

The Relation Between Oral Health Maintenance Knowledge and Junior High School Students's Age and Gender in Denai District Medan

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ABSTRACT

Background: Oral and dental health play a crucial role in maintaining overall body function. Therefore, proper knowledge and behavior regarding oral hygiene are essential to ensure its preservation. **Objective:** This study aims to examine the relationship between oral health knowledge and the age and gender of junior high school students in the district. **Materials and Methods:** His study employed a correlative descriptive approach using a cross-sectional design. The sample was selected through proportional stratified random sampling with the aid of a proportion estimation formula. A total of 248 students participated, consisting of 124 from An-Nizam Middle School and 124 from Hikmatul Fadhilah Middle School. Data were collected using a 15-item questionnaire designed to assess knowledge regarding oral and dental health maintenance. The chi-square test was applied to evaluate the association between students' oral health knowledge and their age and gender. **Results:** The findings revealed a significant association between knowledge levels and students' age and gender ($p < 0.05$). **Conclusion:** The age and gender of junior high school students at Hikmatul Fadhilah and An-Nizam were found to be correlated with their understanding of personal oral health maintenance.

Keywords: Age, Gender, Knowledge, Oral Health Maintenance

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INTRODUCTION

Body health plays an important role in carrying out daily activities both physically and psychologically. One of the important parts of body health is teeth and mouth. The teeth in the mouth are organs that have several functions that can affect overall health. A person who is said to be healthy is a person whose body and oral cavity are healthy. Proper oral hygiene can be achieved through adequate knowledge and appropriate behavior in maintaining oral health. Knowledge about oral health is obtained through a complex process. Good knowledge will have an impact on healthy behavior, otherwise, lack of knowledge will have an impact on the wrong behavior in maintaining oral health.^{1,2,3}

Adolescents are among the groups most vulnerable to oral and dental health problems. According to RISKESDAS 2018, 55.6% of adolescents aged 10–14 years and 51.9% of individuals aged 15–24 years were found to suffer from oral and dental health problems. Similarly, the Centers for Disease Control and Prevention (CDC, 2013) noted that dental caries is one of the most common chronic conditions, affecting 25% of children aged 6–11 years and 59% of adolescents aged 12–19 years. Although 98.5% of individuals aged 15–24 years reported practicing proper toothbrushing, only 3.3% did so at the recommended times—after breakfast and before bedtime. In addition, the mean DMF-T index in 2018 for 12-year-olds was 1.9, a figure that still exceeds the target set by the 2020 National Action Plan for Dental and Oral Health Services, which aimed for a DMF-T index of 1.26 in this age group.^{2,4}

A person's knowledge has a great influence in reducing the occurrence of tooth decay. Knowledge is a precipitating factor for behavior change. A behavior tends to be sustained when it is grounded in knowledge. Such knowledge may be acquired either naturally or through structured educational processes. Research by Gayatri (2017) on students of SDN 2 Kauman Malang regarding

oral health maintenance revealed that 82.3% of students demonstrated a most participants possessed good knowledge regarding dental health, with just 17.1% categorized as having low knowledge levels.^{2,3,5}

Adolescence represents a crucial stage in the human life cycle, serving as a transitional phase from childhood to maturity. The World Health Organization (WHO) defines adolescents as individuals aged 10–19 years, with early adolescence encompassing those aged 12–15 years, who are generally at the junior high school level. At this stage, oral and gingival health problems are common, largely due to the increased prevalence of dental caries. The 12–15-year age group has been designated by WHO as a key indicator in the *Global Goals for Oral Health 2020*, because it marks a critical period for monitoring oral and dental diseases, coinciding with the stage when nearly all permanent teeth used as indices in such studies have fully erupted.^{6,7,8}

There is an increased risk for oral health problems in adolescents due to the freedom to decide for themselves the choice of consuming foods that contain a lot of sugar and choosing fast food menus. The types of food that are often consumed are fried chicken and french fries and the types of drinks consumed are *soft drinks* which result in several changes regarding dental hygiene. In addition, the phenomenon in the adolescent group aged 12–14 years is a change in social patterns. During adolescence, the activities carried out tend to be more outside the home, such as school, tutoring and extra-curricular activities. In adolescence, socializing is important in daily life, so they need to spend a lot of time with peers. Dental health in adolescents is based on the social environment and is often influenced by parents, schools and social levels. Although there is no exact data in Indonesia, the situation can be used as a mirror in society, that this age is a group of students.^{9,10,11,12}

