

Oral health v/s general health in the elderly – an interconnected nexus- a literature review

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ABSTRACT

Introduction: Oral health and overall health have long been recognized as interconnected facets of human well-being, influencing each other in profound ways. This review highlights the essential relationship between oral health and overall health, shedding light on the bidirectional impact they exert on an individual's quality of life among the elderly group. Conversely, overall health significantly influences oral health. Chronic illnesses and immunosuppression can weaken the body's defence mechanisms against oral infections, leading to increased susceptibility to dental caries and gum diseases. Additionally, certain medications may cause dry mouth, further promoting oral health issues. Efforts to improve oral health not only enhance dental well-being but also contribute to better overall health outcomes. Regular dental check-ups, proper oral hygiene practices, and a healthy diet can positively impact systemic health, reducing the risk of certain medical conditions. **Conclusion:** Oral health and overall health are intricately connected, forming a dynamic interplay between the mouth and the body. Recognizing this intricate relationship is crucial for healthcare professionals and individuals alike to implement holistic approaches to maintain optimal well-being and improve health outcomes hârious domains.

Keywords

General health, Geriatrics, Oral health

INTRODUCTION

Ageing is a natural **and** gradual phenomenon, and an irreversible process with progressive physical deterioration that occurs over time. The WHO defines old age as age group of 60 or above.¹ The World Health Organisation estimates that there are 700 million people over 60 in the world right now. There will be about 2 billion people on the earth by 2050, with older people outnumbering younger ones.

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This rise will accelerate in the next decades, particularly in developing countries like India.²

Older people are a valuable resource for any society. Organizing and providing health services for older patients can be more complex than for healthy adult patients. Increasingly, studies find that oral disease can significantly affect systemic health. For example, bacteraemia or cytokinemia from diseased periodontal tissues may trigger inflammatory and/or immunologic responses contributing to tissue or organ damage.³ Compelling associations exist between oral disease and cardiovascular and respiratory diseases, but oral disease can also exacerbate the effect of diseases such as diabetes. Data-driven conclusions about a potential direct cause-and-effect relationship for many oral-systemic linkages remain lacking, but ongoing research continues to suggest strong inter-relationships.⁴ To better the provision of oral health care, to establish public policy, and to allocate public resources to the most effective therapies, including oral health care, medical and oral health research collaborations to examine these links are urgently required.⁵

Common Oral Conditions and Their Clinical Implications in The Elderly:

1. Dental Caries_

Caries, as a clinical problem, forms a significant part of the oral disease burden in older people. The traditional view of caries risk for older people identifies root caries as one of the principal challenges provided by the older person. The main cause of tooth loss in the elderly is root caries, and tooth loss has the worst negative impact on the quality of life associated with oral health in the elderly.

Pathologic factors that encourage dental caries and preventive factors that avert it are in a state of dynamic balance.⁶ Acid-producing bacteria, frequent ingestion of fermentable carbohydrates, variable salivary flow and composition, and poor oral hygiene are examples of pathologic causes. Extrinsic topical antibacterial compounds, casein phosphopeptide-amorphous calcium phosphate paste (GC's Tooth Mousse®, MI Paste®, and Recaldent®), fluoride, and regular daily dental care are protective factors.⁷

2. Periodontal Disease_

Periodontal disease has a higher prevalence in older adults than any other age group. However, it is not a

direct result of aging.⁸ Gram-negative anaerobic bacteria from tooth plaque exhibit pathogenic characteristics and increase pro-inflammatory cytokines, which lead to periodontal disease, an inflammatory condition.⁹ It progresses to periodontitis when the inflammation extends to the periodontal ligament and alveolar bone which leads to loss or recession of gingival tissue, decrease in alveolar bone mass, tooth mobility/tooth loss, and potentially edentulism.¹⁰ These pro-inflammatory cytokines, which are linked to periodontal disease and include tumour necrosis factor (TNF), interleukin-1 beta (IL-1 β), and interleukin-6 (IL-6), are notable because they are also linked to a number of other chronic inflammatory diseases, including osteoporosis, myeloma, rheumatoid arthritis, type II diabetes, and atherosclerosis. These conditions have all been linked to the same or a similar etiologic onset of inflammation.¹¹ Further, *Actinobacillus actinomycetemcomitans*, *Porphyromonas gingivalis*, and other bacteria originating from plaque in the oral cavity can travel to other areas of the body and have been linked to infections of the endocardium, meninges, mediastinum, vertebrae, hepatobiliary system, lungs, urinary tract, and prosthetic joints.¹² Plaque bacteria have been associated with systemic implications in the cardiovascular and nervous systems as well. The goals of treatment for elderly patients in poor health should be to keep them pain- and infection-free as well as to preserve their dentition in a functional state for the rest of their lives.¹³ The primary idea in treatment planning should be subjective oral well-being.¹⁴ A primary goal must be that the trauma of treatment does not exceed the gains of treatment. Therefore, in individual cases the clinician may have to modify the treatment plan to include procedures appropriate for that specific patient. Elderly periodontal treatment requires a thorough evaluation of the patient's physical and psychological condition. A periodontal problem's assessment, treatment strategy, prognosis, and risk of problems after therapy may all be impacted by age changes.¹⁵

