

Causes and Bio-Psycho-Social Changes Associated with Aging: A Review of Qualitative Literature

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Abstract

The term aging denotes the concluding phase of life, with gradual decline normally starting from the age of 60 years. The process of aging has been taken in different perspectives by the different people. The progressive decline spread over the course of entire life in terms of functioning and quality of life are the two principal distinctions of aging. Aging brings a number of visible and non-visible changes in the functions and structure of different organs of the body. Changes in the five basic senses e.g. touch, taste, smell, vision and hearing, and loss of hair, teeth, strength, weak memory, overall weakness and incapacity of the cardiorespiratory, digestive and other systems of the body are the part and parcel of aging. In some parts of the world, the segment of population representing the age group of 85 is the fastest growing segment of population. The age group above 60 and above represented around 12% of the global population in 2017. Experts also assume that there will be 1.2 billion and 2 billion people representing the age group above 60 in 2025 and 2050 respectively and most of them around 80% of them will belong to the developing countries. Different theories of aging are presented from time to time presenting diverse point of view of the social scientists; main theories include Disengagement Theory of aging, Continuity Theory of aging, Wear-and-tear Theory of aging, The Neuroendocrine Theory of aging, Activity Theory of aging, The Membrane Theory of Aging, Programmed Theory of aging, Human Needs Theory of aging, Life-Course Theory of aging, Disengagement Theory of aging. This review paper has evaluated the existing literature encircling the issue of aging, its nature, the process of aging, its effects, future prospectus and measures to slow down its progress.

Keywords: Aging, Population, Life, Theory, Elderly, Deterioration, Decline

Introduction

The term aging has very comprehensive and diverse sphere of meanings. Aging is a lifelong continuous process comprised of a series of events happening throughout the life. Literally, the story of aging begins with the inception of life and ends at death. Kocemba (2007) has documented that aging process is reflected in the social, biological and psychological aspects of life. The aging span of life is, sometimes, linked with the different developmental stages of life; beginning with the growth and developmental stage followed by stage of maturity and finally the last episode of senescence (Murray et al., 2015). Since human life has diverse aspects therefore the aging process is also viewed from different angles including functional aging, psychological aging, biological aging, social aging and chronological aging etc. These segments of aging differ from one another in terms of growth, development, feelings, ability and maturity. Functional age, for example, deals with the working abilities of a person in relation to the age; whereas psychological age is associated with one's own status related to how does s/he feels, behaves or act in relation to his/her age or the capabilities enabling a

person that how effectively s/he adapts to the changing environmental demands. Similarly, biological age is associated with the rate of physical growth; chronological age refers to the actual days, months and years of one's life and social age reflects the behavioral interaction of a person with the other people.

The Concept of Aging

The term aging, elderly, old-age or senescence have interchangeably been used in the literature for one another. According to Pędich (2007) old-age is the last phase of aging process. Old age is the concluding stage of life wherein decline in the physical and mental capabilities of the person are its common manifestations (Amiri et al., 2020). World Health Organization (WHO) has divided the old-age into three distinct portions; 60-74 years represents the early old-age followed by 75-90 years, late old-age and finally 90 years and above, the long lived (Jaspers et al., 2017). So far as the starting age of elderly or old-age is concerned, disagreement exists from nation to nation, culture to culture and organization to organization. The threshold age of elderly is 60 and 65 for the WHO and United Nations Organization (UNO) respectively (Bann et al., 2017). Similarly, the starting bench mark for elderly is 50, 60 and 65-70 years in Samoa, Japan and Thailand respectively.

Bodily Changes associated with Aging

Experiencing different types of changes has been the principal distinction of the old-age, these changes may be sensory, social, biological or psychological. However, individual having healthy lifestyle, proper nutrition and ample amount of sleep are expected to avoid a few of them. As a matter of common observation, a number of changes in the different dimensions associated with the structure and functioning of the body take place for different individuals representing different age groups. It is simply age that first brings weight, height, maturity and climax in terms of power and strength and subsequently diminishes all these one by one. With the passage of time as the person ages, the working quality of these senses deteriorates and the story of old-age gets underway. In human body, five basic senses e.g. touch, taste, smell, vision and hearing remain functional throughout the life for transmitting environmental information to the body. The process of decline of these senses is linked with the increase in the age.

