



The Relationship Between Oral Health Knowledge and Oral Hygiene Status Among the Elderly

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ARTICLE INFORMATION	ABSTRACT
<i>Article History:</i> <i>Received: August 12, 2025</i> <i>Revised: October 16, 2025</i> <i>Published: October 17, 2025</i> Keywords: Knowledge Oral and Dental Hygiene Oral Hygiene Index Simplified Elderly.	Oral and dental hygiene plays a crucial role in maintaining overall health, particularly in older adults. Poor oral health can affect eating comfort, speech, and overall quality of life. Preliminary data from the Melati Elderly Posyandu, Jl. Mustika Baru, Ngagel, Surabaya, showed a low average OHI-S score of 3.8, categorized as poor. This condition is associated with limited knowledge about oral and dental hygiene among the elderly. This study aimed to analyze the relationship between knowledge of oral and dental hygiene and oral hygiene status, as measured by the Oral Hygiene Index Simplified (OHI-S), in older adults. This research used a quantitative approach with a cross-sectional design. The sample consisted of 29 respondents, determined using the Slovin formula. Knowledge levels were assessed through questionnaires, while oral hygiene status was evaluated using OHI-S. Data were analyzed using the Spearman Rank correlation test. The results showed a significance value of $p = 0.012$ ($p < 0.05$) and a correlation coefficient of 0.460, indicating a positive, moderate correlation between knowledge and OHI-S scores. In conclusion, there is a significant moderate relationship between knowledge of oral and dental hygiene and oral hygiene status among the elderly. Higher knowledge levels are associated with better OHI-S scores.

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INTRODUCTION

Older adults, defined as individuals aged over 60 years, experience significant physical and functional changes compared to younger age groups. One of the common issues among the elderly is poor oral health, which negatively affects their ability to eat, speak, and maintain overall quality of life. Many elderly individuals lack awareness and knowledge about proper oral and dental hygiene practices due to limited access to health education and declining engagement in preventive care. As a result, oral hygiene status in this population is often categorized as poor, characterized by plaque accumulation and unmanaged chronic conditions, which further reduce their motivation to seek dental care (Wong, 2020).

Knowledge plays a critical role in shaping attitudes and behaviors toward oral hygiene. Adequate knowledge enables individuals to adopt proper oral care practices, while lack of information results in poor habits and increased risk of oral diseases. Information can be obtained from various sources such as mass media, healthcare providers, and health education programs (Abu-Awwad, 2020). Previous studies have highlighted that oral health knowledge significantly influences oral hygiene status among older adults. However, the level of understanding in this demographic remains low, contributing to the high prevalence of oral problems (Nurwati, 2023).

Oral and dental hygiene is essential because the oral cavity serves as an entry point for pathogens that can cause systemic infections and other health complications. Neglecting oral care leads to plaque buildup, gingivitis, caries, and other serious conditions such as periodontal disease and oral cancer (Sopianah, et al., 2023). National data also reflect this concern: the 2023 Indonesian Health Survey reported that the prevalence of dental problems in individuals aged 55–64 years was 67.1%, and 67.4% among those aged 65 and older. Despite this, the percentage of elderly who practice proper tooth brushing remains very low, at only 5.1% for ages 55–64 and 4.4% for those over 65 years (Badan Kebijakan Pembangunan Kesehatan, 2023). These findings indicate a persistent gap between knowledge and practice among the elderly population.

Preliminary observations at the Melati Elderly Posyandu in Surabaya revealed an average Oral Hygiene Index Simplified (OHI-S) score of 3.8, categorized as poor, based on debris and calculus indices. This highlights the urgent need to investigate factors contributing to poor oral hygiene status, particularly knowledge-related aspects. Unlike previous studies that broadly address oral health behaviors, this research specifically examines the correlation between oral health knowledge and OHI-S scores among older adults. Therefore, the purpose of this study is to analyze the relationship between oral and dental health knowledge and oral hygiene status, as measured by the OHI-S, among the elderly.

METHOD

This study employed a quantitative research method aimed at testing the predetermined hypothesis using a cross-sectional approach with simple random sampling. Observations and measurements of variables were conducted at a single point in time. The study population consisted of 40 older adults (aged 50 years and above) at the Melati Elderly Posyandu, Jl. Mustika Baru, Ngagel, Surabaya. The research was carried out from October to June 2025.

