these theories are specific in identifying life- oriented tasks for the aging person.

Integrity versus despair ◊ Generativity versus stagnation ◊ Intimacy versus isolation
 ◊ Identity versus identity confusion ◊ Industry versus inferiority ◊ Initiative versus
 guilt ◊ Autonomy versus shame and doubt ◊ Trust versus mistrust ◊ Erickson's (1963)
 theory identifies eight stages of developmental tasks that an individual must complete
 throughout the life span:

1. ERIKSON'S THEORY

- The last of these stages is the domain of late adulthood, but failure to achieve success in tasks earlier in life can cause problems later in life.
- The stage pertaining to older adults is : Ego integrity versus Despair.
- The task of this stage is acceptance of one's life as meaningful and that death is part of life, versus despair, which is failure to accept the meaningfulness of one's life, along with fear of death.

2. PECK'S THEORY • Peck expanded Erikson's theory and focused more on later developmental stages.
 - Body transcendence versus body preoccupation is a phase concerned with enjoyment of life in the face of physical discomforts associated with aging.
 - Ego transcendence versus ego preoccupation is a phase concerned with the older adult's ability to focus on the welfare of the future generation rather than on one's own inevitable death. establishing satisfactory living arrangements.
 - Later maturity is Havighurst's term for older adults.
 - The task for later maturity is disengagement. Disengagement from tasks of middle age allows involvement in new roles such as grandparent, citizen, friend. ◊ adapting to social roles in a flexible way, and ◊ establishing a relationship with one's age group, ◊ adjusting to the loss of a spouse, ◊ adjusting to retirement and decreased income, ◊ adjusting to decreased physical strength and health, ◊

Developing a point of view about death. ◊ Accepting one's own life; and ◊ Redirecting energy to new activities and roles including retirement, grandparenting and widowhood ◊ Coping with the physical changes of aging ◊

NEWMAN'S THEORY • Newman's theory identifies the task of aging as

3. JUNG'S THEORY

• Jung's theory proposes that the development continues throughout life by a process of searching, questioning and setting goals that are consistent with the individual's personality. • As individuals age, they go through a reevaluation stage at midlife, at which point they realize there are many things they have not done. • At this age they begin to question whether the decision and choices they have made were the right choices for them. This is so called "midlife crisis", which can lead to radical career or lifestyle changes or acceptance of the self as is. • As aging continues, Jung proposes that the individual is likely to shift from an outward focus (with concerns about success and social position) to a more inward focus. • Successful aging includes acceptance and valuing of the self without regard to the view of others.

4. CONCEPTS OF DEVELOPMENTAL THEORY • The concepts based on the identification of traits and characteristics that may be developed early in life or may change emphasis at different stages of development. • Those who succeed at the final task also develop wisdom, which includes accepting without major regrets the life that one has lived, as well as the inescapability of death. • However, even older adults who achieve a high degree of integrity may feel some despair at this stage as they contemplate their past. •