Touch

Skin works as the protective shield that safeguards the body from the effects of the outer environment. Skin works as the solar-panel for the production of Vitamin-D for the body and the risk of its deficiency increases. Aging renders the skin thin and soft, less elastic, drier, wrinkles appear on necked areas of the body and, no account of deterioration of the proper functioning of the sweat glands, its sensitivity to hot and cold increases and its capacity to maintain the body temperature decreases. Skin health and sunlight have very close association; avoidance of frequent exposure to the sunlight gives younger look to the skin in relation to the age. (Wickremaratchi and Llewelyn, 2006) have concluded that receptors of the skin muscles have the ability to feel hot and cold, detect touch and pain.

Taste

Taste refers to the chemical reaction of the taste receptors with any substance in mouth stimulating sensation of flavor of being salty, sweet, sour or bitter. Taste is, in fact, ability of the taste-buds that distinguishes among different flavors inside the mouth. Aging causes decline in the sensitivity of the taste-buds particularly among male. Taste loss happens after the age of 70 at a mild scale not common in everyone (Imoscopi et al., 2012). On account of taste loss, the affected people complains about the taste and quality of their foods. Boyce and

Shone (2006) have documented that loss of taste leads to avoid different foods of choice. Decline of the proper functioning of the taste buds with the increase in age beyond 70 is a normal happening (Toffanello et al., 2013). Loss of appetite and nutritional deficiency are the ultimate outcomes of loss of taste.

Smell

Aging is the principal cause of deterioration of the sense of smell (Hagger-Johnson et al., 2017). Decline in the ability to detect odours and smell properly is routine sensory activity in humans particularly after the age of 70 (Stafford et al., 2017). Olfactory neurons present in the nose detect the smells, impaired state of functioning is called hyposmia. Psychologically speaking, defective sensitivity to smell affects the quality and attraction of life and it is likely to negatively affect dietary pattern and desire to food (Alonso-Pedrero et al., 2020). Ultimately, the situation deteriorates to an extent that the person loses the ability to differentiate between different smells. Male are more prone to this problem as compared to female. It is estimated that around half of the population is likely to be affected by this issue between 65-80 years of age. Since the senses of taste and smell works in close proximity, therefore impaired sense of smell may lead to lack of interest in different items of food and drink on part of the affected one.

Vision

Perhaps vision is the most important sensory ability that enables the person to witness the attraction and charm of the life. The role of vision is second to none in this regard. Gradual loss of vision around 40s has been the routine change and the person slowly begins to feel difficulty in viewing the things (Jones et al., 2019). Fluency of the eyes movement begins to reduce and, in comparison to the young one, an older person takes longer to adjust to the variation in lighting. Among the aged population, around 15% are likely to confront to the impairment of serious nature. Abd-Allah et al. (2018) have concluded that decline in the vision leads to difficulty in reading, writing, driving, balancing and other tasks requiring accuracy. WHO [World report on vision], (2019) has concluded that impairment associated with vision one of the most prevalent public health problem among the aging ones. According to a careful estimate, in 2020, there were around 1.1 billion people who were facing the vision impairment issues related to distance viewing and it is expected that by the year 2050, this number may reach the figure of 1.8 billion (GBD, 2019). However, a sizable proportion of the vision impairment cases is avoidable and preventable simply with the help of ordinary intervention (Flaxman et al., 2017; Fung et al., 2010).

