



The Relationship Between Dental Health Status and Quality of Life in the Elderly

Lailatul Jannah^a, Imam Sarwo Edi^a, Sunomo Hadi^{a,1*}

^a Department of Dental Health, Politeknik Kesehatan Kemenkes Surabaya, Surabaya, East Java, Indonesia

¹ sunomohadi@gmail.com*

* Corresponding Author

ARTICLE INFORMATION

Article History:

Received: June 4, 2025

Revised: September 12, 2025

Published: November 21, 2025

Keywords:

Elderly

Dental Health Status

Quality of Life

GOHAI

ABSTRACT

Older adults experience various physical and psychological changes as they age. One common physical change in the oral cavity is tooth loss caused by dental caries. Data from the 2018 National Basic Health Research show that the prevalence of tooth loss is 29% among individuals aged 55–64 years and 30.6% among those aged >65 years. This condition affects chewing, speaking, and swallowing functions, and may lead to anxiety that impacts the quality of life of older adults. However, studies examining the relationship between oral health status and quality of life at the community level, particularly in Sebalong Village, Pasuruan Regency, are still lacking. This study aimed to determine the relationship between oral health status based on the DMF-T index and the quality of life of older adults using the Geriatric Oral Health Assessment Index (GOHAI). This cross-sectional analytical study involved 38 respondents aged 60–74 years selected through simple random sampling. Inclusion criteria included older adults residing in Sebalong Village, willing to participate, and able to communicate well, while exclusion criteria consisted of those with severe cognitive impairment. Data were collected through dental health examinations and completion of the GOHAI questionnaire after obtaining ethical approval and informed consent. Data were analyzed using the Spearman Rank test. The results showed an average DMF-T score of 21.03 (high category), far above the WHO standard of <5.0 (very low category). Moreover, 68.4% of participants had poor quality of life. Statistical analysis revealed a p-value of 0.000 and a correlation coefficient of -0.862, indicating a very strong negative relationship between oral health status and quality of life. In conclusion, poorer oral health status is associated with lower quality of life among older adults. These findings highlight the importance of promotive–preventive programs and continuous oral health services for the elderly, as well as further research with larger samples and longitudinal designs.

INTRODUCTION

Older adults, or the elderly, are individuals aged 60 years and above who experience physiological conditions that differ from other age groups (Manurung et al., 2023). According to the World Health Organization (WHO), the elderly are categorized into four groups: middle-aged or pre-elderly (45–59 years), elderly (60–74 years), old elderly (75–90 years), and very old (above 90 years) (Mujiadi & Rachmah, 2022). Data from the Central Bureau of Statistics (2023) reported an increase in the elderly population in Indonesia to 11.75%, while East Java Province reached 15.57% (Badan Pusat Statistik, 2023). This rising trend highlights the importance of paying greater attention to the well-being and quality of life of older adults. As individuals age, they experience various physical and functional declines, making them more vulnerable to disease, which ultimately affects their quality of life (Budiono & Rivai, 2021). The World Health Organization (WHO) describes quality of life as an individual's perception of their position in life within the context of culture, value systems, expectations, goals, and priorities, encompassing physical, psychosocial, and environmental aspects (Ekasari et al., 2018).

One essential aspect of elderly well-being is oral health. A common issue among older adults is tooth loss, which may occur due to periodontal disease, trauma, systemic conditions, and particularly dental caries (Ramadhana et al., 2024). Tooth loss can impair chewing, speech, and swallowing abilities, which directly influence quality of life (Auralia et al., 2024). The DMF-T index is a WHO-recommended tool used to assess oral health status, especially caries experience, by calculating the number of decayed, missing, and filled teeth (Fadilah, Hartman, & Kusaeri, 2021). This index plays a crucial role in describing the burden of oral health problems among older individuals.

