

## Review Article

### Oral Health & Geriatric Patients: Building a Bridge

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#### **ABSTRACT:**

The proportion of older people continues to grow worldwide, especially in developing countries. Non-communicable diseases are fast becoming the leading causes of disability and mortality, in coming decade's health and social policy-makers will face tremendous challenges posed by the rapidly changing burden of chronic diseases in old age. Globally, poor oral health amongst older people has been particularly evident in high levels of tooth loss, dental caries experience, and the prevalence rates of periodontal disease, xerostomia and oral precancer/cancer. Control of oral disease and illness in older adults should be strengthened through organization of affordable oral health services, which meet their needs. Education and continuous training must ensure that oral health care providers have skills in and a profound understanding of the biomedical and psychosocial aspects of care for older people.

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#### **INTRODUCTION**

The chronologic definition of age is simply a number. However, the functional definition is based on the physical and functional capacity of an individual and thus, this definition is much more appropriate than the chronological one.<sup>1</sup> According to WHO, between 2015 and 2050 the world population over 60 years will nearly double from 12% to 22%. By 2050 the world's population aged 60 years and older will increase from 900 million to 2 billion<sup>2</sup>. In India the average life span has increased by 5% in the past decade.

In due course of age, cellular function decreases, body secretions decrease, there is loss of muscle mass and sensory impairment, energy reserves dwindle, collection of waste products in body cells and the immunity weakens.<sup>3</sup> This leads to increased risk of various systemic diseases like diabetes, hypertension, arthritis, alzheimer's, cancer and cardiovascular diseases and oral disorders such as dry mouth, caries, oral mucous membrane changes, gingival recession etc.

#### **ORAL HEALTH STATUS IN ELDERLY**

##### **CHANGES IN SALIVARY GLANDS:**

Salivary glands are known to undergo histological changes with age. About 30% of the elderly suffer from oral dryness and related complaints.<sup>1,4</sup> Secretory components of the glands are replaced by fibrous and adipose tissue making them less efficient at producing saliva. The number of acini decreases and the amount of fatty and fibrous tissue increases. Changes might occur in the concentration and activity of the organic components of saliva. However, there is no significant decrease in major salivary gland flow in healthy older individuals and the changes can be mainly attributed to the effects of systemic diseases and medications. Menopause in elderly women is an important contributing factor in causing decreased salivary flow rates. Salivary glands contain oestrogen receptors and thus a decrease in oestrogen levels affects salivary gland function. Menopause is also responsible for a decline in periodontal health and may cause burning mouth syndrome<sup>5,6</sup> Chronic xerostomia has a debilitating effect on the integrity of the hard and soft

tissues of the mouth. It often causes difficulty in speaking, tasting, eating, swallowing and denture retention. Age related salivary hyposalivation along with the detrimental effect of systemic diseases and medication may deteriorate the quality of life of an individual. It may lead to dental caries, dysgeusia, dysphagia, oral dysesthesia, mucositis and various opportunistic infections like candidiasis. The risk of developing salivary gland cancer increases with age. The significantly reduced total salivary anti-oxidant capacity in elderly persons, increased oxidative stress and increased salivary concentrations may explain higher prevalence of oral cancers in elderly individuals.<sup>7</sup>

**CHANGES IN ORAL MUCOUS MEMBRANE:** The incidence of oral mucosal conditions significantly increases with advancing age. A decline in the protective barrier function of the oral mucosa could expose the aging host to myriads of pathogens and chemicals that enter oral cavity during daily activities. Declining immunity, systemic diseases and medications can lead to oral mucosal disorders in the elderly.<sup>8</sup> Changes over time include mucosal trauma, poor oral hygiene habits, mucosal diseases, a decreased healing capacity etc. The tongue shows marked clinical changes and becomes smoother with loss of filiform papillae. The oral epithelium becomes thinner, loses elasticity and atrophies with age. There is an increase in orthokeratosis in stratum corneum, reduction in thickness in stratum spinosum causing frequent ulcerations and hyperactivity of melanocytes in the basal layer causing pigmentation. There is reduced complexity and decreased convolution of rete ridges, loss of stippling and the collagen synthesis of connective tissue decreases. As a result decreased tissue resistance and disease resistance can be expected. The most common oral lesions among the elderly include trauma due to ill-fitting dentures, lichen planus, lichenoid reactions, inflammatory processes such as papillary hyperplasia, epulis fissuratum, candidiasis, vesiculobullous conditions such as pemphigus, pemphigoid, herpes and finally premalignant and malignant lesions.<sup>4,6</sup>

