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## **Relationship between tooth brushing maintenance actions and OHIS status in schizophrenia patients at Aceh Mental Hospital**

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### **Abstract**

Patients with schizophrenia often neglect their oral and dental hygiene, resulting in poor oral health status. Tooth brushing as a maintenance practice is one of the efforts to improve oral hygiene in patients with schizophrenia. The purpose of this study was to determine the relationship between tooth brushing maintenance practices and OHIS (Oral Hygiene Index Simplified) status in patients with schizophrenia at the Aceh Mental Hospital. This study used a cross-sectional design. The sample consisted of 60 schizophrenia patients at the Aceh Mental Hospital, selected using proportional random sampling technique. Data on tooth brushing maintenance practices were collected through a questionnaire, while OHIS status data were obtained through clinical examination. Data analysis used the chi-square test. The statistical test results showed a p-value of 0.013, which means the p-value < 0.05, so there is a significant relationship between tooth brushing practices and OHI-S status in schizophrenia patients at the Aceh Mental Hospital.

**Keywords:** Schizophrenia patients, Oral and dental hygiene, Maintenance practices, OHIS status

### **Introduction**

According to the results of the 2018 Basic Health Research (Riskesdas), the prevalence of schizophrenia/psychosis in Indonesia is 6.7 per 1,000 households (Ministry of Health Research and Development Agency, 2018). This means that out of 1,000 households, approximately 6.7 households have a household member (ART) suffering from schizophrenia/psychosis. The highest prevalence is found in Bali and Yogyakarta, with 11.1 and 10.4 per 1,000 households, respectively, having a household member suffering from schizophrenia/psychosis (Ministry of Health Research and Development Agency, 2018). The proportion of households with a severely mentally ill member with Schizophrenia/Psychosis in

Aceh is 9 ‰, which is higher than the national average of 7 ‰ (Health Development Policy Report - BKPK Ministry of Health, n.d.). This indicates that the mental health condition of the Aceh community is currently a serious problem that needs attention.

Schizophrenia is a severe mental disorder that causes the sufferer to lose contact with reality and have difficulty distinguishing what is real from what is not (Rezki et al., 2013; Zahnia & Sumekar, 2016). Schizophrenia patients have a higher risk of oral and dental health problems. The most common oral health problem in schizophrenia patients is dental caries, with a prevalence of 65%. This is due to the patient's inability to perform routine oral hygiene, such as brushing their teeth with the appropriate frequency (Cahaya et al., 2021; Jelita & Septa, 2024). Negative symptoms in schizophrenia patients, such as withdrawal from the environment, apathy, and the cessation of habits, also contribute to a lack of self-care, including oral hygiene (Widodo, 2020)

Factors such as lack of motivation and skills in maintaining oral hygiene, as well as the side effects of antipsychotic drugs used in the treatment of schizophrenia, can lead to poor dental health in schizophrenia patients (Hoftman, 2017). Dental health maintenance measures, such as regular tooth brushing, flossing, and using mouthwash, can help maintain oral hygiene (Parnas, 2011; Yang et al., 2018a).

Schizophrenia patients visit the dentist less frequently compared to healthy individuals (Asia et al., 2024). This is due to several factors, including lack of motivation and financial constraints in maintaining dental health. Schizophrenia patients often have difficulty maintaining oral hygiene, such as regularly brushing their teeth and using dental floss (Kisely et al., 2015; Velasco-Ortega et al., 2017). Additionally, the side effects of antipsychotic drugs used in the treatment of schizophrenia, such as xerostomia (dry mouth) and dyskinesia (movement disorders), can also affect oral and dental health. Therefore, a specific oral health management approach is needed for schizophrenia patients. This management involves a holistic approach, including education on the importance of maintaining oral hygiene, regular monitoring by dentists, and the selection of antipsychotic medications with minimal side effects on oral and dental health (Wey et al., 2015)

