

Review article

Geriatric population and relevant contemplation

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Abstract

The number of geriatric population, both in absolute value and as a proportion of the population has been rising since 1900. Currently 10% of world population is over 60 years, which is expected to increase to 20% by the year 2030. Life expectancy has been increasing for the population as a whole. Bangladesh is currently undergoing a demographic transition and the projection of the population ≥ 60 years is rapidly increasing. Bangladesh's elderly population is one of the largest in the world in terms of absolute number. This change in population characteristics will have serious consequences on the society as well as on overall socio-economic development of the any country. In old age, high prevalence of morbidity is a common feature and health care expenditure for the elderly persons is much higher compared to the younger adult. There is a striking increase in the life expectancy and geriatric population is increasing day by day. On the otheur hand morbidity and mortality also increase with age. So, it is essential to know adequate information regarding geriatric population with their common health problems along with appropriate health care & preventive measures for the better quality of their health.

Key words: Geriatric, health, elderly, population

Introduction

Geriatric population is defined as population aged 60 years & above. In the past United Nations & other international agencies used 60 years as a criterion of elderly but more recently there is a growing consensus that ≥ 65 years should be used. The phenomenon of population aging is already a major social & health problem in developed countries. As a proportion of the total population, the geriatric population has been steadily increasing over decade. This rapid growth of the population of the elderly is a challenge to medical profession, the administration & society.¹

It is common to define geriatric population by following age limits : the young old as aged 60 to 69 years, the old

as aged 70 to 79 years& oldest old as aged 80 years & over.² The majority of oldest old persons, aged 80 years or older and currently 70 million in number , live in more developed region. They make up about 1% of world's population and 3 % of the population of the more developed region. This oldest old group is the fastest growing segment of older population.³

In Bangladesh aging population has become an important social concern because, unlike many other developing countries, there is no social security system. In the view of the size of population, scarcity of resources, existing poverty, insufficient health facilities and absence of social security; aging is going to be major problem in Bangladesh. There is a trend in increase in longevity of elderly people which will accentuate the problem of elderly care in the coming years.⁴

Current situation of senior citizen

The number of person aged 60 yrs or older is estimated to be 605 millions in 2000. This number is projected to grow to nearly 2 billion by 2050, at which time it will be as large as the population of children aged 0 to 14 years. Persons aged ≥ 60 currently comprises 10% of world population. The percentage is much higher in the more developed region (20%) than in the less developed region(8%). Among the individual countries, the most aged are in Greece & Italy, where 24% of the population is aged 60 years or older in 2000. Many European countries, as well as Japan, have percentages nearly as high. By 2050, the older ages will make up a projected 22% of the world population.

The majority of the world's older persons (53%) reside in Asia, while Europe has the next largest share (24%). Asia's share of the older population will increase to 63% by 2050.³ According to global aging statistic, almost 1 in 10 people are over 60 years, 1 in 5 peoples will be over 60 years by 2050, peoples over 60 will outnumber children age 0 to 14 by 2050.⁵ The number of older population (persons 65 years or older) is 39.6 million in 2009 (the latest year for which data is available). They represented 12.9% of the US population, about one in every eight Americans. By 2030, there will be about 72.1 million older persons, more than twice their number in 2000. Peoples ≥ 65 years represented 12.4% of the population in the year 2000 but are expected to grow to be 19% of the population by 2030.⁶ (Figur-1)

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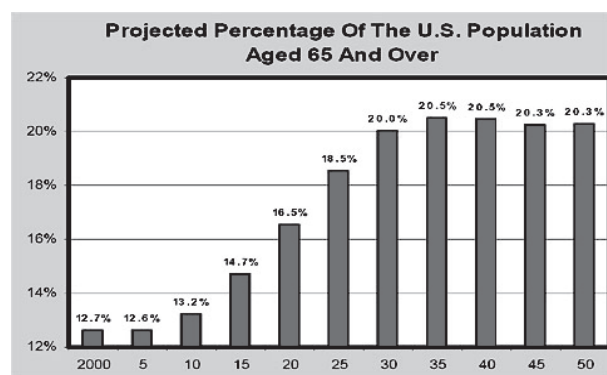


Figure-1: Projected percentage of US population aged 65 and over

Bangladesh is currently undergoing a demographic transition and the proportion of the population 60 years and older is rapidly increasing. Bangladesh's elderly population is one of the largest in the world in terms of absolute numbers. Currently, older people account for around 7% of the country's total population, amounting to roughly 10 million people. By 2050, the ≥ 60 population will account for 20% of the total population - a fourfold increase from the present time. The increase in elderly population in Bangladesh during the period 1990-2025 is projected to be much faster (219%) than that of European countries such as Sweden (33%), UK (45%) or Germany (66%).⁷

Considering the average life expectancy of the people of Bangladesh, which is now 67 years, the Government of Bangladesh amended the public retirement act 1974, raising the retirement of its employees to 59 years. The retirement age for supreme Judges is 67 years and for teachers 65 years in Bangladesh.^{8, 9}

Physiology of geriatric population

Human aging is a physiological fact. This affect cells, tissues, organ & systems of the body. Many theories have been introduced to explain aging of a cell namely random mutation in the DNA of somatic cells, increased cross-linkage of collagen & other proteins, effects of free radical to the tissue, biological clock and apoptosis.¹⁰

The connection between the nervous system, aging and longevity are manifold and profound. An animal's nervous system not only controls its homeostatic responses but also alters its life span and aging process. Recent literature showed that aging is modulated by a complex interplay between the environment, genes, signaling networks and tissues.¹¹

Physiological changes occur with aging in all organ.

