DENTAL SCREENING AND DMF-T SCORE ANALYSIS IN DESA RANDEGANSARI

Jennifer Widjaja, Eveline Yulia Darmadi [*], Yessy Andriani Fauziah, Yemy Ameliana, Nurfitri Amaliah

School of Dental Medicine, Universitas Ciputra
Citraland CBD Boulevard, Made, Kecamatan Sambikerep, Surabaya City, East Java 60219, Indonesia
Email: eveline.darmadi@ciputra.ac.id

Abstract

Dental caries remains a prevalent public health issue, particularly in rural areas with limited access to dental care. This study aimed to assess the oral health status of residents in Randegansari Village through dental screening and DMF-T score analysis. A cross-sectional study was conducted on 15 participants aged 13–65 years. The results showed a high DMF-T score, with missing teeth contributing the most. The high prevalence of tooth loss and untreated caries indicated inadequate access to dental care and a lack of awareness regarding oral hygiene. The primary challenges identified were the absence of preventive measures and limited access to restorative treatment. To address this issue, educational programs on oral health, preventive interventions such as fluoride applications, and improved access to dental care are essential. The study concludes that increased community awareness and dental services are necessary to reduce caries prevalence and improve oral health in rural populations.
Keywords: Dental Caries, DMF-T Score, Oral Health, Rural Communities, Preventive Dentistry

INTRODUCTION

Dental caries is one of the most prevalent oral health problems worldwide, affecting individuals of all ages and socioeconomic backgrounds. The World Health Organization (WHO) recognizes dental caries as a significant public health issue, particularly in rural and underserved areas where access to dental care is limited (Tanık, 2019). Various factors influence dental caries prevalence, including dietary habits, oral hygiene practices, socioeconomic conditions, and dental health services availability. In developing countries, the burden of dental caries remains high due to a lack of awareness, inadequate access to preventive care, and limited availability of restorative treatments (U Ikimi et al., 2020). Desa Randegansari, located in Gresik, Indonesia, is a rural area where oral health concerns, including high caries prevalence and tooth loss, remain pressing.

The DMF-T (Decayed, Missing, and Filled Teeth) index is widely used to assess the prevalence and severity of dental caries within populations. This index helps identify the proportion of decayed, missing, and filled teeth among individuals, providing valuable insight into the oral health status of a community. High DMF-T scores indicate a significant burden

of untreated caries and tooth loss, which can adversely affect the affected individual's overall well-being and quality of life (Singh & Talmale, 2023). In Desa Randegansari, preliminary observations and reports from local healthcare workers suggest that dental caries and tooth loss are common among residents. Yet, there is a lack of comprehensive data to quantify the extent of the problem.

There is often a lack of awareness regarding the importance of oral hygiene and preventive measures, such as fluoride application and regular brushing. In many cases, dental problems are only addressed when they reach an advanced stage, leading to unnecessary pain, discomfort, and even loss of function (Darmadi et al., 2024). The lack of preventive care and early intervention further exacerbates the issue, resulting in higher DMF-T scores and increased oral health complications. Another critical issue affecting oral health in rural communities is the absence of structured dental health education programs. While urban populations may have access to a wide range of educational resources and professional dental services, rural communities often lack such opportunities. In Desa Randegansari, many residents may not be fully aware of the relationship between diet, oral hygiene, and dental diseases. Excessive consumption of sugary foods and beverages and inadequate oral hygiene practices contribute to the high prevalence of dental caries. Poor oral health continues without proper education and intervention, affecting children and adults alike (Singh & Talmale, 2023). Given these challenges, it is essential to conduct a systematic assessment of the oral health status of the residents in Desa Randegansari. This research aims to analyze the DMF-T index among the local population, providing a clear picture of the extent of dental caries, tooth loss, and restorative treatments. By collecting and evaluating data on the oral health status of the community, this study seeks to inform policymakers, healthcare providers, and local authorities about the urgent need for targeted dental health interventions.

IMPLEMENTATION METHOD

This study is a descriptive study with a cross-sectional design. The research was conducted at the Randegansari village hall, Gresik, on Sunday, February 23, 2025. The population in this study consisted of 15 residents living around the village hall, with an age range of 13 to 65 years. The sample size was determined using convenience sampling, involving residents present around the village hall. This study used the DMF-T index to assess dental caries status. The DMF-T index examination used essential diagnostic tools, including a mouth mirror, tweezers, probe, and excavator. The DMF-T index examination aimed to plan promotive and preventive efforts and determine treatment needs for the community around Desa Randegansari.

RESULTS AND DISCUSSION

The characteristics of the research subjects based on gender were five males (33.3%) and 10 females (66.67%). The age distribution of the research subjects by age group is shown in Table 1. The most common age group among the subjects was 50–60 years, with seven individuals (46.67%). The distribution of subjects in other age groups can be seen in Table 1. From the data analysis, it was found that the D index (decay) totalled 18, the M index (missing) totalled 92, and the F index (filling) totalled 3. The sum of these three indices was 113. The average DMF in this population was 7.53. The originality of this research lies in its focus on a rural Indonesian community where oral health data is scarce. While numerous studies have been conducted on dental caries and DMF-T scores in urban settings, relatively few have explored the challenges rural populations face in Indonesia. By shedding light on the oral health status of Desa Randegansari, this study contributes valuable data that can be used for future research, policy development, and community-based interventions.

