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Geriatric Oral Health in India: Disease Burden, Care Gaps, and Intervention Strategies – A Review

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ABSTRACT: As of 2026, the number of elderly people (aged 60 years and above) in India has risen to 173 million and is estimated to be 347 million by 2050. The purpose of this literature review is to synthesise existing evidence on the burden of oral disease among geriatric patients and to identify systemic barriers and evidence-based interventions. The major findings indicate that edentulousness affects around 70% of India's elderly population, dental caries affects between 43% and 91%, and periodontal disease affects up to 98.6%. A variety of systemic barriers, including the high cost of dental treatment, the geographic maldistribution of dentists, suboptimal provider training, and the lack of support for oral health care in public policies, continue to create conditions that contribute to the undertreatment of geriatric patients. There are proven interventions, including Karnataka's Danta Bhagya Yojane scheme, mobile dental units, and specialised geriatric dental centres. The authors have provided an implementation roadmap for 2026–2030. This roadmap aligns with the UN Decade of Healthy Aging and calls for several policy reforms, workforce development, and the establishment of supportive infrastructure to improve service delivery.

KEYWORDS: Geriatric oral health, Edentulism, India, Barriers to care, Danta Bhagya, Policy

I. INTRODUCTION

The elderly population of India has increased from 118 million to 173 million between 2021 and 2026,[1] which equates to an increase of 8.6% of the total population of India. According to projections, this number will grow exponentially over the next 30 years, with estimates indicating that there will be 347 million elderly people in India by 2050. The vast majority of India's elderly, and approximately 80% of those living in rural areas [2] do not have access to dental services.

Oral health is greatly underrepresented in developed countries as well as on a global scale, especially because there is also a direct correlation between oral health and systemic health. Tooth loss affects chewing function, resulting in many people relying on processed foods to eat, thereby decreasing their overall diet intake[3] Improving oral health may reduce the risk of aspiration pneumonia in older adults.

oral health impacts, positively or negatively, on quality of life, nutritional intake and social engagement of elderly individuals in India [[4] which contains very limited provisions related to oral care, although it is well documented that oral health impacts, positively or negatively, on quality of life, nutritional intake and social engagement of elderly individuals in India.

II. Oral Disease Burden in Indian Elderly

Epidemiological evidence establishes a crisis of substantial magnitude:

Edentulism:

Complete loss of permanent teeth, or edentulism, is the end result of untreated oral diseases, mainly dental caries and periodontal diseases. It affects mastication, speech, nutrition, and the quality of life. It has also been linked to systemic diseases such as cardiovascular diseases and diabetes. It is a preventable condition but is often viewed as an unavoidable consequence of the aging process. It is not given much attention.[5]

Caries:

The present review shows that the burden of dental caries is high in elderly population in India. Dental caries and its complications can be easily prevented by simple measures like good oral hygiene and early treatment.

Root caries, affecting exposed root surfaces, is increasingly seen in India's elderly population. It develops when gingival recession exposes the softer root surface to oral bacteria. [7] Studies show lower prevalence in fluoridated areas, and even late fluoride exposure appears to offer some protective benefit [8]

Periodontal Disease:
Characterized byinflammationand destruction of the supporting tissues of the teeth, it affects a large proportion of older adults in India and remains a major cause of tooth loss.[9].

Denture-related mucosal lesions are also common, particularly among elderly individuals with poor denture hygiene and irregular professional care. The combined effects of poor hygiene, dry mouth, systemic illness, and lack of routine denture evaluation increase the risk of chronic denture stomatitis, frequently associated with Candida albicans [10,11]

Xerostomia:
Itis commonly known as dry mouth, is a common condition among older adults. With a prevalence of 30% in the elderly Indian population, largely due to polypharmacy-related can acceleratethe progression of caries due to decreased antimicrobial and buffering action of saliva [8]. Many commonly prescribed medications, including anticholinergics, antihistamines, and diuretics, reduce salivary flow. This xerostomia increases the risk of root caries, mucosal lesions, and oral infections [12,13]

Prosthetic Needs:
Ageing alone does not lead to poor oral health; several other factors contribute to it. Chronic systemic diseases, financial limitations, limited access to dental care, and psychological issues such as loneliness and depression can negatively affect oral hygiene practices among older adults. These factors often result in neglected oral health and untreated tooth loss. Therefore, assessing the prosthetic status and needs of the elderly population is important for planning appropriate dental care and improving their quality of life. [14]

III. Systemic Barriers to Care Access

Multiple interlocking barriers perpetuate undertreatment:

Patient-Related Barriers:
Financial limitation remains a major determinant of poor service utilization. Many older adults survive on restricted pensions, with a significant proportion living below the poverty line. In the absence of comprehensive publicly funded dental coverage, out-of-pocket expenditure remains the primary financing mechanism.[15]. State-level initiatives such as the Karnataka Danta Bhagya Yojane offer prosthetic rehabilitation to Below Poverty Line (BPL) elderly individuals, coverage is limited and does not ensure comprehensive care.[16]

Mobility-related limitations further reduce access. Age-associated frailty, stroke, arthritis, Parkinson's disease, and other chronic conditions restrict independent travel and tolerance for prolonged dental procedures. In rural settings, inadequate transportation infrastructure compounds these barriers.

Dental fear, often rooted in historically painful extraction experiences, contributes to avoidance behaviour and delayed consultation until emergency situations arise.

Low perceived need for dental care is an important yet often overlooked barrier among older adults. Even among elderly individuals who still have natural teeth, many do not recognize the need for dental treatment. Among edentulous individuals, the perceived need for care is even lower despite the presence of existing oral health problems.[16] Limited oral health literacy and normalization of tooth loss as an inevitable consequence of aging further discourage preventive care-seeking.