Oral health problems among the elderly in Indonesia remain high. The 2018 National Basic Health Research reported that 61.9% of individuals aged 55–64 years and 54.2% of those older than 65 years experienced oral health problems (Sari & Jannah, 2021). Data from the Indonesian Ministry of Health (2018) further recorded tooth loss at 23.6% among individuals aged 45–54 years, 29.0% among those aged 55–64 years, and 30.6% among individuals aged ≥65 years (Badan Penelitian dan Pengembangan Kesehatan, 2019). Preliminary surveys in Sebalong Village showed an average DMF-T index of 22.5, categorized as high, and far above the WHO very low standard of <5.0 (World Health Organization, 2013). This condition indicates a significant oral health burden among the elderly, which may contribute to decreased quality of life (Rezq et al., 2024). However, no previous studies have specifically examined the relationship between oral health status and quality of life among elderly individuals in Sebalong Village a critical research gap that needs to be addressed.

Oral Health Related Quality of Life (OHRQoL) is a multidimensional concept encompassing physical, psychological, and social aspects of daily living (Amran et al., 2023). The Geriatric Oral Health Assessment Index (GOHAI) is widely used to assess OHRQoL and measures three key dimensions: physical function, psychosocial function, and discomfort due to oral health problems (Bustamante et al., 2020). This instrument also evaluates an individual's self-esteem, satisfaction with oral health, and comfort while eating, sleeping, and engaging in social interactions (Mahata et al., 2021). GOHAI provides a comprehensive evaluation of how oral health conditions influence the well-being of older adults.

This study offers novelty by analyzing the relationship between oral health status using the DMF-T index and the quality of life of elderly individuals assessed through GOHAI at the community level in Sebalong Village a setting that has never been investigated before. Therefore, the purpose of this study is to determine the relationship between oral health status and the quality of life of elderly individuals, and to provide scientific evidence for strengthening promotive and preventive efforts to improve elderly well-being in the area.

METHOD

This study is an analytical research with a cross-sectional design aimed at analyzing the relationship between dental health status and the quality of life of older adults. The study was conducted in Sebalong Village, Pasuruan Regency, and received ethical approval from the Health Research Ethics Committee of Poltekkes Kemenkes Surabaya (No. EA/3270/KEPK-

Poltekkes_Sby/V/2025). All respondents were informed about the aims and procedures of the study and signed an informed consent form prior to data collection.

The study population consisted of older adults aged 60–74 years residing in Sebalong Village. The sample size was 38 participants, determined using Slovin's formula with a 5% margin of error. The inclusion criteria were older adults who were willing to participate, able to communicate well, and did not have severe cognitive impairment; older adults with severe cognitive impairment were excluded. The sampling process used a simple random sampling technique based on a list of older adults obtained from the Sebalong Village elderly posyandu records. Randomization was carried out using a random number generator.

Dental health status was assessed using the DMF-T examination sheet based on WHO criteria, categorized as very low (<5.0), low ($5.0-8.9$), moderate ($9.0-13.9$), and high (>13.9) (Febrida et al., 2024). The quality of life of older adults was measured using the Geriatric Oral Health Assessment Index (GOHAI) questionnaire, consisting of 12 Likert-scale items covering three dimensions: physical function, psychosocial function, and discomfort related to oral health problems. GOHAI scores were categorized as good ($57-60$), moderate ($51-56$), and poor (≤ 50) (Mahata et al., 2021). The GOHAI instrument has been widely used internationally and is proven to be valid and reliable, supported by a Cronbach's alpha of 0.98 from a validity test conducted in another village.

The DMF-T examination was performed by a calibrated examiner to minimize bias, while the GOHAI questionnaire was administered through structured interviews. Data were analyzed using the Spearman Rank correlation test with a significance level of $p < 0.05$.

RESULTS AND DISCUSSION

Table 1. Frequency Distribution of Age and Gender of Elderly in Sebalong Village.

