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Level of Knowledge About Dental Health with Dental Caries

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ABSTRACT Dental and oral disease problems, especially dental caries, are common problems in Indonesia. Dental caries is a disease characterized by damage to hard tooth tissue on the surface of the teeth and spreads to deeper parts of the teeth. Including adolescents as a group that is vulnerable to dental and oral problems. The results of initial data collection showed a high percentage of dental caries (91%) in students of SMP Brawijaya Sakta 1 Surabaya. Limited knowledge about dental health can increase the risk of dental caries. To determine the relationship between the level of knowledge about dental health and dental caries in students of SMP I Brawijaya Sakta 1 Surabaya. For this study, the type of research used was analytical using the cross-sectional method. The number of research respondents was 39 students of SMP Brawijaya Sakta 1 Surabaya. The data collection instruments used were questionnaires to measure dental health knowledge and examination sheets to identify dental caries. The data analysis technique used the Chi Square Test. The test results from this study obtained an asymp.sig value (2-tailed) or a p value of $0.000 < \alpha$ value (0.05). There is a significant relationship between the level of dental health knowledge and dental caries in students of Brawijaya Sakta 1 Middle School, Surabaya.

KEYWORDS Knowledge; Dental Caries; Junior High School Students.

I. INTRODUCTION

Dental and oral health is defined as a healthy state of hard and soft tissues of teeth and some parts related to the oral cavity that individuals use to eat, communicate and interact with other individuals without any difficulty, discomfort or discomfort. aesthetic problems due to malformation. occlusion or tooth loss, which allows a person to live productively economically and socially [1].

Dental and oral disease problems, especially dental caries, are common problems in Indonesia. Dental caries is defined as a disease of the tooth structure that is influenced by microorganisms contained in carbohydrates on the tooth surface, which are able to ferment, resulting in the formation of acid and demineralization of the tooth structure with symptoms such as hard tooth tissue on the tooth surface becoming damaged and spreading to deeper parts of the tooth [2].

According to the Global Burden of Disease Study 2016, almost half of the world's population, namely 3.5 billion people, suffer from dental and oral diseases, especially tooth decay [3].

The number of dental and oral health problems in Indonesia is 57.6% from the Basic Health Research Results (Riskesdas)

in 2018, higher than the data (Riskesdas) of East Java in 2018 which was only 54.22%. This shows that in terms of dental and oral diseases there is no significant difference between the population of Indonesia and the province of East Java. In addition, 93% of children in Indonesia experience dental and oral health problems according to the results of the Basic Health Research of the Indonesian Ministry of Health in 2018, meaning that only 7% do not experience dental and oral health problems [4].

Teenagers are a group that is quite vulnerable to dental and oral problems. It is known that 55.6% of teenagers aged 10 to 14 years and 51.9% of teenagers aged 15 to 24 years experience dental and oral problems from the results of Riskesdas 2018 [5].

The teenage phase is a transition phase from childhood to adulthood that begins with changes in physical, psychological, and mental aspects. When they observe something that does not match their expectations, they become embarrassed or insecure. One of the most common dental problems that makes them embarrassed or inferior is caries that is visible on the teeth. So that it affects their self-confidence and causes feelings of shame due to lack of knowledge about dental and

oral health [6]. Lack of understanding of dental and oral health results in people not understanding the causes and ways to prevent tooth decay. Because an individual's understanding of good dental health will increase their awareness in caring for their teeth [7]. This theory is reinforced by Green's theorem in Notoatmodjo (2014) regarding when individuals have a higher level of knowledge, attention to dental health also increases [8]. Likewise, if a person's knowledge is low, their attention and dental care will also be low [9].

The results of a survey conducted on August 31, 2023, on 11 students of SMP Sakta I Brawijaya I who were taken randomly showed that there were 10 students who had dental caries (91%) and only 1 student was free of caries (9%). This is still not in accordance with the expectations of the World Health Organization (WHO), where the prevalence rate of dental caries should be less than 10%. This means that 90% are expected to be free from dental caries. So the problem in this study is the condition of severe dental caries in students of SMP Sakta I Brawijaya. So the researcher is interested in conducting research on dental health knowledge and dental caries in students of SMP Sakta I Brawijaya.

The behavior of students of SMP Brawijaya Sakta 1 regarding dental health is influenced by the results of the ABC Chain interaction experiencing changes from ignorance to knowledge, from knowledge to desire, and from desire to ability. Those who previously did not know then knew, when they knew then they had the desire, and from wanting to being able to do it. So that dental and oral health can improve.