The cardiac output decrease, systolic blood pressure increases, atherosclerosis develop, the lungs shows impaired gas exchange, vital capacity decreases & expiratory flow rate slows down. The creatinine clearance decrease with age. Progressive elevation of blood glucose occurs with age & osteoporosis is frequently seen. Skin loses its tone & elasticity. Degenerative changes occur in many joints with loss of muscle mass.¹²

Sarcopenia is a term utilized to the loss of muscle mass and strength and the consequent functional impairment that occurs with aging. Aging is also a major contributor to the development of osteoarthritis.¹³

Old age is accompanied by a generalized reduction of hormone production & activity. There is loss of neurons & impaired synaptic transmission. The sense of smell, taste, vision, hearing & touch are all diminished over time.¹⁴

Nine tentative hallmarks that represent common denominators of aging in different organisms with special emphasis on mammalian aging are genomic instability, telomeric attrition, epigenetic alteration, loss of proteostasis, de-regulated nutrients sensing, mitochondrial dysfunction, cellular senescence, stem cell exhaustion and altered inter cellular communication.¹⁵

Renal status of geriatric population

There is an age related decline in renal function.¹⁶ A general decrease in the volume & weight of the kidneys occurs with aging, so that by the 9th decade renal size is about 70% of that of 3rd decade. In normal aging there is gradual decrease in nephron number. After the age of 40, the number of functioning nephron usually decrease about 10% every 10 years.¹⁷ Tubular function also decline with aging. The incidence of glomerular sclerosis increasing with advancing age & sclerosis involve as much as 30% of glomerular population by the eight decade. With aging, lobulation of the nephron tend to diminish and length of glomerular tuft perimeter decrease relative to the total area. Both the concentrating & diluting ability of the kidneys also slowly deteriorates.

With aging, many subjects exhibits progressive decrease in GFR & renal blood flow with wide variability among individuals.¹⁸ Chronic kidney disease is an important problems in the elderly and is associated with a high risk of kidney failure, cardiovascular disease & death.¹⁹

Chronic kidney disease is becoming a serious health problem; the number of people with impaired renal

function is rapidly rising especially in industrialized countries. In patient with CKD, accelerated atherosclerosis has been observed.²⁰ Urinary incontinence has been found in 17% of men and 23% of woman older than 65.²¹ There is significant decrease of creatinine clearance in retired geriatric population aged 57 years and above, yet values were within normal physiological limit.²²

Cardiovascular status of geriatric population

Cardiac function is altered in an age related manner & cardiovascular diseases increase with increasing age. Age related changes in cardiovascular system are decrease heart rate response, longer P-R interval, right bundle branch block, increased atrial ectopy, increased ventricular ectopy, altered diastolic function, aortic sclerosis, annular mitral calcification.

Common cardiovascular diseases are atrial fibrillation, strokes, systolic hypertension, coronary artery disease, myocardial infarction, diastolic heart failure, valvular diseases like aortic stenosis, aortic regurgitation & mitral regurgitation.²¹ There is significant decrease of ejection fraction in retired geriatric population aged 57 years and above, yet nearly all values were within normal physiological limit.²³

Psychological status of geriatric population

Psychiatric disorders were more prevalent in individual age more than 80 years, in female and illiterate. Mood disorders were the most common.²⁴ A major psychological problem seen in elderly is depression and caused by a loss of independence, chronic diseases or fear of death.²⁵ The elderly living in a nuclear family system were 4.3 times more likely to suffer from depression than those living in a joint family system.²⁶ The prevalence of depression was found to be positively associated with increasing age, female sex, illiteracy, low socio-economic status, loneliness & economically partially and totally dependant.²⁷

Many people experience loneliness and depression in old age, either as a result of living alone or due to lack of close family ties and reduced connections with their culture of origin. Depression is a problem that often accompanies loneliness. Depression and loneliness are considered to be major problems leading to impaired quality of life.²⁸

Psycho-social problems among elderly women in urban population are anxiety & insomnia, somatic symptoms, social dysfunction & severe depression. The prevalence of these illness were found to be significantly higher for age more than 75 years.²⁹ Elderly suffer from dementia,

depressive disorder, Alzheimer's disease & vascular dementia & sleep difficulty.³⁰

Alzheimer's disease & vascular dementia are the most common causes of dementia in elderly. Depression is an important co-morbid disorder in these diseases which is often challenging to recognise.³¹