Characteristics	Frequency	Percentage (%)
Elderly Age		
60-62	7	18.5
63-65	9	23.8
66-68	12	31.6
69-71	7	18.4
72-74	3	7.8
Total	38	100
Gender		
Male	8	21.1
Female	30	78.9
Total	38	100

Table 1 shows that the characteristics of the respondents in this study, based on age groups, indicate that most respondents were aged 66–68 years, accounting for 31.6%. In this study, the majority of respondents were female, with 30 elderly women (78.9%), while male respondents numbered only 8 (21.1%).

Table 2. Average Dental Caries Experience in the Elderly Based on the DMF-T Index.

Criteria	Mean
Decayed	5.21
Missing	15.82
Filling	0
DMF-T	21.03

Table 2 shows that the average caries experience among the elderly based on the DMF-T index includes an average of 5.21 decayed teeth, 15.82 missing teeth (the highest value), and 0 filled teeth. The overall average DMF-T score is 21.03, indicating that the elderly in Sebalong Village have, on average, 21 teeth affected by caries.

Table 3. Frequency Distribution of Dental Health Status in the Elderly in Sebalong Village.

DMF-T Category	Frequency	Percentage (%)
High	36	94.7
Moderate	1	2.6
Low	1	2.6
Total	38	100

Table 3 shows that nearly all elderly respondents had a high level of dental health status (high DMF-T score), with 36 elderly individuals (94.7%). These findings indicate that most elderly tend to underestimate their dental health, paying insufficient attention to oral hygiene, which may increase the risk of dental and oral health problems.

Table 4. Frequency Distribution of Oral Health-Related Quality of Life in the Elderly in Sebalong Village.

Quality of Life	Frequency	Percentage (%)
Good	2	5.3
Moderate	10	26.3
Poor	26	68.4
Total	38	100

Table 4 shows that most elderly respondents (68.4%) had a poor quality of life related to their oral health.

Table 5. Analysis of Dental Health Status and Quality of Life in the Elderly in Sebalong Village.

Variable	Spearman-Rank Correlation Test		Correlation Coefficient
	p	α	
Dental Health Status	0.000	0.05	-0.862
Quality of Life			

Table 5 shows that the results of the Spearman-rank correlation test indicate an alpha value of 0.05 and a p-value of 0.000. Since $p < \alpha$, H_1 is accepted, meaning there is a significant relationship between dental health status and quality of life among the elderly in Sebalong Village, Pasuruan. The correlation coefficient is -0.862 , indicating a very strong relationship. The negative value shows that the higher the DMF-T score (the worse the dental health), the lower the GOHAI score (the poorer the quality of life).

DISCUSSION

This study found a significant association between poor dental health status and a decline in the quality of life of older adults in Sebalong Village, Pasuruan Regency. Older adults with a high average DMF-T score tended to experience reduced quality of life, particularly in the domains of physical function, pain, and psychosocial well-being. Poor dental health in this population was largely dominated by dental caries and periodontal complications, which eventually led to tooth loss. These conditions are triggered by physiological changes associated with aging, such as decreased mucosal elasticity and gingival recession due to chronic plaque accumulation that is not promptly managed, making the oral mucosa more susceptible to irritation and infection. This explanation is supported by Auralia et al. (2023), who stated that aging increases the risk of caries and periodontal disease in older adults. Reduced salivary flow, which contributes to xerostomia, further exacerbates oral problems, especially when influenced by factors such as the use of certain medications, smoking habits, radiation therapy, depression, or systemic diseases like hypertension (Setiawati et al., 2022). Limited oral health knowledge among community members in Sebalong and their tendency to rely on self-medication—such as purchasing over-the-counter pain relievers instead of consulting dental professionals—worsens the issue. The long distance to the nearest health center also serves as a barrier to accessing dental care. These findings are consistent with Hariani et al. (2024), who reported that limited education and low awareness of routine dental check-ups are key contributors to poor dental health among older adults in remote areas.