Behavioral changes can be caused by knowledge, environment, heredity, and health services. Knowledge influences behavioral changes in students regarding dental and oral health. Behaviors in maintaining dental and oral health, brushing behavior, and consuming food can reduce the occurrence of dental caries. If students' knowledge and behavior of dental and oral health or how to brush their teeth is lacking, it will have an impact on increasing dental caries.

II. MATERIALS AND METHODS

The type of research used is cross-sectional analytical research. The data collection method uses a questionnaire to measure knowledge about dental health and the data collection method uses dental caries examination. The population that is the object of this study is students of SMP 1 Brawijaya Sakta 1 totaling 43 people. The sample that is the object of the study is 39 students of SMP Brawijaya Sakta 1.

According to (Nursalam, 2020), determining the sample size uses the following formula [10]:

$$n = \frac{43}{(1+43(0,05)^2)} \quad (1)$$

$$n = \frac{43}{(1+43(0,0025))} \quad (2)$$

$$n = \frac{43}{(1 + 0,1075)}$$

$$= \frac{43}{1,1075}$$

$$n = 39$$

The sampling technique used is simple random sampling, which means a sampling method where each population has the same opportunity to become a sample member and the samples that have been collected are then randomized using a lottery. The location used for this study is SMP Brawijaya Sakta 1. Jl. Bratang Wetan III A No. 6, RT.06/RW.08, Ngagelrejo, Kec. Wonokromo, Surabaya, East Java 60245.

Independent variable: knowledge of dental and oral health in students of SMP Brawijaya Sakta 1. Dependent variable: dental caries in students of SMP Brawijaya Sakta 1.

The data collection instrument used a dental health knowledge questionnaire sheet and the data collection instrument used an examination sheet, diagnostic tools (sonde, mouth mirror, cotton, and alcohol). Data collection on dental health knowledge of students at SMP Brawijaya Sakta 1 The researcher coordinated with the principal in obtaining research permits on students at SMP Brawijaya Sakta 1. questionnaire sheet, then the questionnaire sheet was collected back to students of SMP Negeri 1 Brawijaya Sakta.

Data collection of dental and oral health of students of SMP Brawijaya Sakta 1: The researcher coordinated with the principal to obtain research permits for students of SMP Brawijaya Sakta 1, examined the oral cavity of students of SMP Brawijaya Sakta 1 one by one using a mouth mirror and sonde and the examination results data were written on the examination sheet. Analysis of the relationship between the level of knowledge about dental health and tooth caries in students of SMP Sakta 1 Brawijaya using the Chi-square test.

1. H1: There is a relationship between the level of dental health knowledge and dental caries in students of SMP Negeri 1 Brawijaya Sakta.
2. H0: There is no relationship between the level of dental health knowledge and dental caries in students of SMP Negeri 1 Brawijaya Sakta.

III. RESULTS

This study was conducted from January to March 2024 at SMP Brawijaya Sakta 1 Surabaya, a private school with B accreditation located at Jl. Bratang Wetan III A No. 6, RT.06/RW.08, Ngagelrejo, Kec. Wonokromo, Surabaya. The population in this study was 43 people. This study was conducted to determine the relationship between the level of knowledge about dental health and dental caries at SMP Brawijaya Sakta 1.

The results of data collection are displayed in the form of a table obtained from a questionnaire regarding dental health knowledge and dental caries examination of students at SMP Brawijaya Sakta 1 Surabaya.

TABLE 1

Distribution of students' gender characteristics at smp brawijaya sakta 1 surabaya in 2024

No.	Gender	Frequency	Percentage
1.	Male	19	48,7 %
2.	Female	20	51,3 %
	Total	39	100 %

Based on table 1, it can be seen that in general, the gender of students at SMP Brawijaya Sakta 1 Surabaya in 2023 was 39 students, of which 20 students (51.3%) were female.

TABLE 2

Distribution of students' age characteristics at SMP Brawijaya Sakta 1 Surabaya in 2024

No.	Usia	Frequency	Percentage
1.	12 th	4	10,3 %
2.	13 th	7	17,9 %
3.	14 th	9	23,1 %
4.	15 th	19	48,7 %
	Total	39	100 %

Based on table 2, the majority of respondents were aged 15 years, namely 19 students (48.7%).