The sample size was determined using the Slovin formula, resulting in 29 respondents who met the inclusion criteria. Data were collected through observation using a dental examination form, an OHI-S (Oral Hygiene Index Simplified) assessment sheet, and a structured questionnaire to measure knowledge levels.

Data analysis was performed using the Spearman Rank correlation test, a non-parametric statistical method, to determine the relationship between oral health knowledge and oral hygiene status among the elderly. This study has also obtained ethical approval from the Ethics Committee of the Surabaya Ministry of Health Polytechnic with number: EA/3959 /KEPK-Poltekkes_Sby/V/2025.

RESULTS AND DISCUSSION

Table 1. Frequency Distribution of Oral Hygiene Index Simplified (OHI-S) Examination Among Older Adults at Melati Elderly Posyandu, Jl. Mustika Baru, Ngagel, Surabaya City.

Category	Frequency	Percentage
Good	12	41.4
Fair	17	58.6
Total	29	100.0
Average		1.35

Table 1 shows that the frequency distribution of the Oral Hygiene Index Simplified (OHI-S) among the elderly has an average score of 1.35, indicating that most older adults fall into the “Fair” category.

Table 2. Data Analysis of the Relationship Between Knowledge of Oral and Dental Hygiene and the Oral Hygiene Index Simplified (OHI-S).

Variable	p-value	Correlation
Knowledge of Oral and Dental Hygiene Among Older Adults	0.012	0.460
Oral Hygiene Index Simplified (OHI-S) Among Older Adults		

Table 2. The results of the Spearman Rank correlation test for the relationship between knowledge of oral and dental hygiene and the Oral Hygiene Index Simplified (OHI-S) showed a significance value of 0.012. Since the p-value (0.012) is less than 0.05, with a correlation coefficient of 0.460, this indicates a positive correlation with moderate strength. Therefore, H1 is accepted and H0 is rejected. This means that there is a significant relationship between knowledge of oral and dental hygiene and the Oral Hygiene Index Simplified (OHI-S) among older adults.

DISCUSSION

Knowledge of Oral and Dental Hygiene Among Older Adults

Based on the research findings obtained through questionnaires, older adults demonstrated a relatively high level of knowledge regarding oral and dental hygiene. Knowledge is a predisposing factor influencing health behaviors, and an individual's or community's health behavior is shaped by their level of knowledge. Sari, Halid, & Razi (2017) also emphasized that proper health behaviors require adequate knowledge. This finding aligns with the notion that maintaining oral and dental health begins with awareness and understanding of proper practices.

The study indicated that the better the knowledge of oral hygiene maintenance, the better the oral hygiene status. Similarly, Ripana et al. (2024) also reported a significant correlation between the level of knowledge and oral and dental hygiene status. These findings collectively reinforce the role of knowledge as a critical determinant in maintaining oral health.

Furthermore, knowledge plays an essential role in shaping behavior. Jeklin (2016) explained that behavior grounded in knowledge tends to be more sustainable than behavior without such a foundation. The importance of knowledge about oral and dental health, particularly in maintaining cleanliness, as a foundation for preventive actions from early childhood through old age. The external factors such as age, gender, geography, economic status, knowledge, attitudes, and behaviors contribute to dental caries risk, emphasizing the multifactorial nature of oral health (Lintang et al., 2019).

However, some studies have reported different findings. Suryani (2021) found no significant relationship between knowledge of oral hygiene and gingivitis, attributing this to differences in measurement indicators. Similarly, Sari et al. (2020) found no significant relationship between oral hygiene knowledge and oral hygiene status among adolescents aged 14–21 years in a correctional facility, using the chi-square test instead of the Spearman Rank test applied in the present study. These discrepancies suggest that age, environment, and psychosocial factors influence the impact of knowledge on oral hygiene behaviors. Additionally, Abdi, Ilmianti, & Pratiwi (2024) and Senjaya et al. (2019) reported that knowledge alone does not always translate into proper oral hygiene practices, particularly in populations with different characteristics such as adolescents, who are more susceptible to external influences compared to older adults.

Oral Hygiene Index Simplified (OHI-S) Among Older Adults

The results of the OHI-S assessment using the debris and calculus indices indicated that older adults generally fell into the “fair” category of oral hygiene. According to Rusmiati, et al., (2023), oral hygiene is crucial because poor oral health can negatively affect overall dental health and potentially lead to systemic diseases if neglected. These findings emphasize the importance of maintaining oral hygiene among older adults to prevent complications.