The impact of poor oral health on the quality of life of older adults is multidimensional. In the physical domain, extensive tooth loss causes difficulties in chewing, swallowing, and speaking. Field observations revealed that older adults who had lost many teeth tended to consume soft or liquid foods due to difficulty chewing harder foods. This dietary preference reduces the intake of nutritious foods such as meat and fruits, potentially affecting their nutritional status. This aligns with Ramadhana et al. (2024), who found that tooth loss affects the nutritional status and overall quality of life of older adults. Additionally, impaired articulation due to missing teeth disrupts speech, making social interactions uncomfortable.

In the pain or discomfort domain, caries and tooth loss lead to discomfort during eating, prompting older adults to avoid hard foods or cold drinks that may trigger pain or tooth sensitivity. These findings are consistent with Haidee et al. (2024), who reported that masticatory disturbances influence eating habits among older adults. Similarly, Sari and Azizah (2022) noted that hot and cold foods can exacerbate pain in decayed teeth. Chan et al. (2021) also found that untreated caries may cause discomfort, infection, and ultimately tooth loss.

In the psychosocial domain, caries and tooth loss may affect the facial aesthetics of older adults, leading to dissatisfaction with their dental appearance, feelings of embarrassment when eating in front of others, anxiety, and a tendency to limit social interactions. However, field observations showed that many older adults did not consider tooth loss a significant issue, as they viewed it as a normal and inevitable part of aging. This perspective is supported by Setyowati et al. (2021), who found that older adults often perceive tooth loss as a natural aging process and thus do not actively seek dental care. Nevertheless, some older adults in this study still expressed concern about their oral health, indicating that dental problems may affect psychological well-being even when not openly acknowledged.

Overall, dental health problems can influence various aspects of life, including physical discomfort and functional limitations such as difficulty chewing, as well as psychological effects such as reduced self-confidence and impaired social interaction. Severe caries can cause pain, disrupt eating and sleeping patterns, and eventually result in tooth loss, which directly affects the well-being and quality of life of older adults. This aligns with the concept of "quality of life" in Lawrence Green's Precede-Proceed model (1980), which emphasizes that physical, mental, and social well-being is influenced by multiple factors (Pakpahan et al., 2021). Prameswari et al. (2022) similarly reported that tooth loss negatively affects psychological aspects, leading to embarrassment, anxiety, loss of appetite, malnutrition, difficulty socializing, reluctance to leave home, and impaired concentration.

This study highlights the need for promotive and preventive oral health interventions for older adults, particularly through mobile dental services, oral health education focusing on tartar, caries, and tooth loss, as well as rehabilitative support such as the provision of dentures for those who need them. Strengthening social support and access to healthcare services is expected to significantly improve the quality of life of older adults—not only in terms of oral health, but also their psychosocial well-being as a whole.

CONCLUSION

Based on the findings of this study, it can be concluded that dental health status is closely associated with the quality of life of older adults in Sebalong Village, Pasuruan Regency. The results indicate that poorer dental health is linked to a lower perceived quality of life among the elderly. These findings highlight the importance of strengthening awareness and understanding among older adults regarding the impact of oral health on overall well-being, including maintaining healthy dietary habits, practicing proper oral hygiene, and seeking regular dental check-ups at nearby health facilities.

This study also provides a basis for developing educational programs and promotive–preventive oral health interventions targeted at the elderly population. Furthermore, the findings are expected to serve as a reference for future research exploring additional factors influencing oral health and quality of life among older adults, using larger samples and longitudinal study designs.

