Chapter 177

Health Issues in Geriatrics

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INTRODUCTION

World Health Organization defines "health" as a state of complete physical, mental, social and spiritual well-being and not merely the absence of disease or infirmity.[1] "Geriatrics" is the branch of medicine dealing with the physiologic characteristics of aging and the diagnosis and treatment of diseases affecting the aged. In most of the countries in the world including India, the cutoff point for geriatric age is 60 years.[2] Geriatrics grows increasingly important as modern medicine and rising standard of living have lengthened life expectancy, resulting in increased proportion of aged persons in society. Elderly persons show lot of variation in age-related physiological decline and medical disorders. The age-related decline in muscle strength, vision, memory, locomotion, nutrition, immunity and homeostasis progress slowly. However, the onset of disease may be abrupt, the course of illness varying, complications severe and dreadful. Many chronic diseases increase in prevalence with age and some elderly seem more susceptible to co-occurring problems compared to others. Chronic diseases and disabilities lead to increased use of health care resources and health care expenditure.

EPIDEMIOLOGY

India is in a phase of demographic transition and trends reveal that population of elderly is growing faster than general population. In India, the life expectancy has steadily gone up from 32 years at the time of independence to 67.14 years in 2012. As per the 2001 census, the population of the elderly in India was 76.6 million as compared with 20 million in 1951. There has been a sharp increase in the number of elderly persons between 2001 and 2011 and it has been projected that by the year 2050, the number of elderly people would rise to about 324 million.[3-5] India has thus, acquired the label of "an aging nation" with 8.3% of its population being more than 60 years old. With the decline in fertility and mortality rates accompanied by an improvement in child survival and increased life expectancy, a significant feature of demographic change is the progressive increase in the number of elderly persons. Among the elderly, the older ones (above 80 years) are growing at a fast pace and these very elderly people are usually weaker, more frail, insecure, dependent and suffer more often from age-related diseases. The increasing life span and poor health care add to the degree of disability among the elderly and compound the problems of caregiving.

PHYSIOLOGICAL CHANGES IN ELDERLY

The physiological decline refers to the physical changes an individual experiences because of the decline in the normal functioning of the body resulting in poor mobility, vision, hearing, inability to eat and digest food properly, a decline in memory, the inability to control certain physiological functions and various chronic health problems. **Figure 1** depicts the pathophysiological changes in elderly resulting in various geriatric syndromes.[6]

SPECIFIC HEALTH ISSUES IN GERIATRICS

In India, the elderly people suffer from dual medical problems, i.e. both communicable as well as noncommunicable diseases. This is further compounded by impairment of special sensory functions like vision and hearing. A decline in immunity as well as age-related physiologic changes leads to an increased burden of communicable diseases in the elderly. The prevalence of tuberculosis (TB) is higher among the elderly than younger individuals. Elderly people

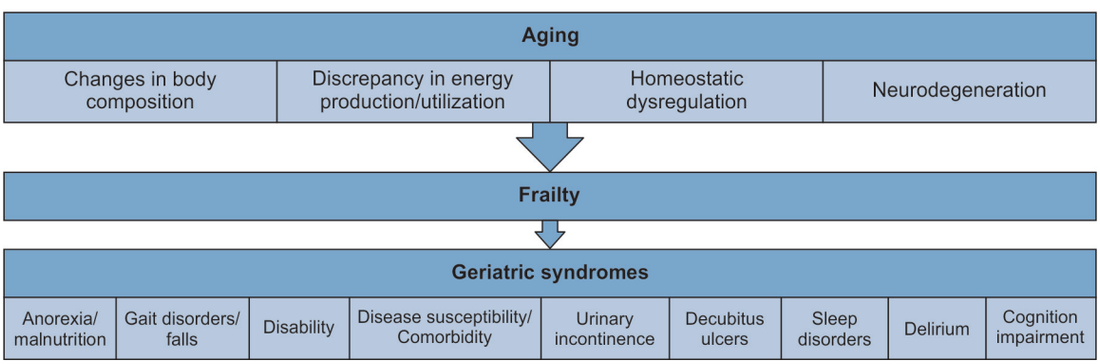

Figure 1: Pathophysiology of health issues in geriatrics

suffer from type 2 diabetes, coronary heart disease, hypertension, stroke, chronic obstructive pulmonary disease, Alzheimer's disease, osteoarthritis, osteoporosis, prostatic hypertrophy, cataracts, macular degeneration, cancer, etc. and at the same time, they are vulnerable to infections involving respiratory (including TB), urinary and digestive tract.

