



PSYCHO-BIOLOGY OF AGEING WITH REFERENCE TO ITS ISSUES AND CHALLENGES

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ABSTRACT

Aging is a multifactorial process, which affects the human body on every level and results in both psychological and biological changes. Gerontology is the scientific study of aging and older adults, evolved as longevity with diverse field areas such as physiology, social science, psychology, public health and policy. The present paper is a review on psycho-biology of ageing with reference to its issues and challenges.

KEYWORDS: Ageing, Psycho-biology, Scientific study, Issues and challenges.

INTRODUCTION

The field of study of gerontology was emerged in the 1930s during the first studies on behavioral and social gerontology. Thereafter in the 1970s and 1980s, research confirmed the importance of the physical and social environment in understanding the aging population and improved the quality of life in old age. There are two main types of gerontology namely social gerontology and bio-gerontology. As their names indicate, social gerontology deals more with the social and emotional aspects of aging while bio-gerontology studies the physical and biological aspects. On the contrary, 'Bio-gerontology' is the study of the biological basis of ageing and age-related diseases. The phenomenon and the process of ageing are well understood in evolutionary and biological terms and a conceptual framework has been established within which general principles of ageing and longevity can be formulated. Researchers pointed out that there is no specific age but most patients who have a geriatrician as their primary care physician are 75 years of age or older (Carstensen, 2006; Bergland *et al.*, 2014; Zhavoronkov *et al.*, 2019 and Mitina *et al.*, 2020). The information is used to develop strategies and programs for improving the lives of older people. This phenomena can also be mentioned with three phases, (a) Pre-reproductive Phase (b) Reproductive Phase & (3) Post-reproductive Phase, however the ageing real issue is post-reproductive phase and corroborated with chronological age, biological age, mental age, and psychological age, which are the landmark issues and challenges for ever.

MATERIALS AND METHODS

The present review paper is based on the backgrounds of different literatures, research papers, articles including help of valuable and authentic resources through e-newspapers and different webpages returned from different Google search to contribute knowledge for mass people, students, scientists and acedemicians.

RESULTS AND DISCUSSION

As the title of the paper deserves, the biological and psychological issues are being incorporated for the vital knowledge of aging.

(A) Biological Issues of Ageing

The biological issues of ageing advocated cellular senescence, specifically, which is the process of cellular aging. A senescent cell is generally larger than its non-senescent counterparts. Senescent cells no longer divide in an effort to protect themselves and the tissue surrounding them from inaccurate or harmful replication errors. They found people tend to fall into one of four biological aging pathways, or ageotypes: immune, kidney, liver or metabolic. Snyder said that metabolic agers, for example, may be at a higher risk for type 2 diabetes as they grow older. Likewise many changes in skin, hair, sound, vision, bones, sexual functioning (sperm & ovum decreased counting) occur during normal aging (Fig.1).



Fig. 1: Showing normal ageing (Source: Google.com).

On the other hand, in individual cells, senescence occurs when a cell can no longer divide. Cells at first divide quickly, then more slowly, until eventually mitosis stops. The size and shape of the cells changes, and debris accumulates inside them. In addition, genetic damage can accumulate in cells over time through exposure to sunlight and radiation, and through free radicals that are cell by-products. Telomeres, which are regions of DNA at the end of a chromosome, are ultimately responsible for the stopping of mitosis. Telomeres shorten with each cell division, and over time when they become very short, the cell can no longer divide. Epigenetics can also mark accurate chronological time versus biological time. Our chronological age is based on our birthdate, but biological age means the true age that our cells, tissues, and organ systems appear to be, based on biochemistry. These epigenetic changes are responsible for human diseases, including Fragile X syndrome, Angelman's syndrome, Prader-Willi syndrome, and various cancers. Recently, it has been well documented that epigenetic mechanisms like DNA methylation and histone modifications regulate the expression of immune system-related genes, modifying the development of the innate and adaptive immune responses. A remarkable achievement in ageing came in 2012, where the Nobel Prize recognizes two scientists John B. Gurdon and Shinya Yamanaka, who discovered that mature, specialized cells can be reprogrammed to become immature cells capable of developing into all tissues of the body. Their findings have revolutionized our understanding of how cells and organisms develop. Piantanelli *et al.*, 1980 has the hypothesis of the thymus acting as biological clock for ageing is revisited. On the basis of data on the endocrine action of the gland, the age-dependent involution of the thymus is postulated to play a fundamental role on the deterioration of the immunological as well as the endocrine functions. Data either on beta-adrenergic responsiveness to Isoproterenol or on hormonal balance, tested on animal model with different degree of thymus efficiency, support this hypothesis. So, many more studies on biological ageing are on the record today. (Małgorzata and Rafal, 2014; Jylhava, 2017 and Squassina *et al.*, 2019).