Hearing

Like other sensory functioning, hearing impairment is also associated with the process of aging. Initially the impairment begins with the difficulty in differentiating the sounds of different words (Khullar & Babbar, 2011). Hearing impairment may lead to social isolation as the person feels embarrassment for his defective hearing capacity and for asking the person to repeat the word or sentence. It is estimated that hearing impairment exists in around 30% of the people having the age >60 and around 33% of the affected population was having the age between 75-85 years who were confronted to hearing loss. Hearing is one of the basic requirements for effective communication and prompt interaction with other individual (Cohen-Mansfield et al., 2015). Among the aging population, its common prevalence has brought it to the third position among the most common chronic health conditions among the population above 65 (WHO, Deafness and hearing loss. Fact sheet N°300. Mar 1, 2020). Muazzam and Jabeen (2016) have concluded that hearing impairment has psychological and

emotional effects causing frustration, social isolation, stress and depression. Hearing impairment and aging go side by side, it leads the person to poor self-image, inferiority complex and anxiety and poor health quality (Cheema et al., 2020; Contrera et al., 2016; Ejaz et al., 2020; Mehboob et al., 2019).

In addition to the above senses, there are a few other areas where aging affects outlook and functioning capacity of different organs and systems of the body which alternately affects normal human life. These include decrease in density of bones and muscles mass, muscular strength and vigour and quality of life (Faulkner et al., 2007). Loss of teeth, loss of hair, change of hair colour, weakness of memory, general physical weakness and dependence are a few common drop scenes of the elderly. In social perspectives, on account of deterioration of hearing, vision, memory and working capacity, the person feels deprivation and social isolation. Keeping close association with someone, sharing one's own feelings with any relative or friend plays vital role in avoiding the feelings of social isolation.

Theories of Aging

Based on the human curiosity, researchers, sociologists and gerontologists have worked to find answer the two basic questions as to why and how do we age? This thing led them to think according to their own logic and reasoning and establish an understanding called theory. Sell and Monnier (2012) have documented that changes associated with the elderly were the basic factors which attracted attention of the researchers to think and establish different theories. The underlying purpose of all these efforts has always been to evaluate and determine the relationship between the response of the aging processes to the different factors. The first landmark achievement was achieved by Birren and his team when disease and aging were declared two different phenomenon ([Birren et al., 1963](#)). [Aging is a multidimensional phenomenon having association with the discipline of](#) anthropology, sociology and psychology, however, bio-gerontology has played leading role in providing basic information about the genetics of aging.

A number of theories focusing process, mechanism and causes of aging have been presented from time to time. The most common theories of aging areas under:

1. Continuity Theory of aging (Haighurst, Neugarten, and Tobin, 1968)
2. The Activity Theory of aging (*Robert J. Havighurst*, Neugarten, Tobin, 1963)
3. Disengagement Theory of aging (Elaine Cumming and Warren Earl Henry, 1961)
4. Wear-and-tear Theory of aging (Dr. August Wiesmann, 1882)
5. The Neuroendocrine Theory of aging (Professor Vladimir Dilman and Ward Dean MD (1954)
6. The Membrane Theory of Aging (Johan Bjorksten, 1942)
7. Programmed Theory of aging (*Libertini*, 1988)
8. Human Needs Theory of aging (Abraham Maslow, 1954)
9. Life-Course (Lifespan development) Theory of aging (*Giele and Elder*, 1998)
10. Disengagement Theory of aging (Cumming and Henry, 1961)

Aging Population

There are different segments of population representing various age groups and it is generally estimated that, in comparison to the other age groups, the age group of sixty and above is the most rapid growing group of population. According to (Murray et al., 2015), in some parts of the world, the segment of population representing the age group of 85 is the fastest growing segment of population. Healthy and long life is the innate quest of all living beings (World

Health Organization, 2020). The age group above 60 and above represented around 12% of the global population in 2017. Experts also assume that there will be 1.2 billion and 2 billion people representing the age group above 60 in 2025 and 2050 respectively and most of them around 80% of them will belong to the developing countries. United Nations, World population aging: highlights, (2017) has documented that among the age group of 60 to 79, there will be 45% and 41% female and male respectively. In 2000 the age group which was representing 65 and above was 12.4% of the population and by 2030 they will represent 20% of the population. In developing countries, the proportion of the people representing the age group of 60 and above has been on rapid rise as compared to the developed nations (Dobriansky et al., 2007).

