

## A Comprehensive study of Geriatric dentistry

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**ABSTRACT:** Aging, the postmaturational changes occurring between middle age and old age, reduces the functional capacity of the physiological systems and increases the vulnerability of an organism to challenges and diseases, thereby increasing the likelihood of death. Gerontology is a scientific study of the process of aging. According to World Health Organisation 2019, By 2050 people of age 60 years and above will reach 2 billion and age 80 years and above will rise to 434 million. In INDIA, according to the State of World Population 2019 reported by the United Nations Population Fund (UNFPA), population in 2019 stood at 1.36 billion. There are some age related oral problems such as periodontal inflammation, loss of attachment, oral ulcerations, missing teeth, edentulous, ill fitting dentures, xerostomia, oral carcinomas. Old age should be regarded as normal, unavoidable biological phenomenon.

### I. INTRODUCTION:

Geriatric dentistry is also known as Gerodontics, defined as the dentistry which deals with dental problems, diagnosing and treatment planning in older individuals. By year 2050, 60 years and older increases from about 650 million to billion around the world<sup>1</sup>. In elderly people there is less usage of dental treatments. National health service (NHS) data March 2006 states that there is decline in dental health care in older individuals when compared to middle aged.

According to National policy for older persons (NPOP) announced by the government of India in 1999 January is to provide food, health, shelter and security to elderly individuals.

According to Population Census 2011 there are nearly 104 million elderly persons (aged 60 years or above) in India; 53 million females and 51 million males.

Categorization of Elderly population:

According to papalia et al., 2009

Age from 65 to 74 years – New or young elderly, who are healthy and active.

Age from 75 to 84 years – Mid old, who are healthy and active with chronic disease.

Age 85 years and above – oldest-old, who are physically weak.

Most common systemic diseases:

**Cardiovascular disease:** Aging can cause changes in the blood flow, arterioles, veins and decreases the functional activity of heart. This causes the increased risk in CVS diseases. The most common pathogen is *Porphyromonas gingivalis*<sup>2</sup>, which causes periodontal inflammation, through this it enters the blood circulation. It also causes cardiovascular disease like heart stroke, coronary artery disease.

**Infective endocarditis:** In elderly people it is mostly seen in males. As age advances there will be degenerative calcification of aortic valve. Most commonly seen bacteria in oral cavity is viridians streptococci, community, acquired endococci, staphylococcus aureus are found in blood samples of infective endocarditis patient<sup>3</sup>.

**Respiratory infections:** Chronic respiratory disease is an important cause of death in old age. People are at high risk in developing pneumococcal pneumonia, asthma, influenza. Decrease in gas exchange and also weakening respiratory muscles. Oropharyngeal bacteria causes aspirational pneumonia due to aspiration of the bacteria<sup>2</sup>.

**Rheumatoid arthritis:** It is systemic inflammatory disease mainly seen in women when compared to male. It limits the activity in older age. In response to inflammation there will be destruction in soft and hard tissues<sup>4</sup>.

**Diabetes mellitus:** It is the most common disease which we will be seeing in 21<sup>st</sup> century. Type 2 diabetes is most commonly seen in elderly population. If diabetic neuropathy is seen along with weight loss, depression and peripheral

neuropathy<sup>5</sup>. Oral manifestations are loss of periodontal attachment, gingival abscess, periodontal abscess and early loss of teeth.

**Burning mouth syndrome:** It is a clinical entity usually based on subjective report of patient rather than pathological signs. It is most prevalent in postmenopausal women. It is painful, burning sensation in mucosa. Tongue is most commonly affected, along with other regions like lips, buccal mucosa/floor of the mouth. Its intensity is mild to severe. There are certain etiological factors such as local {candidiasis, geographic tongue}, systemic {nutritional deficiency}, psychological {anxiety, depression}, neurogenic {alteration in peripheral nerves}. The management is palliative but not curative. Patient education and multiple combinations of medications are given<sup>6</sup>.

**Age changes in oral cavity:**

**Changes in salivary gland & its secretions:** Aging is normal physiological occurrence which affects all glands. As the age inclines there will be decrease in production of saliva. xerostomia is due to atrophic changes in acinar tissue and some degenerative changes occur in major salivary glands<sup>7</sup>. Whereas, in minor salivary glands, acinar cells count will be decreased. High incidence of caries is seen due to decreased production of caries.

**Changes in tongue:** As the age increases, there will be smoother appearance of tongue as there is loss of filiform papillae. There is a tendency to develop sublingual varices and increased susceptibility to candida infections and decreased rate of wound healing.

**Changes in oral mucous membrane:** The oral mucous membrane has self-cleansing mechanism that is natural turnover of epithelial cells. Histologically, epithelium has less prominent epithelial ridges and atrophy, fibrous connective tissue will increase. In elderly person there will be continuous trauma to oral mucosa (check biting), habits (smoking), alters the mucosal structures.

**Changes in enamel:** It is less permeable and more brittle. As the age advances, the nitrogen content in enamel also increases. Physiologic changes like attrition, erosion, abrasion, abfraction are mostly seen due to bruxism, improper brushing habits.

**Changes in Dentin:** In dentin there will be constant growth and physiologically formed secondary dentin. Gradual obstruction of dentinal tubules which leads to blocking of canals due to formation of secondary dentin and leads to sclerosis of dentinal tubules<sup>7</sup>.

**Changes in pulp:** Pulp in elderly individuals has few number of cells and more fibers. Blood supply in subodontogenic region is decreased. Calcification, narrowing root canals and pulp calcification seen as age advances. There is loss and degeneration of both myelinated and non-myelinated pulp which will influence healing capacity of pulp.