According to the Government of India statistics, cardiovascular disorders account for one third of elderly mortality. Respiratory disorders account for 10% mortality while infections including TB account for another 10%. Neoplasm accounts for 6% and accidents, poisoning and violence constitute less than 4% of elderly mortality with more or less similar rates for nutritional, metabolic, gastrointestinal (GI) and genitourinary infections. Instead of pyrexia and leukocytosis, the acute infections in elderly may present in an atypical way with impaired intellect/memory, incontinence, instability or immobility. Malnutrition, occult hypothyroidism, renal failure, depression and sexual problems are also common in the elderly.

The health issues in elderly are several and it is beyond the scope of this chapter to cover all the issues. Following are the important health issues, which are frequently encountered.

Frailty

Frailty is defined as the loss of a person's ability to withstand minor environmental stresses because of reduced reserves in the physiological function of several organ systems.[7] Frail people are at increased risk of disability and death because they do not have the reserves to respond and maintain adequate homeostasis. In functional terms, frailty is defined as dependence on others for activities of daily living (ADLs)—bathing, dressing, feeding, continence, toileting and mobility. Both frailty and disability frequently coexist and the prevalence increases with increasing age. Impaired cognitive function may add to the complexity of the situation.

Anorexia/Malnutrition/Weight Loss

Normal aging is associated with anorexia, which is more marked in men than in women. Anorexia in elderly is due to decline in energy demand, which in itself is due to lower physical activity, decline in lean body mass and slowed rates of protein turnover. Loss of taste sensation, reduced stomach compliance, higher circulating levels of cholecystokinin, and in males, low testosterone associated with increased leptin are other factors responsible for anorexia in elderly.

Malnutrition is a consequence of anorexia, since in elderly, the food intake decreases to a level below the energy demand. Monotonous diet, lack of sufficient fresh food/fruits and vegetables, inadequate intake of important micronutrients, contribute to malnutrition. The adverse health consequences of malnutrition are impaired muscle function, decreased bone mass, immune dysfunction, anemia, reduced cognition, delayed wound healing, delayed recovery from surgery, increased risk of falls, disability and mortality.

Anorexia and malnutrition lead to muscle wasting and loss of subcutaneous fat leading to weight loss in elderly people. Malabsorption, hypermetabolism, cancers, admission to elderly home, acute illness, hospitalization, depression, various drugs, dysphagia, oral infections, dental issues, GI conditions, endocrine conditions such as thyroid diseases, poverty, reduced access to food and dehydration contribute further to weight loss.

Awareness in the patients, caregivers and physicians related to this often neglected issue is important. The record of serial weights should be maintained in medical records of all elderly subjects.

Gait Disorders/Falls

Unstable gait and falls are serious issues in elderly since they lead to injury, restricted activities, increased indoor admissions and even deaths. Risk factors for the repeated falls in elderly are poor muscle strength, cerebellum/basal ganglia involvement, hypoglycemia in diabetes and postural hypotension (mostly drug induced or autonomic) in hypertension and peripheral neuropathies.

Preventive strategies for falls need comprehensive medical, rehabilitative and environmental interventions.

Osteoporosis

Aging is associated with progressive bone loss and osteoporosis with increased risk of hip and other fractures. It is more common in postmenopausal women due to cessation of estrogen secretion. The risk factors for osteoporosis are female gender, advancing age, small build, calcium and vitamin D deficiency, sedentary lifestyle, smoking, alcoholism and caffeine excess.[8]

Bone mineral density measurement by dual energy X-ray absorptiometry (DEXA) scan is the modality readily available for the diagnosis of osteoporosis. Along with calcium and vitamin D supplementation, regular walking, muscle strengthening exercises, prevention of falls, cessation of smoking and moderation of alcohol intake are to be followed meticulously by the elderly. Sunlight exposure at least 15 minutes a day for three times a week is a good source of vitamin D.