REFERENCES

- Amran, R., Lisfrizal, H., & Ningrum, V. (2024). Hubungan antara Status Karies dan Kualitas Hidup Pasien di Klinik Bedah Mulut RSGM Baiturrahmah. *e-GiGi*, 12(1), 38-43. <https://doi.org/10.35790/eg.v12i1.48598>
- Auralia, A., Utami, N. D., Purnamasari, C. B., Sawitri, E., & Martalina, E. (2023). Profil Kesehatan Gigi dan Mulut Lanjut Usia di Panti Sosial Tresna Werdha Nirwana Puri Samarinda. *Mulawarman Dental Journal*, 3(1), 41-49. <http://dx.doi.org/10.30872/MOLAR.v3i1.7997>
- Auralia, A., Utami, N. D., Sawitri, E., Martalina, E., Isnuwardana, R., & Purnamasari, C. B. (2024). The relationship of oral health and quality of life for elderly at the Tresna Werdha Nirwana Social Organization Puri Samarinda. *Interdental Jurnal Kedokteran Gigi (IJKG)*, 20(1), 15-21. <https://doi.org/10.46862/interdental.v19i2.7661>
- Badan Penelitian dan Pengembangan Kesehatan. (2019). *Laporan Nasional RISKESDAS 2018*. Jakarta: Badan Penelitian dan Pengembangan Kesehatan.
- Badan Pusat Statistik. (2023). *Statistik Penduduk Lanjut Usia 2023*. Jakarta: Badan Pusat Statistik. Retrieved from: <https://www.bps.go.id/id/publication/2023/12/29/5d308763ac29278dd5860fad/statistik-penduduk-lanjut-usia-2023.html>
- Budiono, N. D. P., & Rivai, A. (2021). Faktor-faktor yang mempengaruhi kualitas hidup lansia. *Jurnal Ilmiah Kesehatan Sandi Husada*, 10(2), 371-379. <https://doi.org/10.35816/jiskh.v10i2.621>
- Aguirre-Bustamante, J., Barón-López, F. J., Carmona-González, F. J., Pérez-Farinós, N., & Wärnberg, J. (2020). Validation of a modified version of the Spanish Geriatric Oral Health Assessment Index (GOHAI-SP) for adults and elder people. *BMC Oral Health*, 20(1), 61. <https://doi.org/10.1186/s12903-020-1047-3>
- Chan, A. K. Y., Tamrakar, M., Jiang, C. M., Lo, E. C. M., Leung, K. C. M., & Chu, C. H. (2021). Common medical and dental problems of older adults: a narrative review. *Geriatrics*, 6(3), 76. <https://doi.org/10.3390/geriatrics6030076>
- Ekasari, M. F., Riasmini, N. M., & Hartini, T. (2019). *Meningkatkan kualitas hidup lansia konsep dan berbagai intervensi*. Malang: Wineka Media.
- Fadilah, R. P. N., Hartman, H., & Kusaeri, R. P. (2024). Dental caries in children aged 6-12 years using the "HI BOGI" application in Cimahi elementary school in 2021. *Journal of Health and Dental Sciences*, 3(3), 227-238. <https://dx.doi.org/10.54052/jhds.v3n3.p227-238>
- Febrida, R., Rioputri, B. A., Lestari., P.U., Safitri, A., & Nabila Hairun, N. (2024). Angka Kejadian Karies Di Kelurahan Cisaranten Kulon Dan Cisaranten Endah Kota Bandung Pada Tahun 2024. *Dharma Sainika: Jurnal Pengabdian Kepada Masyarakat*, 2(2), 36-45. <https://doi.org/10.24198/saintika.v2i2.56952>
- Haidee, T. Z., Edi, I. S., & Marjianto, A. (2024). Knowledge, Attitudes Regarding Dental and Oral Health With The Number of Functioning Teeth: A Cross-Sectional Study. *International Journal of Advanced Health Science and Technology*, 4(5), 346-354. <https://doi.org/10.35882/ijahst.v4i5.403>
- Hariani, R., & Saputra, M. A. (2024). Hubungan Tingkat Pengetahuan Tentang Kesehatan Gigi dan Mulut dengan Kehilangan Gigi Pada Masyarakat di Dusun Dasan Bunut Tahun 2024. *Jurnal Bale Dental*, 1(1), 34-40.
- Mahata, I.B.E., Bakar, A., & Ningrum, V. (2021). Hubungan Antara Jenis Kelamin, Usia Dan Berat Badan Dengan Kualitas Hidup Terkait Kesehatan Rongga Mulut Pada Lansia Di Kota Dumai, Provinsi Riau. *Jurnal Kedokteran Gigi Universitas Baiturrahmah*, 9(1), 98–106.
- Manurung, M. E. M., Utami, R. A., Tandilangi, A. A., Maria, D., Kusumaningsih, I., Siregar, ..., & Padaunan, E. (2023). *Ilmu Dasar Keperawatan Gerontik*. Medan: Yayasan Kita Menulis.
- Mujiadi, M., & Rachmah, S. (2022). *Buku Ajar Keperawatan Gerontik*. Mojokerto: STIKes Majapahit Mojokerto.