TABLE 3

Frequency distribution of students' knowledge level at SMP BRAWIJAYA SAKTA 1 SURABAYA IN 2024

No.	Knowledge Level	Frequency	Percentage
1.	Good	5	12 %
2.	Enough	3	8 %
3.	Less	31	80 %
	Total	39	100 %

From table III it can be seen that the level of knowledge of the majority of students is in the category of less than 80%, namely 31 students.

TABLE 4

Distribusi frequency karies gigi pada siswa SMP BRAWIJAYA SAKTA 1 SURABAYA di 2024

No.	Dental caries	Frequency	Percentage	Assessment criteria
1.	Caries free	7	18	0 = No Caries
2.	Free from caries	32	82	1 = There is caries
	Total	39	100	

Based on Table IV, it is known that the majority of students experienced tooth decay, as many as 32 students (82%) and only 7 students (18%) were free from tooth decay. Based on table V, the value of $p = 0.000$ is known using a significance level of $\alpha = 0.05$. The results of the analysis show $0.000 < 0.05$ so it can be concluded that H_0 is rejected and H_1 is accepted, meaning "there is a relationship between the level of knowledge about dental health and dental caries in Brawijaya Sakta 1 SMP in 2024".

TABLE 5

Analysis of the relationship between the level of knowledge about dental health and dental caries at SMP BRAWIJAYA SAKTA 1 SURABAYA in 2024

		Dental caries		p value
		No Caries	There is Caries	
Students' knowledge of dental health	Good	4	1	0,000
	Enough	1	2	
	Less	2	29	
	Total	7	32	

IV. DISCUSSION

Based on the results of research and analysis of research data that has been conducted on students of SMP Brawijaya Sakta 1 in 2024, the following discussion can be carried out.

A. DENTAL HEALTH KNOWLEDGE OF STUDENTS OF BRAWIJAYA SAKTA 1 SMP SURABAYA IN 2024

Based on the research results obtained from the questionnaire distributed to students of SMP Brawijaya Sakta 1 Surabaya, it is known that students' knowledge about dental health is in the poor category. This is influenced by the lack of knowledge about how to brush teeth, how to maintain dental health, the causes and effects of not maintaining dental health, about how to brush teeth, and how to care for dental health.

Knowledge and level of dental health status have a significant relationship. A person's knowledge about how to maintain dental and oral health can have an influence in reducing the problem of dental caries. The level of student knowledge in maintaining dental health is getting better, resulting in lower dental caries [11].

Knowledge can be obtained naturally or through the education process. According to Tirthankar, education is one of the socio-economic factors that impact health conditions. It is known that the higher a person's education, the better the level of knowledge and attitude regarding healthy living behavior. Then, the knowledge obtained will result in a person's behavior in accordance with the knowledge they have [12].

The knowledge factor plays a large and important role in influencing dental and oral health factors, but it is not only limited to knowledge, good attitudes and actions are also needed, so that dental health factors are good [13].

This is in accordance with research by Molek et al. (2023) that there is an influence of parental education level and socioeconomic level on dental caries. The higher a person's education level, the more they care about health. The higher the education level, the better the understanding of health information, in other words, the lower the level of a person's education, the lower the concern for health and healthy living behavior [14]. In addition, children with low socioeconomic status have a high risk of developing dental caries because people with low socioeconomic status tend to ignore healthy

living behavior. Conversely, children from families with high socioeconomic status have a lower incidence of dental caries.

Children who have a high level of knowledge should apply the knowledge they have to maintain dental and oral health. And pay more attention to your dental and oral health. The role of parents, teachers and health workers is very necessary to convey information and teach how to maintain dental and oral health.