MATERIALS AND METHODS

Data collection was conducted in March 2022 at Private Junior High School of An-Nizam and Private Junior High School of Hikmatul Fadhillah. The study population consisted of 499 students from both institutions. Participants were eligible if they were 12–15 years old, male or female, and provided informed consent to take part in the study. Sampling was conducted using a proportional stratified random sampling technique, considering the unequal number of students in each class. This method ensured that the distribution of sample members across classes was balanced, thereby producing more representative results.

The sample size was calculated using the proportion estimation formula and obtained a sample size of 248 students, then the sample was divided across the two schools with each sample in each school totaling 124 students. After that the sample will be divided equally for each grade level, so that the sample size for VII grade students is 41 samples, VIII grade students are 41 samples and IX grade students are 42 samples. This research instrument uses a questionnaire consisting of 15 questions to measure the level of knowledge of oral health maintenance. The questionnaire was validated, yielding an *r*-count greater than the *t*-table value of 0.361, and a Cronbach's Alpha value of 0.89 indicated that the tool was highly reliable.

The correct answer is given point 1 and the wrong answer is given point 0. The results are then included in three classes according to Arikunto, namely the level of knowledge is good, sufficient, and lacking. The limit of good category values is with a range of 11-15, sufficient 8-10, and less 0-7. Data processing was carried out using Microsoft excel and SPSS tools then the the study's result were presented in form of tables with frequencies and percentages along with narratives. Chi-square analysis was applied to the categorical data to examine the correlation between oral health maintenance knowledge and respondents' age and gender, with

significance set at $p < 0.05$. The study was authorized by the Faculty of Dentistry, University of North Sumatra, and conducted in the designated schools. Ethical clearance was secured from the University of North Sumatra Health Research Ethics Commission (347/KEPK/USU/2022).

RESULT

Based on the study findings, Table 1 presents the distribution of respondents by gender and age. A total of 122 were male and 126 were female. In terms of age, the respondents were evenly distributed, with 62 students each at 12, 13, 14, and 15 years old. (Table 1)

Table 1. Respondent Characteristics

Variables	Number (n)	Percentage (%)
Gender		
- Male	122	49,2
- Female	126	50,8
Total	248	100
Age		
- 12 years	62	25
- 13 years	62	25
- 14 years	62	25
- 15 years	62	25
Total	248	100

The findings presented in Table 2 indicate that among the 62 respondents aged 12 years, it was found that among the respondents, the most respondents had a sufficient level of knowledge, namely 13.7%. However, the respondents aged 13 years had the highest level of knowledge, which was 11.3%. Of the respondents aged 14 years, 14.5% of respondents already had an adequate level of knowledge regarding oral health maintenance and the respondents aged 15 years had the most good level of knowledge, namely 16.1%. The statistical test results show a *p*-value of 0.029 indicating a statistically significant difference between the level of knowledge and the age of the respondent. (Table 2)

Table 2. Statistical Test Results of Level of Knowledge on Dental and Oral Health Maintenance by Age

Knowledge level regarding oral health maintenance									Test results statistics
Age (Years)	Good		Simply		Less		Total		
	n	%	n	%	n	%	n	%	
12	23	9,3	34	13,7	5	2	62	25	0,029*
13	28	11,3	30	12,1	4	1,6	62	25	
14	36	14,5	23	9,3	3	1,2	62	25	
15	40	16,1	22	8,9	0	0	62	25	
Total	127	51,2	109	44	12	4,8	248	100	

Furthermore, Table 3 illustrates that among the 122 male respondents, the largest proportion (25.4%) demonstrated a sufficient level of knowledge regarding oral health maintenance. In contrast, among the 126 female respondents, 29.8% exhibited a good level of

knowledge in maintaining oral health. Statistical analysis yielded a p-value of 0.048, indicating a significant difference in oral health maintenance knowledge between male and female students (Table 3).

