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The Effect of One-Sided Chewing Habits on the Occurrence of Caries, Calculus, and Oral Status Hygiene in Students of SMP Islam Terpadu Nurul Fadhillah, Percut Sei Tuan District, Deli Serdang Regency, Indonesia

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ABSTRACT

Worldwide, 45–97% of people chew food with only one side of their mouth. It is possible that chewing may act as a natural cleanser. One side of the mouth is more susceptible to the development of calculus and plaque when chewing, while the other side naturally removes debris and improves hygiene. Chewing behavior on one side causes a buildup of food detritus, resulting in low oral status. This study aims to explore the influence of one-sided chewing habits on the occurrence of caries, calculus, and oral status hygiene in Students of SMP Islam Terpadu Nurul Fadhillah Percut Sei Tuan District, Deli Serdang Regency, Indonesia. This study is an analytical observational research with a cross-sectional approach. This study uses primary data obtained from observations of the subject study. A total of 50 research subjects took part in this study. The incidence of caries, calculus, and oral hygiene status is influenced by one-sided chewing patterns. One-sided chewing patterns increase the caries index calculus index and reduce oral hygiene status.

1. Introduction

Currently, dental caries is a major problem in the mouth. Damage to cementum, enamel, and dentin, the three hard tissues found in teeth, begins with demineralization, a metabolic process initiated by bacteria in plaque. This disease is known as caries. Necrosis of the dental pulp and the spread of infection to the periapical tissues are consequences of untreated caries and increase over time. Discomfort and difficulty in carrying out routine activities are unavoidable consequences. Symptoms of fever,

swelling, lethargy, and loss of appetite often accompany this pain.¹⁻³

Inadequate dental care can lead to calculus formation. The accumulation of calcified plaque, known as calculus, causes dentin to have a rough texture and a lumpy sensation. The surfaces of teeth and other solid oral cavity structures are filled with this calculus. Periodontal disease is characterized by symptoms such as halitosis, inflammation, bleeding, and gum damage, as well as tooth mobility and the potential for tooth loss. When calculus is present, it

gets much worse. Tooth loss due to tooth attrition can occur if this condition is not treated. Possible contributors to caries and calculus include inadequate toothbrushing techniques and the use of substances containing cariogenic compounds. Unilateral chewing increases the risk of cavities and the development of calculus due to the accumulation of food debris.⁴⁻⁶

Worldwide, 45–97% of people chew food with only one side of their mouth. It is possible that chewing may act as a natural cleanser. One side of the mouth is more susceptible to the development of calculus and plaque when chewing, while the other side naturally removes debris and improves hygiene. Chewing behavior on one side causes a buildup of food detritus, resulting in low oral status.^{7,8} This study aims to explore the influence of one-sided chewing habits on the occurrence of caries, calculus, and oral status hygiene in Students of SMP Islam Terpadu Nurul Fadhillah, Percut Sei Tuan District, Deli Serdang Regency, Indonesia.

2. Methods

This study is an analytical observational research with a cross-sectional approach. This study uses primary data obtained from observations of research subjects. A total of 50 research subjects participated in this study, and the research subjects met the

inclusion criteria. The inclusion criteria in this study were students of SMP Islam Terpadu Nurul Fadhillah, Percut Sei Tuan District, Deli Serdang Regency, Indonesia agreed to participate in this study. This study has received approval from the medical and health research ethics committee of Universitas Prima Indonesia. Observations of dental hygiene parameters were carried out in this study. The assessment of caries is done by questionnaire DMFT, assessment calculus is done with questionnaire calculus, and the assessment of oral hygiene is done with questionnaire OHIS. Data analysis was carried out using SPSS version 25 software, univariate and bivariate. Univariate analysis was carried out to present the frequency data for each variable, and bivariate analysis was carried out to present the relationship between the test variables, $p < 0.05$.

3. Results and Discussion

The age distribution of the sample shows that the largest proportion consists of 12-year-old individuals, who make up 80% of the sample, followed by 11-year-old, who make up 14% of the population, and 13-year-old. 6% of the sample. The results showed that the sample consisted of 26 women (52%) and 24 men (48%). Of this sample, 28 people (56%) chewed on one side, while 22 people (44%) did not chew on one side.