#### **CHANGES IN DENTITION:**

Gradual changes take place in dental tissues throughout life. There are changes in dentin, decreased cellularity, fibrosis, pigmentation of anatomical defects, pterygia and imbrication lines are lost, gradual obturation of dentinal tubules, secondary dentin formation, an increase in fluoride and magnesium content is seen with age. Occlusal attrition, pulpal recession, staining, chipping and cracking is seen. There is an increase in coronal and root surface caries associated with reduced salivary flow. There is loss of tooth sensitivity and reduced perception of painful stimuli due to degeneration of nerve fibers. Enamel becomes less permeable and more brittle with age. Regeneration and repair capacity of dental

tissues decreases. There is decrease in thermal sensitivity and translucency of the tooth decreases due to altered surface structure in older individuals which gives a different pattern of light reflection. Apical foramen diminishes in size. Pulp dimensions are also reduced with age. Dentinal changes, pigmentation, decreased transparency, corrosion products and inadequate oral hygiene may also contribute to change in tooth colour. Dental pulp becomes less cellular, more fibrous and decreases in volume. Blood supply is greatly reduced leading to a decreased regeneration capacity of the pulp.<sup>9</sup> Majority of the geriatric patients are fully or partially edentulous. In India about 16%-21% of the elderly population is edentulous. Thus denture care forms a major part of the geriatric dental care.

#### **CHANGES IN PERIODONTAL TISSUES:**

Aging is accompanied by a variety of periodontal changes. Periodontal diseases are among the most prevalent chronic dental conditions in the geriatric population. Enhanced severity of the periodontal disease with age has been associated with the length of time the periodontal tissues have been exposed to the dentogingival bacterial plaque and is considered to reflect individual's cumulative oral history. There is an increase in gingival recession, progressive loss of soft tissue attachment, accumulation of plaque, bone resorption and increased inflammatory processes. The gingival connective tissue becomes coarser and denser, mechanical strength of collagen increases reduction in the organic matrix production and decreased vascularization. In the periodontal ligaments there is a decreased number of fibroblasts, reduced organic matrix production, decreased epithelial cell rests, decreased number of collagen fibers and reduced mitotic activity.<sup>10</sup> The width of cementum increases with increasing age especially in the apical region to compensate for the wear at the occlusal surface. Increased bone resorption is seen in aging individuals. The dental plaque accumulation increases with increasing age with increase in hard tissue surface area resulting from gingival recession. Difference in dietary habits and poor oral hygiene also play an important role in the deterioration of periodontal health of the elderly.

#### **ORAL MOTOR AND SENSORY FUNCTIONS:**

There is a decline in motor and sensory function with age. The two major sensory function deficits experienced in old age are olfactory function and dysgeusia. The sense of smell as well as the ability to discriminate between smells decreases. Chemosensory function (olfaction and gustation) plays an important role in the safety and quality of the life of older adults. Individuals with compromised chemosensory function are at greater risk for food poisoning and cooking or heating gas injuries due to their inability to identify spoiled food or detect the odor

warning of a gas leak. Loss of chemosensory function has also been closely linked to inadequate nutritional intake, reduced social pleasure, aging anorexia, and other related diseases. Severe gustatory dysfunction (14.8%) was more prevalent than severe olfactory dysfunction (2.7%).<sup>11</sup> Motor dysfunction in the elderly may lead to dysphagia, aspiration and masticatory muscle weakness. This in turn leads to malnutrition and affects the overall health of an individual. Furthermore, elderly persons with a swallowing disorder have a high risk of choking and aspiration.<sup>1</sup>

#### **OROFACIAL PAIN and BURNING MOUTH:**

Peripheral neuropathies such as Burning mouth syndrome, atypical facial pain, Trigeminal neuralgia etc are common in old age. Burning mouth syndrome is particularly common in post menopausal women although the degree of pain varies in each individual. Disorders like Trigeminal neuralgia can greatly reduce the quality of life in old age.<sup>12</sup> The diagnostic process and the time required to investigate the pain complaint is more complex for the elderly patients due to multiple systemic diseases and the medications taken in old age.

#### **ORAL CANCER:**

Oral cancer is clearly a disease of older people. More than 98% of the cases occur in persons older than 40 years and the average at the time of diagnosis is about 60 years. The male to female ratio is about 2:1. The most common oral cancer is squamous cell carcinoma. Five year survival rate of oral cancer decreases with age and are low as compared to other cancers. The incidence of oral cancer in the elderly may reflect time for the accumulation of genetic changes and duration of exposure to carcinogenic agents. These include chemical and physical irritants, viruses and hormonal effects. In addition decreased immunological surveillance over time may be another explanation to the age relations, such as in individuals undergoing solid organ and hematopoietic stem cell transplantations, individuals treated with chemotherapy, and HIV infected individuals.

