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A Diagnostic Overview of Geriatric Oral Cavity in Randegansari, Gresik

Nurfitri Amaliah *, Danella Yustiono, R. P. Arief Rakhman
School of Dental Medicine, Universitas Ciputra Surabaya
Citraland CBD Boulevard, Made, Kecamatan Sambikerep, Surabaya City, East Java 60219, Indonesia

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ABSTRACT

As the global population ages, the intersection of systemic health, polypharmacy, and oral pathology presents a growing challenge for geriatric care. In elderly populations, oral health is often a reflection of systemic well-being, where chronic diseases and their pharmacological treatments directly modify the oral environment. This study aimed to provide a diagnostic overview of the oral health status—specifically dental caries experience and oral mucosal lesions—among a geriatric and pre-geriatric cohort in Randegansari, Gresik. A descriptive cross-sectional study was conducted involving 35 respondents (62.9% female; 37.1% male). Clinical examinations were performed to determine the Decayed, Missing, and Filled Teeth (DMF-T) index and to identify Oral Mucosal Lesions (OMLs). Systemic health history and routine medication use were also recorded to contextualize clinical findings. The mean DMF-T score for the population was 6.86, categorized as "Very High" according to WHO severity scales. The index was dominated by the Decayed (4.29) and Missing (2.51) components, while the Filling component was remarkably low (0.06). Systemic comorbidities were prevalent, with Diabetes Mellitus (34.3%) and Hypertension (25.7%) being the most frequent, accompanied by high rates of polypharmacy (71.4%). Notably, 100% of respondents exhibited oral mucosal findings, with Coated Tongue being the most ubiquitous lesion across all age and gender groups. There is an urgent need for integrated geriatric health programs that prioritize biofilm control, tongue hygiene, and minimally invasive restorative interventions to prevent further dental loss.

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Corresponding Author:

Nurfitri Amaliah
Universitas Ciputra Surabaya
Email: nurfitri.amaliah@ciputra.ac.id

INTRODUCTION

Demographic shift towards an ageing population is a salient issue in contemporary society. Current projections indicate that by 2050, the population of individuals aged 80 years and older is expected to increase by over threefold (Bakker et al., 2024). A significant consequence of this phenomenon is expected to be its profound influence on prevailing healthcare systems, given the heightened vulnerability of the elderly population to conditions of fragility and care dependency. Its definition is as a term used to describe a condition in which elderly individuals are susceptible to abrupt alterations in their health status due to a decrease in bodily functions and reserves (Caetano-

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Santos et al., 2026). As elderly individuals deteriorate and require highly specialised forms of assistance, they may no longer be capable of maintaining an independent lifestyle within their own homes and elderly individuals frequently exhibit inadequate oral health, characterised by the presence of caries and the presence of remains of former teeth (radices relictae), compounded by suboptimal oral hygiene practices (Yoshida-Kohno et al., 2025).

Oral health of the ageing demographic is a matter of concern. This phenomenon is evidenced by the prevalence of tooth loss and oral pathologies within this demographic (Blostein et al., 2020). It is imperative that this condition is analysed within the context of the elderly population, disregarding the notion that the suboptimal oral health status is solely indicative of the accumulated impact of oral pathologies by using DMF-T (decay, missing, filling) score (Kabbarah et al., 2024). Instead, it is essential to consider the challenges faced by these individuals in accessing adequate dental treatment over the course of their lifetime. The DMF-T score offers a clear quantitative overview of a patient's dental status and present health issues, but it is important to consider other factors. The state of the underlying oral mucosa often manifest as secondary symptoms in the form of the clinical status of the dentition. In elderly patients, the shift in focus from hard to soft tissue is mediated by the ecosystem of the oral cavity.

Elderly have a different oral environment to youngsters. At the moment, it looks like age-related alterations in the mouth aren't too disruptive for healthy people. From a clinical perspective, the oral mucosa of the elderly shouldn't be any different to that of youngsters (Radwan-Oczko et al., 2022). But the lining of the mouth is subject to change due to a number of ongoing issues in the oral cavity. There are loads of things that can cause this, including things like physical injury, dry mouth, skin problems, not getting enough nutrients, not getting enough vitamins and minerals, diabetes, high blood pressure, heart problems, digestive problems, medicines to treat all sorts of conditions (both general and local), smoking and drinking alcohol, not keeping your teeth clean, and mental or physical health issues that might stop someone from looking after their teeth properly (Capodiferro et al., 2021).