B. DENTAL CARIES IN STUDENTS OF SAKTA 1 BRAWIJAYA SURABAYA JUNIOR HIGH SCHOOL IN 2024

Most students experience tooth decay. This is influenced by a lack of knowledge about how to maintain good dental health, lack of attention to dental and oral hygiene, consuming lots of sweet and sticky foods, and improper brushing of teeth which causes tooth decay. Students whose caries are not treated are caused by the students not maintaining and paying attention to their dental and oral health [15]. The results of the study by Hanifah et al. (2022) showed that there was a significant relationship between the level of cariogenic food consumption and the incidence of dental caries. This is because school students often consume cariogenic foods such as sweet, soft, and sticky foods. Then, after consuming these foods, they do not brush their teeth regularly and properly, which has an impact on the risk of dental caries [16]. Tooth brushing behavior affects caries rates and oral hygiene. Brushing teeth is one of the efforts made to maintain clean and healthy teeth. If you do not brush your teeth, it will result in dirty, yellow teeth, bad breath, poor oral and dental health, and cause other diseases [17]. According to the Indonesian Ministry of Health, it is advisable to visit a dentist every 6 months and twice a day to brush your teeth, after breakfast and before bed. Brushing your teeth should also use the correct technique so that food residue is disposed of properly. If the technique used is wrong, it can cause abrasion on the teeth which can lead to caries [18]. Tooth decay that is not treated properly can continue to be damaged and eventually must be removed. Tooth extraction is carried out if the tooth cannot be maintained or treated [19]. Dental care needs to be done to avoid pain, improve chewing ability, and avoid other health problems. Dental care can be started from reducing the number of foods containing sugar or sticky foods, cleaning plaque and food residue by brushing teeth properly, filling cavities to the dentist, cleaning tartar, removing teeth that can no longer be maintained and so on. focal infections, and regular visits to the dentist every six months if there are complaints or no complaints [20].

C. RELATIONSHIP BETWEEN KNOWLEDGE LEVEL ABOUT DENTAL HEALTH AND DENTAL CARIES IN STUDENTS OF SMP SAKTA 1 BRAWIJAYA SURABAYA IN 2024

From the results of the data analysis, the results were obtained regarding the relationship between the level of knowledge about dental health and dental caries at SMP Brawijaya Sakta 1 Surabaya. This is in accordance with the results of the study

by Khulwani et al. (2021) regarding the relationship between dental health knowledge and dental caries. If someone has the correct knowledge, the level of caries is low, and vice versa [21].

According to Blum's 1974 concept by Arikunto, (2020), behavior (knowledge and attitudes), environment, heredity, and health services are the main factors that influence dental health [22].

A person's knowledge is able to represent their behavior towards health, so that someone who has the right understanding will understand the right attitude and behavior if a disease occurs. The environment also influences the risk of dental caries, so the environment plays a big role in shaping attitudes and behaviors to maintain dental health. An environment that does not support maintaining dental health will increase the risk of caries. such as families who do not support or help in maintaining children's dental health properly and correctly. This is influenced by the lack of attention and awareness of parents towards their children's dental and oral health [23].

Other possible causes, according to research (Wright JT, 2018) in Yulianti, (2023) states that hereditary/genetic factors are one of the factors that influence the presence of tooth decay. These hereditary factors can affect the condition of the teeth, enamel structure, low saliva production and tooth development that is passed down from parents to children [24].

Increased dental caries occurs during adolescence, because all permanent teeth begin to grow at the age of 11-14 years, except for the third molars. Therefore, schools play an important role in forming and providing an understanding of good dental and oral health. In the school age group, children are experiencing a growth process so they need special attention to maintain their dental and oral health [25].

According to Tauchid & Subandini (2017), dental health problems can be overcome with a dental health knowledge approach. Dental health education given to someone can provide knowledge about healthy lifestyles and can replace unhealthy behavior with healthy behavior [26].

Lack of information causes students to be unaware of dental and oral health. Students' knowledge that is in the low category affects how to maintain dental and oral health, and increases the occurrence of dental caries. Children's awareness of dental and oral health is still low, which can lead to a lack of concern in maintaining dental and oral health. Health workers also play an important role in health services for students. By implementing health promotion, efforts to improve health, namely dental health education, can increase students' information about dental and oral health. Therefore, children's knowledge is very important in supporting their dental and oral health. With the knowledge gained, children must also be able to apply it in their daily lives. It is hoped that students will also be more aware of their dental and oral health so that they can avoid dental caries.

V. CONCLUSION

Based on the results of data analysis and discussion, the researcher drew the following conclusions: (1) Knowledge about dental health of students at SMP Brawijaya Sakta 1 Surabaya is in the low category. (2) Identification of dental caries in students at SMP Brawijaya Sakta 1 Surabaya is in the high category. (3) There is a relationship between the level of knowledge about dental health and dental caries at SMP Brawijaya Sakta 1 Surabaya in 2024.

The results of this study can be used as input for schools to pay attention to the condition of their students' dental and oral health and collaborate with the Health Center to carry out activities to improve students' understanding of dental and oral health, for example, joints, brushing teeth and counseling on dental health. The results of the study that can be done are to conduct further research on other possible causes or examine other variables that have not been studied by researchers that can affect dental caries. The results of this study can be used as evaluation material to provide more frequent understanding of dental health to increase awareness of the importance of maintaining dental and oral health so as to avoid dental caries and other dental health problems.

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