**Changes in cementum:** Cementum forms throughout the life. In some unreliable conditions, hypercementosis is seen. Fluoride and magnesium content increases with age. It contains clear annual rings which found can help in determining the age of person in forensic specimen and also biomarker<sup>7</sup>.

**Changes in periodontium:** Periodontitis is most extensive condition in older individuals. Severity depends on exposure of periodontal tissue to bacterial plaque present in oral cavity. In gingival recession, there will be greater amount of plaque and calculus are attached and retained due to large surface area.

**Changes in taste and smell:** As the age inclines there is alteration in taste and smell also. Functions of olfactory nerve is altered as the change in age, but gustatory function remains intact<sup>8</sup>.

**Problem with denture wearing:** There are certain problems faced by geriatric patient while wearing denture are ill-fitting denture, denture stomatitis, improper denture hygiene, denture usage during night, traumatic ulcers, denture-induced mucosal hyperplasia<sup>7</sup>.

**Nutritional values in geriatric patient:** Nutrition is an important determinant in old age. There is more need in calcium and vitamin D. In elderly individuals there is decreased requirement of caloric intake due to low metabolic rate, decline in muscle mass. Appetite and food intakes also decrease which result in reduced intake of essential nutrients. This is mostly seen in females. In active elder 0.97g/kg of body weight/day protein intake should be given. It even increases more in conditions such as tissue necrosis and inflammation.

**Geriatric mental health:** The clinician should always remember that the physical and psychological symptoms of patient change from visit to visit. Patients differ in degree of mobility; some are bedridden, malnourished, wheelchair-bound and other ambulatory<sup>9</sup>. So various illness changes the clinical picture. Dementia is a common neuropsychiatric illness beside depression<sup>4</sup>. Patient with multiple medication and multiple doctors shows best results in work synergy.

**Barriers in approaching the dental care:**

1. Cost of service.
2. Difficulty in obtaining appointments.
3. Fear of dentist.
4. Availability of oral health care services.
5. Access to oral health services.

Additional barriers:

1. Shortage of professionals.
  2. Lack of awareness about services.
  3. Mental, physical, medication related conditions<sup>10</sup>.
- The main reason to visit the dental clinic is due to tooth extraction, pain and abscess treatment and the least reason is treatment of inflammation.

Preventive measures:

1. If the individual maintain well balanced diet which makes strong, gives strength and free from diseases.
2. Do not eat high sugar diet, sweet, sticky food between the meals which leads to caries.
3. Regular brushing – preferred method of brushing is sulcular brushing with extra soft bristle (Bass method)<sup>4</sup>.
4. Visit dentist regularly.

Treatment appointments:

Treatment visits should be short. Morning appointments can be more profitable because in geriatric patients have less tissue distortion<sup>11</sup>. Patients should not be given high expectation for prosthetic outcome if the prosthesis does not turn out the way dentist promised that will be more depressing to the old people. The prognosis of prosthodontic treatment should also depend on the psychological status of patient<sup>11</sup>.

Prosthodontic considerations:

Prosthetic rehabilitation should aim at restoring the vertical dimension and increasing the occlusal contact. Prosthetic treatment in geriatric patients is effectively determined by some of factors such as patient's cooperation, financial support. Patient should be educated about reduced efficiency about the artificial dentures when compared to the natural dentition. Geriatric people doesn't pay attention to oral and prosthetic care until serious complications are elevated. Prosthetic treatment should be neglected until general health is restored. Central nervous system also changes and it limit in acquiring new muscle activity. Mental disorder will complicate outcome of prosthetic treatment in preventive counselling like education and motivating the patient towards the treatment is most challenging part in people living in rural area. Majority of elderly are below the poverty line<sup>12</sup>.

**IMPLANT:** A large number of patients have difficulty in mastication and normal oral function

when using a removable prosthesis. Quality and Quantity of bone is relatively affected by the age.

There is increased requirement of implant among geriatric people which includes condition of edentulous ridges, improper use of removable prosthesis, Increased awareness of the benefits of implants. Successful osseointegration can be maintained irrespective of a patient's oral hygiene performance.

**FIXED PARTIAL DENTURES:** In geriatric patients, increase in acknowledgement about fixed prosthodontics as the new generation older individuals are more educated and health conscious<sup>6</sup>. More problems are seen in post insertion of fixed prosthesis. Difficulties associated with FPD are cleaning, cheek biting, inflammation of soft tissue if it is improperly placed. Now a days fixed prosthesis is supported by implants. Implant supported overdentures are most frequently used, mini implants.

**REMOVABLE PARTIAL DENTURE:**

For completely and partial edentulous individuals removable partial dentures and complete dentures can be given. Utilization of removable partial dentures in elderly individuals will give supreme benefits<sup>6</sup>. Overload on denture can be reduced by removing rest in RPD. Patient will be impotent to gain normal speech, function and comfort. Design, materials, ease of repair, patient education, and follow-up for RPD treatment all had a significant impact on treatment success.

## II. CONCLUSION:

The overall general health of the person depends on the oral condition. Oral health impact the general health. Health can be achieved by having healthy diet and maintaining health of oral tissues<sup>15</sup>. There is a need of the geriatric dental education within the undergraduate dental student curriculum, which is the persistent necessity for today communities. A simulation experience is an effective method of increasing the empathy and attitudes toward caring for the elderly. About 12-14% of elderly people are bedridden or housebound that they cannot visit for medical or dental care. To overcome this problem is through providing homely dentistry<sup>16</sup> which is infrequent in India. Domiciliary care main objective is to deliver care for elderly patient. Increase in insistence for homely dental health care and specifications for delivering the service.

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