People with Mental Disorders (PWMD) require special attention in the management of their oral hygiene (Bernard, 2020; Velasco-Ortega et al., 2017; Wey et al., 2015). In a study conducted by Apip Muhtarom et al. in 2022, it was mentioned that PWMD require special attention in maintaining oral hygiene (Muhtarom et al., n.d.). A holistic and integrated treatment approach between the fields of mental health and oral health is crucial to improve the oral hygiene conditions of patients with mental disorders. Based on data from the dental clinic at the Aceh Mental Hospital, the prevalence of dental caries in schizophrenic patients was 65%. This indicates that there is still a lack of adequate oral hygiene among schizophrenic patients at the Aceh Mental Hospital in 2022. Interviews with dental therapists revealed that there are 3 types of schizophrenic patients treated at the Aceh Mental Hospital: acute patients, intermediate patients, and calm patients. The total number of schizophrenic patients treated reaches 320, who are accommodated in 13 treatment rooms for schizophrenic and NAPZA (narcotics, psychotropics, and addictive substances) clients. The most prevalent oral health problem among schizophrenic patients is dental caries, with a prevalence of 65%. This is due

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to several factors, including the patient's inability to perform routine oral hygiene, such as not brushing their teeth properly.

Additionally, the negative symptoms of schizophrenia, such as social withdrawal, apathy, and the cessation of habits, also contribute to the lack of self-care, especially oral hygiene. To address this issue, it is essential to provide guidance and support to schizophrenic patients in maintaining their oral health. Dental therapists can provide guidance on proper tooth brushing techniques and educate patients on the importance of maintaining good oral hygiene. It is also crucial to involve the patient's family or caregivers in the oral care process, so they can provide the necessary support and assistance (Nuraena et al., 2024). Currently, the examination or consultation process for schizophrenic patients is only carried out when they have a complaint of dental pain. Patients who complain of dental pain will inform the mental health therapist, who will then contact the attending physician. After obtaining approval, the schizophrenic patient, who is in a calm and cooperative state, will be taken to the dental clinic. Based on the background information provided, the researcher is interested in investigating the relationship between oral health maintenance practices and oral hygiene status among schizophrenic patients at the Aceh Mental Hospital.

### **Literature Review**

Research on the oral hygiene condition of mentally ill patients has been conducted in several countries, including Taiwan, Ethiopia, and Israel (Kebede et al., n.d.). The results of these studies show that mentally ill patients have poor oral hygiene status, which leads to a high prevalence of dental caries in this population (Bernard, 2020; Petersen & Yamamoto, 2005; Suhonen et al., 2015; Velasco-Ortega et al., 2013). Other research conducted by Yang M et al. (2021) showed similar results. The DMFT (Decayed, Missing, Filled Teeth) score in patients with mental disorders in Israel reached 24.3%, with an average of 2.84% carious teeth and an average tooth loss of 20% (Khokhar et al., 2016). These results indicate that individuals with mental disorders are also vulnerable to oral health problems.

### **Research Method**

The study design used in this research is a cross-sectional analytical study, with the aim of determining the dental health maintenance practices and dental hygiene status of schizophrenic patients at the Aceh Mental Hospital. This research will be conducted at the Aceh Mental Hospital, located on Jl. Dr. Syarif Thayeb, Bandar Baru, Kecamatan Kuta Alam, Banda Aceh City, during the period of February 1 - February 28, 2024. The population in this study is all calm (low) type schizophrenic patients undergoing treatment at the Aceh Mental Hospital, totaling 150 patients. The sample to be used is 60 calm (low) type schizophrenic patients who meet the inclusion criteria and do not meet the exclusion criteria, which will be determined using the proportional random sampling technique.

The data collection instruments to be used consist of questionnaires for direct interviews with respondents, as well as direct examinations using a diagnostic set (mouth mirror, tweezers,

toothbrush) and materials (disclosing solution, 70% alcohol, tissues, cotton pellets, water glasses, toothpaste). The research stages include preparation (licensing, sample determination, notification to respondents, preparation of tools and materials), implementation (licensing, determination of respondents, explanation to respondents, filling out informed consent, measurement of debris index), and data processing and presentation. The data collection technique will use primary data from the questionnaire, as well as secondary data from the annual report of the dental clinic at the Aceh Mental Hospital and related journals. Data processing will be carried out through the stages of editing, coding, tabulating, and cleaning. Data analysis includes univariate analysis and bivariate analysis with the Chi-Square statistical test, using a significance level of  $\alpha = 0.05$ .

## Result

### Univariate Analysis

The univariate analysis in this study aims to provide a descriptive overview of the characteristics of each variable, which include age, gender, occupation, and education level.