The newer drugs, like bisphosphonates (alendronate, pamidronate), selective estrogen receptor modulators (SERMs), tamoxifen, calcitonin are proved to be beneficial than hormone therapy for osteoporosis.

Urinary Incontinence

The involuntary leakage of urine is highly prevalent in elderly, particularly females. The increasing age, multiparity, obesity and associated medical comorbidities are the risk factors for urinary incontinence (UI) **(Table 1)**.

The first line of treatment for urinary incontinence is bladder training associated with pelvic muscle exercise, sometimes with electrical stimulation. Treatment of cause of UI, treatment of urinary tract infections (UTIs), omission of culprit drug/s, sometimes surgical correction are to be planned in elderly subjects with UI.

TABLE 1 | Clinical types of urinary incontinence in elderly

Types	Stress incontinence	Urge incontinence	Overflow incontinence
Definition	Failure of the sphincteric mechanism to remain closed when there is sudden increase in intra-abdominal pressure	Expulsion of urine accompanied by a sudden sensation of need to urinate	Urinary dribbling, either constantly or for some period after urination
Causes	Females—due to insufficient strength of pelvic floor muscles Males—almost exclusively secondary to prostate surgery	Due to detrusor muscle over activity (lack of inhibition) due to loss of neurologic control or local irritation	Due to impaired detrusor contractility (denervation in diabetes) or bladder outlet obstruction [in males: bipolar enucleation of the prostate (BEP), in females: cystocele]

Decubitus Ulcers

The lesions due to skin breakdown occur frequently in elderly. The disabilated/frail elderly, whose body parts are subjected to pressure, friction, shearing and maceration develop bed sores involving skin, subcutaneous tissue, muscles and even bones and joints. Prolonged immobilization, inactivity in or outside bed, fecal/UI, malnutrition and altered sensorium are the risk factors for development of pressure sores in elderly. The factors prolonging the healing of decubitus ulcers are anemia, infection, diabetes, peripheral vascular diseases, edema, paralysis, dementia, alcoholism, fractures and malignancy.

Frequent change of patient's position, avoiding head end elevation beyond 30°, use of special beds like water/air beds, keeping skin and body folds clean and dry, are the basic steps in preventing the decubitus ulcers. Regular nursing care, control of infection and debridement of wound whenever indicated are mainstay in the management.

Sleep Disorders

Sleep disorders are common in elderly with difficulty in onset of sleep or its maintenance, frequently leading to excessive daytime sleepiness. In most of the cases, it is secondary to some medication or medical or psychiatric illness. Detailed history is crucial in diagnosis.

The primary sleep disorders are restless leg syndrome, periodic limb movement disorders, sleep apnea and rapid eye movement (REM)—sleep disorders. If diagnosis of primary sleep disorder is established clinically or with polysomnography, specific treatment should be started. In patients with obstructive sleep apnea, long-term continuous-positive airway pressure (C-PAP) has been shown to be useful in reducing cardiovascular mortality.

Delirium

Delirium is an acute disorder of disturbed attention that fluctuates with time.[6] It is associated with high in-hospital mortality and sometimes with permanent brain damage.

The clinical features of delirium include:

- Rapid decline in the level of consciousness with difficulty in focusing, shifting or sustaining attention
- Cognitive change (mumbling, incoherent speech, memory gaps, disorientation, hallucinations)
- Medical history suggestive of preexisting cognitive impairment, frailty and comorbidity **(Table 2)**.

The diagnosis of delirium in a hospital setup can be done by simple validated tool—the confusion assessment method (CAM). Prompt and early identification and treatment of precipitating factors, withdrawal of culprit drug and supportive care are mainstay in the treatment, though the drug of choice is low-dose haloperidol.