Furthermore, the rising prevalence of oral diseases among the elderly has been attributed to two key factors. Firstly, the prolonged retention of teeth within the oral cavity, resulting in the accumulation of oral diseases through the years. Secondly, the increased difficulty experienced by this demographic in maintaining optimal oral hygiene, leading to reduced utilisation of oral healthcare services (Costa et al., 2024). Therefore, an examination using a reliable assessment index for oral cavity is required in order to produce valid results, particularly in the case of elderly people who are frail and vulnerable.

IMPLEMENTATION METHOD

This study is a descriptive study with a cross-sectional design and was conducted at the Randegansari, Gresik, on Sunday, March 29th 2026. Population constituting the subject of this study was comprised of 35 elderly who came to Village Councill Hall on that day to take part in the counselling and examination session, with an age range extending from 50 to 79 years. Sample size was determined by means of convenience sampling, which entailed canvassing the elderly as residents whose living around. DMFT index was utilised as the metric for assessing dental caries status. Subsequently, an examination of the oral mucosa was carried out by listing several normal variations or lesions commonly found in the elderly, followed by a direct examination of the elderly using a mouth mirror utilised essential diagnostic instruments, comprising a dental mirror and an excavator. The goals of the oral cavity assessment was to plan proactive and pre-emptive measures for the elderly residing in the Randegansari area.

RESULTS AND DISCUSSION

Table 1. Characteristic of Respondents

Characteristic	Frequency (n)	Percentage (%)
Age Group		
Pre-elderly (<60)	22	62,9
Young-old (60-69)	9	25,7
Middle-old (70-79)	4	11,4
Old (80)	0	0
Gender		
Male	13	37,1
Female	22	62,9
Systemic Disease		
Diabetes Mellitus	12	34,3
Hypertension	9	25,7
Dyslipidemia	7	20,0
Gout	4	11,4
None (-)	10	28,6
Medications		
Metformin/Glimepiride	12	34,3
Simvastatin	7	20,0
Antihypertensives	9	25,7
Allopurinol	4	11,4
None (-)	10	28,6

Demographic and clinical profile of the Randegansari cohort highlights a "feminization of aging" trend, with a female majority (62.9%) and a high prevalence of metabolic disorders, specifically Diabetes Mellitus (34.3%) and Hypertension (25.7%). These systemic conditions act as primary modifiers of oral health; chronic hyperglycemia in diabetic patients is a well-documented risk factor for periodontal destruction and impaired mucosal healing, while hypertension often necessitates medications like Amlodipine and Captopril. According to Ioana Paunica et al. (2023), the bi-directional relationship between systemic health and oral status means these patients are at a higher risk for both tooth loss and opportunistic infections, which explains the significant Missing (M) component and mucosal findings observed in the study (Păunică et al., 2023).

Furthermore, the high rate of polypharmacy—with over 70% of respondents taking routine medications such as Metformin, Simvastatin, and antihypertensives—creates a physiological environment prone to drug-induced hyposalivation. As noted by Zohreh Khavandgar et al. (2024), the side effects of these common drugs frequently include xerostomia, which reduces the mouth's natural buffering capacity. This lack of salivary flow not only promotes the accumulation of microbial biofilm, evidenced by the 100% prevalence of Coated Tongue, but also accelerates the Decay (D) process. Consequently, the respondents' dental and mucosal pathologies are not isolated issues but are direct sequelae of their systemic health management and age-related physiological shifts (Khavandgar et al., 2024).

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Table 2. Distribution of DMF-T Components

Variable	Decayed (D)	Missing (M)	Filling (F)
Age Group			
<60	4,00	2,68	0,09
60-69	4,89	2,22	0,00
70-79	4,50	2,25	0,00
Gender			
Male	4,69	3,00	0,00
Female	4,05	2,23	0,09

Table 3. Interpretation of DMF-T Indeks

Index	Calculated Mean	WHO Severity	Clinical Interpretation
DMF-T Score	6,86	Very High	The population exhibits a severe level of dental impairment. The high score is driven primarily by untreated decay (**D**) and tooth loss (**M**), with a significant lack of restorative intervention (**F**)

DMF-T index of 6.86 identified in this study falls into the "Very High" severity category according to World Health Organization (WHO) criteria, indicating a significant cumulative experience of dental caries within the community. A critical observation in Table 2 is the profound disparity between the Decayed (4.29) and Filling (0.06) components; the near-absence of restored teeth suggests a lack of access to restorative dental care or a low prioritized value for tooth preservation. According to Petersen in 2005 that cited by Fatima Del Carmen et al. (2021) in the Bulletin of the World Health Organization, high "D" and "M" scores in aging populations often reflect a transition toward "emergency-only" dental care, where extraction is favoured over restoration once decay becomes symptomatic. This pattern is particularly evident in the male subgroup, which exhibited a higher mean DMF-T (7.69) compared to females (6.36), potentially due to documented differences in health-seeking behaviours and tobacco use frequently observed in geriatric cohorts (Fatima Del Carmen et al., 2021).