Table 1: Age Range and Frequency of Schizophrenia Patients

Age Range	Frequency	Percentage (%)
20-29	22	36.7
30-39	32	53.3
40-49	6	10.0
Total	60	100%

Based on the data on the characteristics of schizophrenia patients at the Aceh Psychiatric Hospital, the distribution of respondent ages can be interpreted across different age ranges. The most common age range is 30-39 years, with 32 respondents, accounting for 53.3% of the total respondents. The 20-29 age range includes 22 respondents, representing 36.7% of the total, while the 40-49 age range includes 6 respondents, or about 10.0%. This data indicates that the majority of respondents fall within the young to middle adult age range (20-39 years), with the 30-39 age group being the dominant one. The older age range (40-49 years) has a lower representation in this sample. This information suggests that schizophrenia is prevalent in the productive age group, which should be taken into account in the planning and implementation of comprehensive mental health care programs for schizophrenia patients at the Aceh Psychiatric Hospital.

Table 2: Frequency and Percentage of Gender for Schizophrenia Patients at Aceh Psychiatric Hospital

Gender	Frequency	Percentage (%)
Male	36	60.0
Female	24	40.0
Total	60	100%

Based on the data on the gender characteristics of schizophrenia patients at the Aceh Psychiatric Hospital, it is known that out of 60 samples, 36 individuals (60.0%) are male, while 24 individuals (40.0%) are female. This indicates that there are more male schizophrenia

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patients than female patients at the Aceh Psychiatric Hospital.

Table 3: Frequency of Occupation Types for Schizophrenia Patients at Aceh Psychiatric Hospital

<b>Occupation</b>	<b>Frequency</b>	<b>Percentage (%)</b>
Student	18	30.0
Entrepreneur	26	43.3
Farmer/Gardener	4	6.7
Housewife	12	20.0
Total	60	100%

Based on Table 3 the distribution of occupations among the 60 respondents studied is shown. The majority of respondents, 26 individuals or around 43.3%, are entrepreneurs. Meanwhile, 18 respondents (30.0%) are students, and 12 respondents (20.0%) are housewives. The occupation with the lowest frequency is farmer/gardener, with only 4 respondents or about 6.7%.

Table 4: Frequency of Education Levels for Schizophrenia Patients at Aceh Psychiatric Hospital

<b>Education Level</b>	<b>Frequency</b>	<b>Percentage (%)</b>
No Schooling	5	8.3
Elementary School	16	26.7
Junior High School	20	33.3
Senior High School	16	26.7
Bachelor's Degree	3	5.0
Total	60	100%

The table above shows the distribution of education levels among 60 respondents. Approximately 33.3% of the respondents have a junior high school education, while 26.7% each have an elementary or senior high school education. About 8.3% did not attend school, and the lowest percentage, 5.0%, consists of respondents with a bachelor's degree. Overall, this data provides an overview of the education levels within the sample, with the majority of respondents having a middle school education, and a few having pursued higher education up to the bachelor's level.

Table 5: Frequency of Tooth Brushing Habits for Schizophrenia Patients at Aceh Psychiatric Hospital

<b>Tooth Brushing Habit</b>	<b>Frequency</b>	<b>Percentage (%)</b>
Good	37	61.7
Poor	23	38.3
Total	60	100%

The table above shows that 61.7% of respondents have good tooth brushing habits, while 38.3% have poor habits.

Table 6: Frequency of OHI-S Status for Schizophrenia Patients at Aceh Psychiatric Hospital

<b>OHI-S Status</b>	<b>Frequency</b>	<b>Percentage (%)</b>
Good	10	16.7
Moderate	33	55.0
Poor	17	28.3
Total	60	100%

The table above shows that the majority of respondents have a moderate OHI-S index, with 33 individuals (55.0%), while 17 individuals (28.3%) fall into the poor category. The smallest group is respondents with a good OHI-S index, consisting of 10 individuals (16.7%).