Cognition Impairment (Dementia)

Dementia is decline in cognitive, intellectual and memory function due to affection of central nervous system without loss of consciousness. Dementia occurs in Alzheimer's disease, multi-infarct state, subdural hematoma, normal pressure hydrocephalus, hypothyroidism, head injury, alcoholism, brain space occupying lesions (SOLs) and vitamin B_{12} deficiency.

Clinical features include slow onset of forgetfulness, loss of interest in surroundings, impairment in social skills and personality. Depression is an early feature of this disease. Disorientation in time and space, followed by language impairment, aphasia and paralysis are common features. Vegetative state followed by death are frequent end results.

Neuroimaging helps in supporting the diagnosis of dementia. Unless a treatable cause is found, the treatment essentially is supportive. Neuroprotective agents, N-methyl-D-aspartic acid (NMDA) antagonists, anti-inflammatory agents and cholinesterase inhibitors are claimed to have beneficial effects on cognitive functions.

SCREENING FOR HEALTH ISSUES IN GERIATRICS

- *Osteoporosis:* Bone mineral density (BMD) at least once after the age of 65 years, once in every 2–3 years.
- *Hypertension:* Blood pressure at least once a year, more often in patients with hypertension.
- *Diabetes:* Serum glucose and hemoglobin A1C every 3 years, more often in patients who are obese or hypertensive.
- *Lipid disorders:* Lipid profile every 5 years, more often in patients who are diabetics or any cardiovascular disease.
- *Colorectal cancer:* Stool occult blood test, sigmoidoscopy or colonoscopy, regularly up to age of 75 years.

Breast cancer: Mammography every 2 years between ages 50 and 74 years.

- *Cervical cancer:* Pap smear every 3 years up to age of 65 years.

PREVENTIVE INTERVENTIONS IN ELDERLY

- *Vaccinations:* Influenza immunization annually, *Pneumococcal* immunization once at the age of 65 years.
- *Myocardial infarction:* Daily aspirin in patients with prior history or with cardiovascular risks factors.
- *Osteoporosis:* Calcium 1,200 mg daily and vitamin D at least 800 IU daily.
- *Exercise:* In older adults, increased physical activity improves physical function, muscle strength, mood, sleep and metabolic risk profile. Regular, moderate intensity supervised exercise can reduce the rate of age associated decline in physical function.

150 minutes/week of moderate intensity aerobic activity such as brisk walking and muscle strengthening exercise involving all major muscle groups on two or more days in a week is recommended for elderly.

- *Nutrition:* Basic principles of healthy diet are also valid for older people, namely:
  - Consumption of fruits, vegetables, whole grains
  - Good hydration, at least 1,000 mL of fluids/day
  - Fat-free and low-fat free dairy products, legumes, poultry
  - Fish at least once a week

TABLE 2 | Factors affecting Delirium

Predisposing factors for delirium	Precipitating factors for delirium
Dementia	Surgery, anesthesia
Neurological diseases	Hypoxia
Dehydration	Chronic persistent pain
Alcohol	Opiates, narcotics, anticholinergics
Psychoactive drugs	Sleep deprivation
Diminution in vision	Immobilization
Hearing loss	Metabolic and electrolyte disturbances

- Supervised medications and ensuring the drug compliance in elderly

WHAT NEEDS TO BE DONE IN INDIAN SCENARIO?

At present, most of the geriatric outpatient department (OPD) services are available at tertiary care hospitals in India. Since 75% of the elderly reside in rural areas, it is mandatory that geriatric health care services be made a part of the primary health care services. This calls for specialized training of medical officers and other paramedics in geriatric medicine.

The elderly population has longevity on one hand and compromised quality-of-life on the other. The probable solution is multidimensional approach that comprises not only curative, but also noncurative methods of care that are essentially preventive, rehabilitative and ones that pertain to terminal and respite care.[9] The medical/health and social service institutions in the country need to prepare for the demands of care of the frail/disabled senior citizens to minimize the gap between the longevity and associated poorer quality-of-life.

In conclusion, increased life expectancy, rapid urbanization and lifestyle changes have led to an emergence of varied problems for the elderly in India. Although this chapter has mainly focused on the health issues of the elderly, it must be remembered that complete health care to the elderly is possible only by comprehensive and multidisciplinary approach.

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