3. Endodontic Management

Compared to older patients in the mid- to late 20th century, the dental demands of ageing individuals in the 21st century seem to be substantially different and more complex.⁶ People are taking more medications as the population ages, which may be good for their overall health but not always for their dental or periodontal health.⁷ In most cases, older patients should be treated

the same as younger patients, with the expectation of the same degree of success if correct treatment principles are followed before, during, and after treatment. The biology of older patients' pulp tissue and surrounding dentin undergoes changes that, if not recognized, will lead to mistreatment and loss of teeth. The changes that occur have been recognized for several years, yet the greater body of dentists will treat all their aging patients exactly as they treat their younger patients.

4. Oral Mucosal Lesions_

Numerous lesions, including ulcerative, vesiculobullous, desquamative, lichenoid, infectious, and malignant lesions, frequently develop on the oral mucosa. Oral pathoses may exist as a result of pathologic reasons as well as typical ageing changes. Age-related mucosal atrophic changes lead to thinner and less elastic tissue. An increase in sensitivity to infection and damage is the outcome of this alteration in cellular structure in addition to a reduction in immunologic reactivity also linked to aging.¹⁶

5. Xerostomia_

Patients typically complain about having a dry mouth, especially the elderly. 30 percent of persons, 65 and older and 20 percent of the general adult population suffer symptoms of oral dryness, according to reviews of studies on the prevalence of xerostomia.¹⁷

All important and minor structural changes in the salivary glands are brought on by ageing.¹⁸ Significant acinar atrophy and the replacement of acinar cells with fat, connective tissue, and duct-like epithelial structures are two examples of the histologic changes that have been observed.¹⁹ Both men and women are impacted by these changes.²⁰

The substances that are most frequently linked to sensations of dry mouth and decreased salivary production have sympathomimetic mechanisms that make saliva more viscous or anticholinergic activities that make saliva less serous. Antihistamines, anticholinergics, antidepressants, anxiolytics, antipsychotics, antihypertensive medications, and diuretics are typical xerogenic medications and their subgroups. It's important to keep in mind that some medications, such loop diuretics and inhalation treatments, can lead to xerostomia without having a

negative impact on salivary secretion.¹⁹

Drug use frequency and quantity have been connected to the intensity and prevalence of dry mouth symptoms.

6. Prosthetic Considerations_

Chronic illnesses become more common as a population ages, and patients are more likely to use drugs, some of which have the potential to harm oral tissues.⁸ Hyposalivation, which can cause xerostomia and raise the risk of **caries** and periodontal disease, is one of the most common side effects of many of the drugs this group takes.

i. Bone loss with Ageing

The majority of investigations have come to the conclusion that age-related loss of alveolar bone occurs naturally and is unrelated to edentulism or periodontal disease. Additionally, there seems to be a correlation between osteopenia in the alveolus and osteoporosis in the postcranial skeleton. The results of a study by Wactawski-Wende et al., who evaluated the risk of loss of alveolar bone with the degree of loss in bone mineral density elsewhere in the body, are indicative of the latter. According to the findings, the likelihood of alveolar bone loss increases with the severity of systemic osteoporosis.

ii. Pain Management_

Due to varying responses to treatment, a variety of factors that contribute to pain, and numerous concurrent medical conditions that affect the choice of pain therapy modalities, managing pain in older adults can be difficult. Pain is not only physical; it also has mental and affective components. For this reason, a multidimensional approach to treatment is advised. Physiological changes that come with age affect how older people respond to drugs. Changes in medication absorption, duration of action, hepatic enzyme system activity, and renal function may speed up drug interactions and the pace of pharmacological excretion. Drug interactions can increase the chance of harmful effects or toxicity while taking drugs to address different medical conditions.²⁰

In order to maximize an older adult's function and quality of life, a multimodal strategy to pain management is recommended. This approach includes the use of

pharmaceutical medication, non-pharmacological modalities (such as education, exercise, weight loss, physical therapy, and occlusal appliances), and psychological support.²¹ Controlling pain is essential for both symptom relief and preventing unfavourable health outcomes linked to pain. Inadequate pain management has been associated with depression, sleep disturbance, functional impairment, and a marked increase in morbidity and death, particularly in the elderly.