The clinical interpretation in Table 3 underscores a state of "dental neglect" or "treatment lag," where the high number of active lesions (Decayed) has not been met with therapeutic intervention (Filling). This "Very High" score is a reliable predictor of impaired quality of life, as untreated caries and subsequent tooth loss (Missing) directly impact masticatory efficiency and nutritional intake in the elderly. As noted by Selwitz in The Lancet, the progression from the "D" category to the "M" category in older adults is often accelerated by systemic factors such as xerostomia and reduced manual dexterity (Ghorbanizadeh et al., 2022). In the Randegansari group, the high DMF-T indicates that the population is at a high risk of "Oral Frailty," a condition where the cumulative loss of dental function leads to broader physical decline.

To address these findings, the focus of geriatric intervention must shift from reactive extractions to proactive stabilization. The fact that the Filling (F) score is nearly zero suggests that the community is trapped in a cycle of tooth loss rather than tooth maintenance. According to the WHO Global Oral Health Status Report (2022), effective management in such high-severity populations requires the integration of fluoride therapies and minimally invasive restorations to arrest active decay (WHO, 2022). Without a structural change in dental health delivery, the "Decayed" teeth currently identified in Table 2 will inevitably transition into "Missing" teeth, further inflating the DMF-T score and worsening the oral-systemic health of these elderly residents.

Table 4. Distribution of Oral Mucosa Lesion

Characteristic	Presence of Lesion	Most Common Lesion Type
Age Group		
<60	100%	Coated Tongue
60-69		
70-79		
Gender		
Male	100%	Coated Tongue
Female		

The 100% prevalence of Coated Tongue across all age and gender groups in Table 4 serves as a primary indicator of compromised oral hygiene and altered physiological states. This finding is intrinsically linked to the high decay rate, as the accumulation of keratin, food debris, and microorganisms on the tongue dorsum acts as a reservoir for cariogenic bacteria. Yaegaki and Sanada demonstrate that a coated tongue is a significant precursor to both halitosis and increased dental biofilm formation, particularly in elderly patients with reduced manual dexterity or systemic frailty (Yatabe et al., 2023). Furthermore, the presence of Fissured Tongue and Lingual Varicosities noted in the raw data are common age-related degenerative changes. While often asymptomatic, these fissured grooves provide additional niches for microbial entrapment, further exacerbating the risk of opportunistic infections like oral candidiasis in a population already vulnerable due to systemic comorbidities (Pedersen et al., 2021).

Findings in this report suggest that the Randegansari elderly population has an "Oral Frailty" syndrome. This is a condition where people have a lot of tooth decay and have mucus build-up in their mouths. The lack of treatment (low F score) and the fact that there is still mucus on the teeth show that the patient has not been looking after their teeth properly. Management of dental caries in the elderly must move beyond simple drilling and filling to include aggressive biofilm control and mucosal debridement. For this cohort, the clinical priority should shift towards stabilising the oral environment through tongue hygiene and fluoride therapy to prevent the "Decayed" teeth from progressing into the "Missing" category, thereby preserving what remains of the patients' functional dentition and nutritional capacity.

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Figure 1. Oral Examination Assessment in Elderly

CONCLUSION

This study concludes that the elderly and pre-elderly population in Randegansari exhibits a "Very High" dental disease burden, characterized by a mean DMF-T of 6.86 and a near-total absence of restorative interventions (Filling = 0.06). This high caries experience is inextricably linked to a 100% prevalence of oral mucosal findings, particularly Coated Tongue, which serves as a clinical marker for oral frailty exacerbated by systemic conditions like Diabetes Mellitus and Hypertension. The widespread reliance on polypharmacy further compromises the oral environment through drug-induced xerostomia, creating a cycle of untreated decay and tooth loss that threatens the nutritional health and overall quality of life for these residents. Therefore, there is an urgent need for integrated geriatric dental programs that prioritize proactive biofilm management, tongue hygiene, and accessible conservative treatments over reactive extractions.

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