This study's results are consistent with research by Harapan and Faradilla (2022), which demonstrated a significant relationship between knowledge of oral hygiene practices and OHI-S scores. OHI-S is an index used to assess clinical oral hygiene conditions, calculated from the sum of the debris and calculus indices (Ermawati, 2016). Proper tooth brushing twice daily, particularly after breakfast and before bedtime, is essential for preventing plaque buildup, which is the primary cause of oral health problems (Riyadi, 2019).

Additional studies reinforce these findings. Yusdiana, and Restuastuti (2021) highlighted that oral health maintenance should focus on controlling bacterial growth in the oral cavity, as uncontrolled bacterial proliferation is a major cause of dental problems. Plaque formation, which results from poor oral hygiene, can lead to periodontal disease and dental caries. Pindobilowo and Tjiptoningsih (2023) emphasized proper brushing techniques to ensure all tooth surfaces are cleaned, while Yuniarly et al. (2019) confirmed the relationship between oral health knowledge and oral hygiene status using standardized clinical indices. The importance of knowledge in shaping health behaviors.

However, contrasting evidence exists. Ningsih, & Kustantiningtyastuti (2016) found that children with special needs had oral hygiene status more influenced by direct assistance than by parental knowledge. Similarly, Anjani and Mijaata (2025) reported that parental knowledge did not necessarily reduce caries incidence among children, as children depend on caregivers for oral care. Ximenes et al. (2024) also found no relationship between knowledge and oral hygiene among younger populations, highlighting the impact of age, dependency, and social environment. These findings differ from the current study, which involved older adults who are generally more independent and capable of implementing health knowledge in daily life.

The Relationship Between Oral Hygiene Knowledge and OHI-S Among Older Adults

Bivariate analysis using the Spearman Rank correlation test revealed a significant relationship between oral hygiene knowledge and OHI-S among older adults, with a p-value of 0.012 (< 0.05) and a correlation coefficient of 0.460. This indicates a positive and moderate relationship, meaning that higher knowledge levels are associated with better oral hygiene status. Conversely, low knowledge levels correlate with poor OHI-S scores. The knowledge can be acquired naturally or through structured education, and Fatmawati et al. (2022) noted that good oral health knowledge, accompanied by awareness and proper behavior, can prevent dental caries and other oral diseases.

This result aligns with Primawati, Kamelia, & Rinaldi (2022), who highlighted the importance of assessing OHI-S to increase awareness and encourage older adults to maintain oral health. Similarly, Samsul et al. (2021) emphasized the role of education in shaping cognitive development and positive attitudes toward oral hygiene. Most respondents in their study had good knowledge of dental health, attributed to a clear understanding of preventive measures such as proper brushing techniques, dietary habits, and early recognition of oral health issues.

However, some studies report contradictory findings. Linda et al. (2019) found that inadequate parental supervision and low motivation in children resulted in poor oral hygiene, contrasting with the current study where older adults demonstrated independence in implementing oral care practices. Suryani (2019) and Saputri et al. (2022) also reported different outcomes due to variations in research variables, populations, and oral health indicators. These differences underscore the influence of demographic and contextual factors on the relationship between knowledge and oral hygiene behavior.

Overall, knowledge plays a crucial role in shaping behavior and actions for maintaining oral health. Low levels of knowledge tend to lead to poor oral hygiene behaviors, negatively affecting dental and overall health. Therefore, improving oral health knowledge among older adults is essential to promote better oral hygiene practices and prevent oral health problems.

CONCLUSION

The study concludes that there is a significant relationship between oral health knowledge and the Oral Hygiene Index Simplified (OHI-S) among older adults at the Melati

Elderly Posyandu, Jl. Mustika Baru, Ngagel, Surabaya. The correlation strength is categorized as moderate, indicating that better oral health knowledge is associated with improved oral hygiene status in this population. Future research should involve a larger sample size and include additional variables such as attitudes, behaviors, and access to dental care to provide a more comprehensive understanding of the factors influencing oral hygiene among the elderly. It is also recommended to conduct intervention studies, such as educational programs, to evaluate their effectiveness in improving oral health knowledge and oral hygiene outcomes over time.

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