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The Effect of Dental Caries Incidence Rate (DMF-T), Dental and Oral Hygiene Status (OHI-S) on Adolescent Tooth Brushing Behavior based on the area of residence on the River Coast and Highlands in Tayan Hilir District in 2023

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Abstract

Concerning oral health in Sanggau District is still quite high, the results of an initial survey in Tayan Hilir District on MTsN3 children used a questionnaire on 42 respondents. The results obtained are as follows, knowledge about dental and oral health is good (54.8%, and moderate (45.2%). This study aims to describe and analyze the influence of the incidence of dental caries (DMF-T), the status of dental and oral hygiene (OHI-S) on tooth brushing behavior of young men based on their area of residence on the river coast and highlands in Tayan Hilir District, Sanggau Regency.The tools used were a questionnaire with Cross Sectional, Correlate Spearman and Kendall's test and Regression, with Univariate, Bivariate analysis, Multivariate The results showed that the incidence of dental caries (DMF-T) was 32.3%, oral hygiene status (OHI-s) was 48%. river (54.5%), types of food consumed on average non-cariogenic types every day (61.1%), the age of most respondents aged 13 years (40.4%), the incidence of caries (DMF-T) is influenced by status dental and oral hygiene (OHI-s) by (R=15.7%), influenced by tooth brushing behavior by (R=15%), influenced by living area by (R=8.8%), influenced by type of food (R=6.3%), and influenced by age (R=6.5%). Dental and oral hygiene status (OHI-s) affected the incidence of dental caries (DMF-T) by (R=16.4%), influenced tooth brushing behavior by (R=15%), affected area of residence (R=9, 9%), affecting the type of food consumed every day non cariogenic type (R = 9%), as well as influencing age (R = 21.3%). Overall the incidence of dental caries (DMF-T) is influenced by oral hygiene status (OHI-s), and vice versa, including the type of food consumed daily and age. The significance value is 0.00 <0.05 with the number (r) close to 1, so it can be concluded that the effect is perfect.

Keywords: DMF-T, OHI-S, Toothbrushing Behaviour, Place of Residence

INTRODUCTION

Efforts to provide dental health services are aimed at groups prone to dental and oral health problems, such as pregnant women, nursing mothers, toddlers, preschool age and school-age children. The group of school-age children is one of the vulnerable groups, because these school-age children have habits and behaviors that are less supportive of dental and oral health. Knowledge is fundamental and very important for cultivating a person's habits to be able to change attitudes and behavior. Knowledge can be obtained directly or indirectly both planned and without planning, whether through formal or informal education processes, because knowledge is a predisposing factor of attitudes and behavior.[1,2]

Based on the 2020 Tayan Hilir District Profile, the topography or living areas of Tayan Hilir District are generally located in river coastal areas or hilly and swampy highlands which are flowed by several rivers such as the Kapuas River and tributaries of the Sembesut River. Cempedak River, Semendok River, Segelam River, Mata Burik River and Tayan River. Local culture (Social Sciences) states that different topography can cause differences in light intensity, humidity, air pressure and air temperature. High-altitude topography will also affect living creatures in receiving oxygen and air pressure, so it will affect a person's health status.[3]

The results of research conducted by researchers in 2020, regarding empowering people by directly reading personal hygiene books to maintain oral hygiene with a sample of children from SDN 01 Semanget Village and SDN 08 Nekan Village, which had a very positive impact. The difference in value between the control and intervention groups before and after receiving treatment by reading Personal Hygiene books on how to maintain oral hygiene. There was a difference in value of 49.4% between the intervention group and the control group and a siq value of 0.00 <0.05. This means that providing knowledge by directly empowering respondents will be better and very significant than just using lectures and regular question and answer.

Based on these problems, the researcher wants to describe the results of the analysis of the effect of the incidence of dental caries (DMF-T), dental and oral hygiene status (OHI-S) on the teeth brushing behavior of young men based on the area of residence on the river coast or highlands in Tayan Hilir District, Sanggau in 2023.

METHOD AND MATERIAL

This study used a survey method with observation to collect data on the incidence of dental caries (DMF-T), dental and oral hygiene status (OHI-S), on the toothbrushing behavior of young women based on the area of residence on the river

coast or highlands. The tools used are questionnaires, Spearmant Kendalls test and Regression. The total number of respondents was 198 people. The subjects of this study are especially young men aged between 12 and 25 years and who live in coastal areas or highlands in Tayan Hilir District, Sanggau Regency in 2023.

The research was carried out in Tayan Hilir District, with the location of the schools in the coastal area of the river or highlands in the village of Tayan Hilir District, Sanggau Regency. The time provided adjusts to the academic calendar, so that the secondary and premier data collection schedules are also adjusted, data collection can be carried out between Friday - Saturday.

The analysis used is Univariate, Bivariate, Multivariate, the test used is Regression to find the magnitude of the effect while corelate is to find out whether there is no correlation or perfect correlation. The data is displayed in the form of a frequency distribution table.