Table 3. Statistical Test Results of Level of Knowledge on Dental and Oral Health Maintenance by Gender

Knowledge level regarding oral health maintenance									
Gender	Good		Simply		Less		Total		Test results statistics
	n	%	n	%	n	%	n	%	
Male	53	21,4	63	25,4	6	2,4	122	49,2	0,048*
Female	74	29,8	46	18,6	6	2,4	126	50,8	
Total	127	51,2	109	44	12	4,8	248	100	

DISCUSSION

Several factors contribute to the development of knowledge, and age is one of the key determinants influencing this process. Age has a close relationship with a person's level of knowledge. (Khasanah, dkk. 2019). As students progress to higher grade levels, their increasing age is associated with greater knowledge about oral health. The findings of this study revealed a p-value of 0.029, indicating a significant relationship between age and the level of oral health maintenance knowledge (Table 2). Specifically, the proportion of students with higher knowledge rose with age, from 9.3% at 12 years, 11.3% at 13 years, 14.5% at 14 years, and 16.1% at 15 years (Table 2). The knowledge of 15-year-olds is better than that of younger children because the higher the age,

the greater the level of curiosity so that with increasing age, the ability to capture and think will be more developed and the knowledge obtained will be better.¹²

Adolescents aged 11 years and above are able to develop their formal thoughts to be able to achieve logical and directed thinking.⁸ Huclock stated that increasing age is associated with greater maturity as well as improved cognitive and work capacity. Experience also affects a person's knowledge, the older a person is, the more experience he will have so that the better his knowledge. Mubarak said that the factors that influence knowledge are age, education, occupation, exposure to information and experience. Experience is an event that a person has gone through in interacting with the environment. The experience of a 15-year-old

child is more than a 12-year-old child, so the knowledge of a 15-year-old child is better than the age of the child below.^{8,13-15}

The results of statistical analysis indicated a significant association between oral health maintenance knowledge and gender, with a p-value of 0.048 (Table 3). The findings revealed that most female students demonstrated a good level of knowledge, with 74 respondents (29.8%), whereas the majority of male students showed a sufficient level of knowledge, totaling 63 respondents (25.4%) (Table 3). These results suggest that female students possess better knowledge of oral health maintenance compared to male students, reflecting superior oral health care practices among girls. This pattern may be explained by the tendency of girls to exhibit higher concern and awareness regarding the aesthetic significance and importance of oral hygiene, which leads them to be more consistent in maintaining their teeth and mouth. Well-maintained teeth not only improve physical appearance but also increased self-confidence among females.¹³

Gender roles are not only determined by a person's sex but also by the environment and other factors. The environment that influences children's knowledge includes the environment of playmates, parents, or the surrounding community. The environment is a place where a child will learn good and bad things depending on the nature of the group he is in so the environment has a considerable influence on a person.¹⁶ Parental knowledge and attitudes play a crucial role in shaping children's understanding of dental and oral hygiene, as these parental influences may either support or hinder proper practices. Children's attitudes often mirror the level of knowledge possessed by their parents. If parents do not pay attention to their knowledge in dental and oral health care, children who still have the habit of imitating their parents' attitudes will be very vulnerable to dental and oral diseases due to poor self-habits in

maintaining oral hygiene and health.^{17,18} An experience gained from the environment will affect a person's way of thinking.¹⁹ The findings of this study differ from those reported by Selvataj et al., who conducted research on 288 respondents in India. Their results showed no statistically significant difference in oral health knowledge between male and female participants ($p = 0.096$), suggesting that gender is not a determining factor influencing knowledge levels.²⁰ Knowledge is shaped by internal factors including education, occupation, age, and external factors such as environmental conditions and socio-cultural influences.^{12,16}

CONCLUSION

A significant association was found between oral health maintenance knowledge and respondent characteristics, namely age and gender. Children aged 15 years have a better level of knowledge than children under the age of 15 because the mindset and capacity of 15-year-old children is better and girls have a better level of knowledge than boys because girls have more awareness of the importance of beauty so they have better knowledge to maintain oral hygiene.

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