Significance of Oral Health on General Health in the Elderly

Poor dental health may have a substantial negative impact on an elderly person's quality of life. Oral health problems can make patients less likely to interact socially with family and friends, such as by making them less likely to speak or smile, in addition to experiencing terrible pain. Managing other health issues can become more difficult if a patient has trouble speaking with doctors or taking their prescription. It is significant to note that poor dental health is linked to a number of different diseases and can affect an older person's overall health.

► Malnutrition

One of the most visible effects of oral health disorders is that people may find it harder to eat, swallow, and drink. Malnutrition may follow from this, which is harmful to one's health in numerous ways. Malnutrition is thought to be a risk factor for one-third of all elderly patients admitted to hospitals, and 1.3 million persons over 65 are thought to be undernourished. Malnutrition slows down the healing process, makes people more fragile, and can unnecessarily lengthen hospital stays.²²

► Pneumonia

According to studies, there is "considerable evidence" to link aspiration pneumonia and poor oral health, especially in institutions like hospitals and nursing homes. This is because some pneumonia-causing micro organisms can colonise dental plaque before being inhaled.²³

► Oral Cancer and Other Mucosal Diseases

Routine dental exams are necessary to enable the early diagnosis and prompt treatment of these conditions,

which can particularly affect older people (over 50s account for seven out of every eight cases of oral cancer), even though oral cancer and other mucosal diseases are not directly caused by poor oral health. It's crucial for dentists to be able to identify non-dental reasons of facial and mouth pain, such as trigeminal neuralgia (chronic pain brought on by a problem with the trigeminal nerve). The availability of dental treatment for the elderly is therefore crucial.^{23,24}

► Psychological Problems

Stress and depression have both been found to adversely affect the periodontal status of patients. Stress has been related to the increased production of inflammatory mediators, which can increase the severity of the immune response to plaque bacteria.²⁵ Older adults are subject to depression as their friends, family, and significant others pass away. Studies have shown that older adults living on their own have a higher occurrence of clinical depression compared to married couples living together.¹² Depression can decrease immune function and compromise wound healing, which can lead to depression-induced memory loss. Patients who suffer from depression may also have a decreased response to periodontal therapy because of poor attitude, an inability to quit smoking, feeling overwhelmed with the treatment process, and overall poor compliance with the recommended treatment. Thus, it may be reasonable to infer that periodontal disease is associated with stress, anxiety, and depression.¹² Socially isolated people are more at risk of oral disease and yet less likely to access care.

Oral Health-Related Life Quality

The nature of the links between health, illness, and quality of life are complex and poorly understood. Understanding the clinical treatments that a dentist or dental services can offer can help in understanding how oral ailments affect both general health and quality of life. As part of their ongoing research on health-related quality of life and the use of such measures, Fitzpatrick et al.¹¹ have identified the essential requirements for a health status measure. Among these are concepts with multiple dimensions, reliability, validity, sensitivity to change, appropriateness, and practical utility. We looked into a few of these measures of quality of life connected to dental health.²⁶⁻³⁰

CONCLUSION

Finally, as ageing is an inevitable process, it is critical for oral health care professionals to avoid unfavourable stereotypes that undervalue older people's talents or treat them with contempt. Additionally, the effect of oral health on overall health and happiness. Dentists must be aware of the dental demands of older patients if they are to provide the finest care possible for ageing patients.

Conflict of Interest

The author reviewed and approved the final version and has agreed to be accountable for all aspects of the work, including any accuracy or integrity issues.

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Data Availability

The data is exclusively available from the principal author for research purposes only.

Author's Contribution

All authors contributed significantly to the work, whether in the conception, design, utilization, collection, analysis, and interpretation of data or all these areas. They also participated in the paper's drafting, revision, or critical review, gave their final approval for the version that would be published, decided on the journal to which the article would be submitted, and made the responsible decision to be held accountable for all aspects of the work.

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