Comparison with National and Regional Data

Indonesia has a notably high prevalence of dental caries. The 2018 national health survey reported a caries prevalence of 88.8%, with the highest rates observed in individuals aged 5–9 years and those aged 35 and over (Riskesdas, 2018). The national DMF-T index was reported to be 7.1, with a high DMF-T index (6.9) found in the 35–44-year age group and 16.8 for individuals aged 65 and over. Our study's findings align with these national trends, indicating a significant burden of dental caries in Desa Randegansari. This high prevalence underscores the widespread nature of dental caries across various age groups in Indonesia. Our study's findings are consistent with these national trends, indicating a significant burden of dental caries in Desa Randegansari.

Urban-Rural Disparities in Oral Health

Numerous studies have documented disparities in oral health between urban and rural populations. In central Chile, adolescents from rural communities exhibited higher caries experiences than their urban counterparts, highlighting the impact of rurality on oral health outcomes (Giacaman et al., 2018). Similarly, a study in Ferozepur City found that the rural population had a higher prevalence of caries (55.8%) than the urban population (39.8%). These findings suggest that rural communities, like Desa Randegansari, may be more susceptible to dental caries due to limited access to dental care and preventive services.

Contributing Factors to High DMF-T Scores

Several factors may contribute to the high DMF-T scores observed in Desa Randegansari:

Limited Access to Dental Care: Rural areas often face challenges accessing dental services, leading to delayed treatment and higher rates of untreated caries. A study comparing dental services across rural, suburban, and urban areas found that urban regions had more dental caries penetrating dentin than rural areas, suggesting differences in service availability and utilization (Dewanto et al., 2020).

Oral Hygiene Practices: Inadequate oral hygiene practices, such as infrequent brushing and lack of fluoride use, contribute to higher caries rates. A study assessing the association of gender and oral health knowledge on the DMF-T index among schoolchildren found that better oral health knowledge was associated with lower DMF-T scores, emphasizing the importance of education in preventing caries (Monsalves et al., 2023).

Dietary Habits: High consumption of sugary foods and beverages is a well-established risk factor for dental caries. In rural communities, limited access to affordable, healthy food options may lead to diets high in cariogenic substances, increasing the risk of caries development (Santoso et al., 2021).

Implications for Public Health

The high prevalence of dental caries in Desa Randegansari has significant public health implications:

Quality of Life: Dental caries and tooth loss can lead to pain, difficulty eating, and speech problems, adversely affecting individuals' quality of life.

Economic Burden: The cost of dental treatments can be substantial, particularly for low-income families, leading to financial strain.

Systemic Health: Poor oral health is linked to systemic conditions such as cardiovascular diseases and diabetes, highlighting the need for comprehensive health interventions.

Recommended Interventions

To address the high prevalence of dental caries in Desa Randegansari, the following interventions are recommended:

Oral Health Education: Implement community-based educational programs to raise awareness about proper oral hygiene practices, the importance of regular dental check-ups, and the impact of diet on oral health.

Preventive Services: Introduce preventive measures such as fluoride varnish applications and dental sealants in schools and community centres to reduce the incidence of caries.

Improving Access to Care: Establish mobile dental clinics or outreach programs to provide dental services in rural areas, ensuring residents can access necessary treatments.

Policy Initiatives: Advocate for policies that promote oral health, such as subsidizing dental care costs for low-income populations and integrating oral health into primary healthcare services.

A systematic review and meta-analysis of observational studies reported an overall caries prevalence of 76% among Indonesian children. Moreover, this research aims to bridge the gap between dental health awareness and actual practice by proposing practical and sustainable solutions. One such solution involves introducing community-based oral health education programs emphasising preventive care. Educating residents about proper brushing techniques, the benefits of fluoride, and the impact of diet on oral health can significantly reduce the incidence of dental caries. Additionally, establishing periodic dental screening programs in collaboration with local healthcare providers can ensure early detection and treatment of dental

problems (Dewanto et al., 2020).

Another key solution involves advocating for improved access to dental care services in rural areas. Efforts can be made to bring mobile dental clinics or organize outreach programs where professional dentists visit remote villages to provide check-ups, treatments, and preventive care. Encouraging partnerships between governmental and non-governmental organizations can also help fund and support such initiatives. Furthermore, training local healthcare workers to provide basic dental care and education can empower communities to take charge of their oral health. The results of this study are expected to provide evidence-based recommendations for addressing the oral health needs of rural populations. Stakeholders can design more effective and targeted interventions by understanding the factors contributing to high DMF-T scores in Desa Randegansari. The study also aims to raise awareness among residents, encouraging them to adopt better oral hygiene practices and seek timely dental care when needed. Ultimately, improving oral health in rural communities will enhance individual well-being and contribute to overall public health development (Srisilapanan et al., 2017).

Table 1. Distribution of research participants based on age range and gender

Age	Male	Female	Total	Percentage
< 15 years	-	1	1	6,67%
15 – 20 years	-	1	1	6,67%
21 – 30 years	1	1	2	13,33%
31 – 40 years	-	2	2	13,33%
41 – 50 years	1	-	1	6,67%
51 – 60 years	3	4	7	46,67%
> 60 years	-	1	1	6,67%
	5	10	15	

CONCLUSION

The high prevalence of dental caries and tooth loss in Desa Randegansari underscores the urgent need for comprehensive oral health interventions. This research, by assessing DMF-T scores, provides crucial insights into the existing challenges and potential solutions. The findings will serve as a foundation for future efforts to improve dental care access, promote preventive measures, and enhance community awareness. By addressing the root causes of poor oral health, this study seeks to create a sustainable impact that benefits both current and future generations in Desa Randegansari.

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