Caregiver-Related Barriers:
For dependent and institutionalized elderly individuals, oral health is largely influenced by caregiver awareness and training. Nurses, auxiliary health workers, and family caregivers often lack formal education in oral hygiene practices, denture care, and early recognition of oral diseases.[17]. The limited integration of oral health into nursing and medical curricula further contributes to this gap.

In many institutional settings, oral hygiene is often given lower priority compared to acute medical management. Studies indicate that structured caregiver training programs can significantly improve oral hygiene practices and overall oral health outcomes among elderly residents; however, such programs remain limited within the Indian healthcare system

Provider-Related Barriers:
In India, only 1–5 hours are typically devoted to gerodontology in the undergraduate curriculum, and there is no mandatory comprehensive training in geriatric dentistry. Consequently, many practitioners lack adequate preparation to manage medically complex,polypharmacy-affected older patients.[19]

Competency gaps extend beyond clinical knowledge to communication skills and attitudinal

readiness. Practicing dentists frequently report reduced confidence in treating elderly individuals with multiple comorbidities, which may influence treatment planning decisions.

In addition to training limitations, physical accessibility barriers within dental clinics further restrict service utilization. Limited wheelchair access, absence of elevators, and lack of geriatric-friendly infrastructure can discourage both patients and providers from pursuing comprehensive care. [20]. Treatment decisions often vary with age, with younger patients receiving more restorative care, while older adults are more frequently offered removable prostheses.

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Domiciliary care remains underdeveloped due to economic disincentives. Lower productivity andinsufficient reimbursement structures discourage routine home-based service provision for homebound elderly individuals

Health System Barriers:

Geographic maldistribution of dental professionals remains a major structural barrier in India. Nearly 95% of dentists practice in urban areas, while around 80% of the elderly population resides in rural regions, creating substantial disparities in service access. Many rural health facilities also lack dedicated dental infrastructure and trained personnel.

Despite increasing evidence linking oral health with systemic diseases, oral healthcare continues to receive limited policy attention in India. It accounts for only about 1–2% of total health expenditure, which is disproportionate to the significant disease burden among older adults. In the absence of a dedicated national geriatric oral health policy, services remain fragmented and inconsistently implemented across states.

IV. Evidence-Based Intervention Models

Despite the substantial burden of geriatric oral disease in India, several structured interventions demonstrate practical and scalable approaches to service improvement.

State-Supported Prosthetic Care:

In India, some state governments have introduced denture support programs for older adults who cannot afford treatment. Government hospitals and dental colleges also provide free or low-cost prosthetic care. One example is the Danta Bhagya Yojana by the Government of Karnataka, which offers free complete dentures to eligible senior citizens through government dental colleges, with state support. Such initiatives improve access to basic prosthetic care and have been associated with better Oral Health-Related Quality of Life (OHRQoL) [21].Long-term success depends on regular follow-up, maintenance, and continued oral health guidance. However, sustainability remains challenged by limited funding, administrative delays, awareness gaps, and transportation barriers.

Mobile Dental Units (MDUs):

Mobile dental units equipped with portable diagnostic and basic treatment facilities extend services to geographically underserved populations. Evidence suggests that MDUs improve access to extractions, basic restorative procedures, and preventive services in rural areas. In dispersed communities, they represent a cost-effective alternative to establishing permanent infrastructure services to geographically underserved populations. Evidence suggests that MDUs improve access to extractions, basic restorative procedures, and preventive services in rural areas [22].

Regional Geriatric Dental Centres:

Several states have initiated specialized geriatric dental centres to provide complex case management, workforce training, and research support. Integration of oral healthcare within existing National Geriatric Centres offers a strategic opportunity to strengthen service delivery for aging populations [23].

Domiciliary Dental Care:

Home-based dental services address access barriers faced by frail and homebound elderly individuals. International evidence indicates improved outcomes when domiciliary care is combined with caregiver education and routine monitoring [24]. In India, broader implementation remains limited but represents a critical area for expansion.

Community-Based Training Initiatives:

Training Accredited Social Health Activists (ASHAs) and nursing home staff in basic oral health assessment, denture maintenance, and early disease recognition has shown potential to improve screening and referral pathways [1,12]. Strengthening such community-level engagement is essential for enhancing preventive care uptake.[25]

V. Policy implications and strategic considerations: Policy and system strengthening.

Improving geriatric oral health in India requires attention at many levels. Dental education must include stronger training in geriatric care so that future professionals are better prepared to manage elderly patients. At the same time, healthcare

institutions need better infrastructure and support to handle the growing demand. Expanding outreach services, such as mobile dental units, and strengthening public funding support can help reduce financial and access difficulties.[26].

A coordinated and practical policy approach is necessary to ensure that older adults receive timely, affordable, accessible and sustained oral healthcare. Investment in preventive and rehabilitative services can significantly enhance quality of life while reducing long-term disease burden.

VI. CONCLUSION

Geriatric oral health in India remains an important public health concern, with a high prevalence of edentulism, untreated caries, periodontal disease and denture-related problems. These issues reflect challenges in access to care, workforce training, and policy focus. Strengthening existing models such as prosthetic rehabilitation programs, mobile dental services, domiciliary care, and community-based initiatives is essential to improve oral health outcomes for India's growing elderly population Geriatric oral health in India remains an important public health concern, with a high prevalence of edentulism, untreated caries, periodontal disease, and denture-related problems. These conditions highlight challenges related to access to care, workforce training, and policy focus. Existing models such as prosthetic rehabilitation programs, mobile dental services, domiciliary care, and community-based initiatives show that improvement is possible. Expanding and effectively implementing these strategies will be essential to improve oral health outcomes for India's growing elderly population.

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