General health problems of geriatric population

The problems of aged is not merely medical, it is physical, mental, economical & socio-cultural. Many things about geriatric health and health problems depends upon individual desire & endeavor, socioeconomic & environmental factor, which are changeable & preventable. Geriatric health problems are making a greater demand on the health services of a community.³²

With aging, two things occur. There is a physiologic decline & an increase in the prevalence of diseases. Although these processes influence each other; physiologic decline does not occur independent of diseases. In healthy geriatric peoples, many physiologic functions are maintained in the basal resting state but decrements are seen in most organ systems & homeostatic mechanism, when these systems are challenged or stressed.³³ The geriatric population suffers from health problems i.e. senile cataract, glaucoma, nerve deafness, musculoskeletal changes affecting locomotion, failure of special senses and poor reflexes (resulting in accident proneness) and enlargement of prostate in males.

Degenerative diseases & long term illness like ischemic heart disease, hypertension, diabetes, respiratory diseases (chronic bronchitis and emphysema) and cancer. The elderly also suffer from conditions which are in the domain of psychology and psycho-sociology.¹

Age related decrease in body weight, often called un-intentional weight loss or involuntary weight loss can be a significant problem for the elderly. This has been shown to be related to decline in appetite and food intake is common amongst the elderly and is often referred to anorexia of aging. Body weight appears to decrease with age after the age of 65 to 75 years.³⁴

Visual impairment, uncorrected hearing impairment, urinary complaint, hypertension, diabetes, ischemic heart disease, dental problems & depression are found to be the common health problems of elderly.³⁵ A study in Bangladesh found that common diseases of elderly are arthritis, fever, cataract, diarrhea, hyperacidity, bronchitis, dental problems, asthma, hypertension, skin disease, hydrocele & diabetes.³⁶ Another study found that

common health problems of 60 to 69 years age group are hypertension, arthritis, diabetes, asthma, cataract & anemia.³⁷

7 health challenges of geriatric population are obesity & metabolic syndrome, osteoporosis & falls, cardiovascular diseases, cancer, arthritis, vision & hearing loss, mental health-memory and emotional well-being.³⁸

10 conditions that ail the geriatric population are Alzheimer's, Parkinson's, arthritis, diabetes, disc prolapse, urinary incontinence, strokes, cancer, tremor, and dementia.³⁹

Top 10 causes of death among adult over age 65 are heart disease, cancer, stroke, COPD, pneumonia, diabetes, accidents, septicaemia, nephritis and Alzheimer's disease.⁴⁰

Preventive health measures for geriatric population

Common preventive measures for all geriatric population are promotion of physical activity and regular exercise, good and healthy diet, smoking cessation, vaccination (influenza vaccination, pneumococcal vaccination), screening test, routine medical checkup, treatment of chronic diseases and adequate social support.

For the elderly, prevention focuses on diseases, frailty, accident, iatrogenic complication and psychosocial problems. Not all elderly peoples benefit from every preventive measure. Choice of preventive measure depends on the general condition of them & accordingly they are grouped as

A) Healthy : These elderly people have minimal or no chronic disease and are functionally independent. So, primary and secondary prevention of disease and prevention of frailty are the most beneficial measure for this group.

B) Chronically ill : These elderly people typically have several non-curable but treatable diseases, are usually functionally independent or minimal dependant, often take several prescription drugs and occasionally are hospitalized for exacerbation of their chronic diseases. Secondary and tertiary prevention of disease and prevention of frailty are the priorities.

C) Frail or complex : These elderly peoples typically havemany severe diseases, are functionally dependant and have lost their physiologic reserve. They are frequently hospitalized. For them, prevention of accident and iatrogenic complication is most important.⁴¹

Recommendation for the wellbeing of geriatric population⁴²

- To accelerate the implementation, spread and scale up of proven community-based preventive programs
- To enhance knowledge and adoption of self management programs for chronic diseases and promote the adoption of evidence based work place wellness initiatives
- To support public education and community based initiative for planning for old age
- To increase support for policies and programs aimed at preventing falls among older adults, enhance opportunities for physical activity among older adults
- To promote healthy diet and nutrition among older adults
- To promote primary and secondary prevention of depression among older adults
- To increase affordable and accessible housing options for older adults, support the creation of healthy communities for peoples of all ages & abilities.

Conclusions

None among us wants to grow old. During childhood we often wished to get older but after reaching adulthood, we wish to slow down the aging process. Early scientists (philosophers) agreed that we are born with predetermined amount of vital substance and once it is consumed, we die.⁴³ Aging is a biological reality, which has its own dynamic and is largely beyond human control. We must have to meet the challenge of aging but we cannot stop it. Rather we can protect, promote and preserve the better quality of elderly health. Living to a healthy and happy ripe old age may not be a matter of genetic predisposition or just dumb luck. Moderate alcohol use, no smoking, a stable marriage, regular exercise, appropriate weight, positive coping mechanisms and no depressive illness are the seven factors that give us longevity.⁴⁴

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