Factors affecting Aging

Aging is a lengthy process characterized by the gradual functional and structural decline. It is a natural phenomenon and it goes on in upward direction by itself. Different types of tools and techniques are used for measuring the aging process; in some cases, age is determined by days and years, in other, it is measured by intelligence quotient (IQ). Similarly, in one instance it is determined by maturity and in another, it is measured by functional capacity and behavior of the individual. Alongside the natural process of aging, there are a number of factors that play significant role in affecting this process. The most common factors that affect the aging process include lifestyle, diet, physical activity, sleep, stress, anxiety, body composition, poverty, diseases, family and life incidents, mental, emotional and psychological disturbance and social isolation. Irrespective of the role of a number of factors affecting aging, experts place particular emphases upon healthy diet and physical activity in healthy aging and longevity of life.

Diet, Nutrition and Aging

Internal functioning of the different systems inside the body and external working functionality of the person depends upon the prompt and uninterrupted supply of fuel. In literature the role of nutrition in relation to healthy aging is well documented (Stromsnes et al., 2021). Diet and nutrition serve this vital job of supplying required calories and nutrients to the body enabling the person to be active and energetic. Kiefte-de Jong et al. (2014) have concluded that prevention of the diseases associated with the elderly and maintenance of good health during old age are closely related to the provision of healthy diet and dietary pattern of the person. As a matter of common observation, maintenance of health and functional independence in the elderly rely greatly upon the provision of healthy diet carrying necessary nutrients in relation to the needs of the person who eats it (Jacques & Tucker, 2001). Preservation of health for elderly needs timely measures and the role of having proper diet is vital in this regard (Roberts et al., 2021). Aging is the ultimate result of the life process and proper nutrition is primary factor that determines the healthy aging (JP Baeyens et al., 2006). The role of diet in perspectives of healthy life and elderly is well documented (Stevenson, 2017). However, Robinson (2017) has concluded that, in case poor diet is served for a longer period of time, will result in deteriorating health standard and will lead to high rate of mortality.

Physical Activity and Aging

Positive effects of physical activity on health, aging and longevity have been well documented. A number of studies have confirmed that physically active lifestyle has very promising effect on aging (Duggal et al., 2019). Literature has confirmed that physical

activity has been one of the basic health behaviours of the elderly. Regular physical activity has been identified as the factor having substantial positive effect on the quality of life and aging process of the elderly (Simpson et al., 2012). Research has also documented that aging and weak population can have substantial benefits from participation in physical activities if they are designed to serve their needs (Pahor et al., 2006). Sun et al. (2010) have documented that regular physical activities have a number of benefits for the elderly and is likely to slow down the aging process. Irrespective of the age, intensity of the activity and nature of involvement, physical engagement and health have an intimate relationship. (Manini et al. (2006) have concluded that physical activity of even low nature may prove beneficial for the aged population.

Conclusions

Pivot of this investigation was to review the available literature in perspectives of the different issues associated with the quality of life of elderly and to evaluate the aging process encircling the bio-psycho-social aspects of the aging ones. Aging is the natural process bringing gradual decline in the quality, perfection, output and fine-tuning of the different organs and systems of the body. As the person ages, s/he gets acclimatized with the weakening performance and working capacity of the different systems of the body. As a general rule, the youth segment of population of today transforms the aging section of the population of tomorrow. Literature has confirmed that following healthy lifestyle and health habits during the pre-elderly period mostly have healthy aging, longevity and sense of wellbeing during elderly. Regular physical activity and healthy diet are the two principal component of healthy lifestyle and have got very efficient role in avoiding cardiovascular diseases, obesity, musculo-skeletal problems and dependence during elderly. Research has also documented that sleep, stress, anxiety, body composition, poverty, diseases, family and life incidents, mental, emotional and psychological disturbance and social isolation affect the process of aging.

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