## 2. Bivariate Analysis

Table 7: Relationship Between Tooth Brushing Habits and OHI-S Status for Schizophrenia Patients at Aceh Psychiatric Hospital

Tooth Brushing Habit	Status OHI-S						Total		p-value
	Good		Moderate		Poor				
	f	%	f	%	f	%	f	%	
Good	9	24,3	22	59,5	6	16,2	37	100,0	0,013
Poor	1	4,3	11	47,8	11	47,8	23	100,0	
Total	10	16,7	33	55,0	17	28,3	60	100,0	

The table above shows that respondents with poor OHI-S status are more prevalent among those with poor tooth brushing habits, with 47.8%, compared to 16.2% among those with good habits. Conversely, respondents with good OHI-S status are more prevalent among those with good tooth brushing habits (24.3%) than among those with poor habits (4.3%). The statistical test results show a p-value of 0.013, which means the p-value is less than 0.05. Therefore, there is a significant relationship between tooth brushing habits and OHI-S status among schizophrenia patients at Aceh Psychiatric Hospital.

## Discussion

The research findings show a relationship between tooth brushing behavior and OHI-S (Oral Hygiene Index-Simplified) status in schizophrenia patients at the Aceh Mental Hospital. The poorer the tooth brushing behavior, the worse the OHI-S status.

The findings of this study are consistent with previous research, which consistently shows that maintaining oral hygiene through regular tooth brushing is an important factor in maintaining optimal oral health status, even in populations with complex health conditions. In patients with diabetes mellitus, a study by Sari and Pratiwi (2019) found that patients with diabetes who regularly brush their teeth have a much better OHIS (Oral Hygiene Index Simplified) status compared to those who do not regularly maintain their oral hygiene. Similar findings were also found in the elderly population in rural areas, where Joshi et al. (2013) reported that the elderly with poor tooth brushing routines had a 3.2 times higher risk of developing periodontal disease. Further research on groups of patients with periodontal disease, heart disease, cancer, and disabilities also shows consistent results. Sharma et al. (2015) found that regular oral hygiene maintenance was proven to help prevent and reduce the severity of periodontal disease.

Velasco-Ortega et al., 2013)also reported a significant correlation between tooth brushing routines and better OHIS status in patients with heart disease. Each found that in cancer patients and patients with disabilities, those who were consistent in their dental care tended to have better maintained oral hygiene (Melinda et al., 2021; Yang et al., 2018b). The

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findings from these various studies overall indicate that maintaining a regular tooth brushing routine is a key element in maintaining optimal dental and oral health, even in populations with complex health challenge (Arafah et al., 2024)s. This has important implications for health practitioners in providing adequate education and support to patients to maintain oral hygiene, in order to achieve better treatment outcomes.

The researchers assume that schizophrenia patients often experience deficits in self-care, including oral hygiene, due to impairments in cognitive function and motivation caused by their mental condition. This disease is also often accompanied by side effects of antipsychotic drugs that can cause dry mouth, which in turn increases the risk of plaque and dental caries formation. Brushing teeth regularly is one of the main actions in maintaining good oral hygiene and preventing plaque accumulation. Therefore, if schizophrenia patients have good tooth brushing habits, they are likely to have better OHI-S status. Conversely, the lack of tooth brushing will contribute to a decline in their oral hygiene status, as reflected in higher OHI-S scores. Additional support from family, caregivers, or integrated mental health interventions can help improve oral hygiene habits in schizophrenia patients, thereby improving their OHI-S status.

## **Conclusion**

The findings of this study indicate a significant relationship between tooth brushing practices and OHI-S (Oral Hygiene Index Simplified) status in schizophrenia patients at the Aceh Mental Hospital. The statistical analysis revealed a p-value of 0.013, which is less than the significance level of 0.05, suggesting a strong association between the two variables. This result highlights the importance of oral hygiene maintenance in the management of schizophrenia patients. Patients with schizophrenia often neglect their oral and dental health due to the cognitive and motivational deficits associated with the disorder. As a result, they frequently have poor oral hygiene, which can lead to various dental problems and negatively impact their overall health and quality of life. The significant relationship found in this study emphasizes the need for targeted interventions to improve tooth brushing and other oral hygiene practices among schizophrenia patients. Healthcare professionals, particularly dentists and psychiatric nurses, should work collaboratively to develop and implement comprehensive oral health promotion programs tailored to the specific needs of this population. Such programs may include regular oral health assessments, patient education on the importance of oral hygiene, provision of dental hygiene supplies, and the integration of oral health care into the overall management of schizophrenia. By addressing the oral health needs of schizophrenia patients, healthcare providers can contribute to the improvement of their overall well-being and potentially reduce the burden of associated dental complications.

## **Declaration of Conflicting Interest**

The author declares that there is no conflict of interest in the implementation and results of this research.

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