- Pakpahan, M., Siregar, D., Susilawaty, A., Tasnim, T., Ramdany, R., Manurung, E. I., ... & Sitanggang, Y. F. (2021). *Promosi kesehatan dan perilaku kesehatan*. Medan: Yayasan Kita Menulis.
- Prameswari, A. A. P., Putri, I. G. A. K. A. N., Hadi, S., & Prasetyowati, S. (2022, October). The Relationship Between The Attitude of Maintaining Dental Health and Tooth Loss in The elderly at the hargodedali nursing home Surabaya in 2022. *2nd International Conference of Dental and Oral Health (ICoDOH)*, 2(1), 1-4. <https://icodohp.poltekkesdepkes-sby.ac.id/index.php/icodoh/article/download/20/19/19>
- Ramadhana, G. N., Irsal, I., & Fitriany, E. (2025). Hubungan Kehilangan Gigi dengan Status Gizi dan Kualitas Hidup pada Lansia di Kecamatan Balikpapan Timur. *e-GiGi*, 13(1), 166-173. <https://doi.org/10.35790/eg.v13i1.54933>
- Rezq, K. A., Algamdi, M. M., Alatawi, F., Altamimi, D., Albalawi, N., Albalawi, A., ... & Alhthli, R. (2024). Predictors for the level of quality of life among older adults: approaches to the effect of sociodemographic and chronic diseases. *Journal of Aging Research*, 2024(1), 5436660. <https://doi.org/10.1155/jare/5436660>
- Sari, G. D., & Azizah, A. (2022). Analisis kualitas hidup kesehatan gigi dan mulut pada lansia (Tinjauan Pada Pensiunan PNS Pemko Banjarmasin). *An-Nadaa: Jurnal Kesehatan Masyarakat (e-Journal)*, 9(1), 66-72. <https://doi.org/10.31602/ann.v9i1.6900>
- Sari, M., & Jannah, N. F. (2021). Gambaran Pengetahuan Kesehatan Gigi Mulut, Perilaku Kesehatan Gigi Mulut, dan Status Gigi Lansia di Panti Wreda Surakarta. *Jurnal Surya Masyarakat*, 3(2), 86-94. <https://doi.org/10.26714/jsm.3.2.2021.86-94>
- Setiawati, T., Robbihi, H. I., & Dewi, T. K. (2022). Hubungan Usia Dan Jenis Kelamin Dengan Periodontitis Pada Lansia Puskesmas Pabuarantumpeng Tangerang: Relationship Of Age And Gender With Periodontitis In Lansia Puskesmas Pabuarantumpeng Tangerang. *JDHT Journal of Dental Hygiene and Therapy*, 3(1), 43-48. <https://doi.org/10.36082/jdht.v3i1.309>
- Setyowati, S., Purnomo, P. S., & Hartina, M. (2021). Dampak kehilangan gigi, fungsi kognitif dan kualitas hidup lanjut usia. *Heal Sci Pharmacy J*, 5(3), 88-96. <https://doi.org/10.32504/hspj.v5i3.468>
- World Health Organization. (2013). *Oral health surveys: basic methods*. World Health Organization.