#### **EFFECT OF ORAL HEALTH ON QUALITY OF LIFE**

WHO defines quality of life as 'individuals' perceptions of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns'. Oral health related quality of life is determined by not only functional parameters like pain and dysfunction but also by psychological and social aspects. Dental treatment could further improve oral appearance of the elderly individual, which might provide self-esteem and thus contribute to the psychological well-being. Even social aspects like communication and social interactions could be positively influenced by dental care. Thus oral health

and dental care have a significant impact on the quality of life of elderly adults. Orofacial pain can negatively affect the dietary habits causing various nutritional deficiencies in elderly and is also otherwise detrimental to the quality of life of elderly.<sup>13</sup>

#### **PROBLEMS IN PROVIDING DENTAL CARE IN ELDERLY PEOPLE:**

##### **MEDICAL FACTORS-**

The typical aging patients baseline health state is complicated by comorbid conditions ( e.g. hypertension, diabetes mellitus) and physiologic changes associated with aging. Older adults may regularly use prescription and/or over the counter medications making them more vulnerable to medication errors, drug interactions and adverse drug reactions. Potential physical, sensory and cognitive impairments associated with aging may make home oral health care and patient education/communication challenging. Patients may show increased sensitivity to drugs used in dentistry, including local anaesthetics and analgesics.

##### **PATIENT ATTITUDE-**

Patient attitude plays a great role in facilitating oral health care in elderly patients. Various physical, sensory and cognitive impairments may affect patient's attitude towards dental care negatively. Patient care in elderly suffering from Dementia, Alzheimer's and Parkinsonism can be particularly challenging for the dentist. Special attention should be given to the oral hygiene maintenance in these patients. Patient beliefs may affect his/her attitude towards dental care.

##### **SOCIO-ECONOMIC AND DEMOGRAPHIC FACTORS-**

Patients place of residence and access to dental care play an important role in oral health of the elderly. Financial limitations can have a detrimental effect on the dental care of older patients. Patient's education and culture may play a role in motivating him/her to receive dental care.

#### **CARE IN GERIATRIC PATIENTS:**

##### **PREVENTIVE DENTISTRY FOR ELDERLY PATIENT -**

The preferred method for most elderly patients is sulcular brushing with soft toothbrush. Patients with gingival recession should be instructed carefully to avoid further recession. Patients with physical impairments should be provided assistance. Plaque control in elderly with physical limitation can be enhanced by electronic devices and adaptive aids such as enlarged handles for easy grasp and are motor driven toothbrushes in which complex arm and wrist movements are not required<sup>14,15</sup>. Therapeutic rinses may be beneficial for

tooth surface and oral environments may contain chlorhexidine, sodium benzoate, flouride etc. It helps to reduce oral colonization, prevent caries and promote remineralisation.<sup>16</sup> Elderly who wear dentures should be taught proper home care of both dentures and tissues on which they rest. Importance of regular professional care should also be taught.

### **DENTAL AND HOME ORAL CARE IN ELDERLY PATIENTS WITH PHYSICAL AND SENSORY IMPAIRMENTS-**

In patients with Hearing Loss, the dentist should speak slowly, clearly and loudly when talking to older patients to enhance hearing and understanding. Gain the patients attention with a light touch before beginning to speak. In patients who read lips, face the patient. In patients with hearing aids minimize the background noise while speaking. Written aids and illustrations can be used to explain procedures and home care instructions. In patients with visual loss such as visual impairment such cataracts, glaucoma, presbyopia etc. can diminish person's ability to process nonverbal conversations. The new tools and strategies can help assist the visually impaired elderly like large print magazines in waiting room, good lighting throughout the office, large print on prescription bottles, install blinds or shades to reduce glare, use contrasting colours on towel racks, door handles, stair markers etc. Patients with physical limitations/loss of mobility- Modifications of manual toothbrush or use of electronic toothbrush and increasing the frequency of dental cleanings and examinations can help in maintaining oral hygiene in patients with reduced mobility.

### **COUNSELLING AND EDUCATION –**

Patient education includes a discussion with the patient about the current diseases and methods of intervention and prevention of future diseases. The Tell-Shoe-Do technique can be used for this i.e. Tell the patient what to do, Show or demonstrate the procedure, Finally the learner can Do or practice the technique.

### **CONCLUSION:-**

The proportion of older people continues to grow worldwide, especially in developing countries. This, along with an increase in the prevalence of oral disease and non-communicable diseases, will significantly challenge health and social policy planners.

The Health Programmes must encourage public health care administrators and decision-makers to design effective and affordable strategies and programmes for better oral health and quality of life of the elderly. Demonstration projects on oral disease control, health promotion and quality of life improvement should be initiated and evaluated systematically as to outcomes and processes for sharing. Finally, surveillance systems targeted at the oral health of the elderly can help assess the attainment of goals for oral health of the elderly and provide data for analysis of the cost-effectiveness of oral health programmes.

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