(B) Psychological Issues of Ageing

Inability to cope with everyday routine, problems in maintaining hygiene, home or garden should not be disregarded-they are often a sign of mental illness in

older people, and hence, mood swings, ranging from e.g. being carefree to anxious are indicative of psychological issues. It is estimated that 20% of people age 55 years or older experience some type of mental health concern. The most common conditions include anxiety, severe cognitive impairment, and mood disorders (such as depression or bipolar disorder). Mental health problems are common among seniors and may include isolation, affective and anxiety disorders, dementia, and psychosis, among others. Many seniors also suffer from sleep and behavioral disorders, cognitive deterioration or confusion states as a result of physical disorders or surgical interventions.

Natural changes happen in the body as we age, such as skin damage from sun exposure, loss of muscle and physical strength, loss of some sight and hearing, as well as changes to our sleep patterns, energy levels and appetite. Some most common mental health disorders and their related symptoms are Younger and older General Anxiety Disorders, Mood Disorders, Psychotic Disorders, Dementia, Eating disorders. On the other side, behavioral changes in aging adults seen like, Memory Issues, Lack of Interest, Aggressive Behavior, Increased Irritability, Thriftiness, Attention Deficit Hyperactivity Disorder (Adults), Bipolar Disorder, Borderline Personality Disorder, Child and Adolescent Disorders, Chronic or Persistent Pain, Depression and Eating Disorders and Obesity (Beutel, 2018; Zachary, 2021 and Palma-Gudiel, 2020).

Challenges of Bio-Psychological Issues Of Aging

Some challenges faced by the elderly include- a lack of physical infrastructure, companionship, mental health issues, lack of financial support and emergency response services. Elderly people often face health problems like cardiovascular diseases and mobility issues, but society has an ableist vision. For aging adults who live alone and no longer work, they may have limited social interaction. The elderly who also experience health issues have a difficult time getting out of the house and interacting with others. The Biggest Challenges for Elderly People in Our Society are Ageism and a lost sense of purpose, Financial insecurity, Difficulty with everyday tasks and mobility, Finding the right care provision, Access to healthcare services and End of life preparations. On the contrary, the rapid aging of populations around the world presents an unprecedented set of challenges: shifting

disease burden, increased expenditure on health and long-term care, labor-force shortages, dissaving, and potential problems with old-age income security. In India, loneliness and isolation are definitely a major concern among elders who are above the age of 60. Isolation basically can result in gradual depression and other mental disorders in the elderly. The rapid aging of populations around the world presents an unprecedented set of challenges: shifting disease burden, increased expenditure on health and long-term care, labor-force shortages, dissaving, and potential problems with old-age income security. Multiple problems in old age homes, include psychological, physical, emotional, lack of facilities, and health challenges also. As highlighted in the report, many of the issues in the industry are due to a lack of funding, overworked and underpaid staff, lack of resources and lack of technological innovation to enhance efficiency.

In both rural and urban communities, helping older adults get and stay meaningfully engaged is critical for their health and the health of our communities. New and creative ways are needed to not only tap into their wisdom but also to provide opportunities for lifelong learning and meaningful engagement across the lifespan. People are living longer and traditional models of work and retirement have not kept pace. Financing longevity will require new models, new tools and new norms. New opportunities for later life employment, new models for planning and financing care and better ways to prevent scams and fraud are needed. Everyday objects, homes and communities not originally designed with longevity in mind often become obstacles to movement, safety, independence and socializing. Remaining safe and mobile are top priorities for older adults. There is a need for products, programs, and services that enable people to maximize their safety, strength, balance, fitness, independence and mobility as they age. The majority of older adults state a preference to “age in place,” yet one third of people over 65 need assistance with at least one activity of daily living (e.g. eating, bathing, dressing). Products and services are needed to help support not only older adults’ basic daily activities but also to foster and support their ability to thrive, pursue their passions and engage with their chosen lifestyles. Care for older adults is provided by informal (unpaid) and formal (paid) caregivers. Both groups are increasingly caring for people with higher levels of acuity and complex conditions. Family caregivers-who are often juggling other family and work responsibilities and living remote from the care recipient-need better support, training, resources and tools to help them take care of their loved ones and themselves. The health care journey can be particularly complex and fragmented for older adults, two-thirds of whom have at least two chronic conditions. With the overwhelming majority of health care dollars spent managing chronic conditions, families and health insurance providers are aligned in their desire to care for people in the least restrictive, most cost effective setting. Families and providers need new tools and care models

to support care transitions, clinical collaboration, medication management, population health management and remote care delivery. Alzheimer’s disease is the 6th leading cause of death in the United States and is projected to cost \$1.1 trillion by 2050. Incidence of Alzheimer’s disease is 33% among people over 85 years old, the fastest growing segment of the population. While there remains no cure for Alzheimer’s disease, better tools and services are needed to increase awareness, develop tools for early prediction and diagnosis, optimize cognitive fitness, slow cognitive decline and support caregivers. Death is inevitable, but that doesn’t seem to make it any easier to talk about or prepare for. As a result, 25% of the Medicare budget is spent on the last year of life and many people still do not die where or how they want. Families and providers need help navigating end of life options, having the difficult conversations and ensuring that end of life wishes are met (Katy Fike, 2018).

CONCLUSION

Finally it can be concluded that one and all can understand the challenges of bio-psychological aspects with a zeal of helpfulness and their solutions that reflects a significant need.

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