Table 1. Sample characteristics by age and gender.

Characteristics	Frequency	Percentage (%)
Age		
11	7	14,0
12	40	80,0
13	3	6,0
Gender		
Male	24	48,0
Female	26	52,0

Table 2. Frequency distribution of one-sided chewing.

Chew on one side	Frequency	Percentage (%)
One side	28	56,0
Two sides	22	44,0

Table 3. The influence of one-sided chewing habits on the occurrence of caries.

Chew on one side	Caries	p-value
	Mean±SD	
One side	4.36±2,36	0,004*
Two sides	2,36±1,65	

*p<0,05.

The results showed that those who chewed on one side had an average caries level of 4.36 ± 2.36 , while those who chewed on both sides had an average caries level of 2.36 ± 1.65 . A significant effect on chewing

behavior was demonstrated by the Mann-Whitney statistical test, which produced a p-value of 0.004 ($p \leq 0.05$).

Table 4. Effect of one-sided chewing habits on the occurrence of calculus.

Chew on one side	Calculus	p-value
	Mean±SD	
One side	1,34±0,843	0,004*
Two sides	0,64±0,623	

*p<0,05.

Findings showed that an average of 1.34 ± 0.843 calculus was formed during unilateral mastication, compared with 0.64 ± 0.623 during bidirectional mastication. In Percut Sei Tuan District, Deli Serdang Regency, students of SMP Islam Terpadu Nurul

Fadhilah have a tendency to chew, and the possibility of developing calculus is higher according to the Mann-Whitney statistical test (p-value = 0.004; p-value < 0.05).

Table 5. The influence of one-sided chewing habits on the occurrence of oral hygiene is a bad one.

Chew on one side	Oral hygiene	p-value
	Mean±SD	
One side	1,98±1,167	0,002*
Two sides	0,97±0,939	

*p<0,05.

The average OHI-S score for those who chewed on both sides was 0.97 ± 0.939 , while individuals who chewed on one side only had an average score of 1.98 ± 1.167 , according to the data. The Mann-Whitney statistical test shows that there is a significant relationship between students' irregular eating habits and poor dental hygiene in SMP Islam Terpadu (p-value = 0.004 ($p \leq 0.05$)).

Dental and oral health problems may arise from chewing on one side of the mouth. The results showed that those who chewed on one side had an average caries level of 4.36 ± 2.360 , while those who chewed on both sides had an average caries level of 2.36 ± 1.649 . The proof is seen in the results of the Mann-Whitney U test. Students in SMP Islam Terpadu Percut

Sei Tuan District are susceptible to cavities if they chew food at an angle. Other studies found no correlation between unilateral chewing and dental caries based on their research findings. Another study states that the bad effects of chewing food are caused by cavities and discomfort during the chewing process. The young will avoid the area and continue chewing on the other side. Failure to stop this activity will result in dysfunction of the temporomandibular joint (TMJ) due to uneven distribution of chewing force.⁹⁻¹³

Chewing causes the buildup of dental calculus, which paradoxically aids tooth cleaning. The average calculus of samples chewed on both sides was much lower than samples eaten on one side, namely $1.34. \pm 0.843$. The findings of this study confirm the findings

of other studies, which found a correlation between calculus index and unilateral chewing behavior in high school students.¹⁴⁻¹⁶ Of the twenty people who chewed on one side, eight had moderate OHIS, four showed good OHIS, and four showed insufficient OHIS. Biting on the side of the mouth that is not directly above the gum line is associated with an increased risk of dental calculus accumulation, and this study corroborates the findings of other studies. Of the 40 people who took part, 28 (or 70%) were familiar with calculus. If you only chew on one side of your mouth, you can keep that side clean, but it increases the risk of developing calculus if you don't use the other side. Other studies suggest that if one side of the mouth is chewed more often than the other, calculus can form in the non-masticatory tissues.¹⁷⁻²⁰

4. Conclusion

The incidence of caries, calculus, and oral hygiene status is influenced by one-sided chewing patterns. One-sided chewing patterns increase the caries index calculus index and reduce oral hygiene status.

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