RESULT

Table 1: Frequency Distribution based on respondent characteristics, dental caries incidence rate (DMFT), Dental and oral hygiene status (OHI-S), Tooth brushing behavior and Types of food that are often consumed every day

Variable		n	%
Age	12 years	16	16.7
	13 years	80	40.4
	14 years	50	25.3
	15 years	21	10.6
	16 years	17	8.6
	17 years	11	5.6
	18 years	1	0.5
	19 years	2	1
Domicile	River Coast	108	54.5
	Plateau	90	45.5
Dental caries incidence rate (DMFT)	Very Low (0.0-1.1)	56	28.3
	Low (1.1-2.6)	29	14.6
	Medium (2.7-4.4)	64	32.3
	Height (4.5-6.5)	31	15.7
	Very High (> 6.6)	18	9.1
Dental and oral hygiene status (OHI-S)	Good	94	47.5
	Moderate	95	48
	Bad	9	4.5
Tooth brushing behavior	1x a day	33	16.7
	2x a day	134	67.7
	3x a day	26	13.1
	> 3x a day	5	2.5
Type of Food	Cariogenic	77	38.9
	Non cariogenic	121	61.1

Table 1 shows that the most dominant average age is 13 years 40.4% and 14 years 25.3%. It can be seen that the average area of residence for young men on the river coast is 54.5% and that in the highlands is 45.5%. The average incidence of dental caries (DMF-T) is in the moderate category, 32.3%. The average oral hygiene status (OHI-S) was moderate 48% and good 47.5%. The average tooth brushing behavior of young women is 67.7% twice a day and the average number of young men consuming cariogenic types of food is 38.9% while non-cariogenic types are 61.1%.

Table 2: Correlation test analysis results

	Correlation	r	Siq.	R
DMF-T Vs	OHI-S	0.147	0.03	0.157
	Tooth brushing behavior	0.57	521	0.150
	Domicile	0.061	390	0.088
	Age	0.065	372	0.77
	types of food	0.067	282	0.063

Table 2 shows that the influence of the number of dental caries incidents (DMF-T) on OHI-S status is very perfect because the r value is close to 1 and is also very significant because the p value = 0.03 <0.05.

Table 3: Regression test analysis results

	Correlation	r	Siq.	R
OHI-S Vs	DMF-T	0.147	0.03	164
	Tooth brushing behavior	0.57	0.36	150
	Domicile	0.061	0.58	099
	Age	0.065	0.00	213
	types of food	0.067	0.21	211

Table 3 shows that the effect of status (OHI-S) on the DMF-T number is 16.4% and is very perfect because the r value is close to 1. It is also very significant because the siq value. 0.03<0.05. Likewise with the magnitude of the age of 21.3% and is very perfect because the value of r is close to 1 is also very significant because the value of p = 0.00 <0.05.

DISCUSSION

The incidence of dental caries (DMF-T) is in the moderate category of 64 (32.3%), this shows that teenagers need to pay special attention to increasing knowledge, taking preventative action against existing cases to prevent and avoid further damage. from tooth decay so that it does not interfere with future activities. Tooth decay will greatly affect activities and even interfere with school activities, as well as disrupting appetite which can result in malnutrition due to lack of intake that can be absorbed by the body, thus special attention needs to be paid to changing attitudes and behavior among teenagers so that the number of cases increases. Dental and oral health continues to improve with age. It is also necessary to pay attention to why, because today's teenagers will continue to grow and develop.[4,5]

This growth and development will be disrupted or become a separate problem for adolescents, when they later enter the world of work, if the teeth are not treated comprehensively, it can result in these adolescents being unable to enter the world of work due to toothache, for example. In the world of work, if this happens, the company or place where youth work will lose a number of production due to absence from work. For the growth and development that can occur in adolescents where there is a lot of damage to the teeth, it will result in difficulty eating because it hurts. If the toothache persists, it can cause you to be lazy about eating, which can lead to a lack of nutritional intake in the body. The lack of nutritional intake will affect the organs in the body, and if this continues without improving the nutritional intake of these adolescents they can be malnourished or even anemia. If malnutrition or anemia continues without adequate nutritional support, something even worse can happen, namely stunting. What young men can do is to carry out simple promotive, preventive and curative activities, with the aim of changing attitudes and behavior through increased knowledge.[6–8]

Knowledge is a very important domain for changes in one's attitude and behavior, moreover this knowledge has been instilled from an early age. Based on the opinion of several experts, if we reach 40 years of age, we must have a minimum of 28 teeth. Preventive activities that can be carried out are closing fissures using Glass Ionomer (GI) materials, or cleaning tartar if tartar is present. While the curative action that can be done is in the form of fillings with the ART technique, using composite materials or other tooth-colored filling materials. The influence of tooth brushing habits can reduce the plaque index and pH of saliva, according to Triswari & Pertiwi, this habit needs to be instilled as early as possible especially in children who have the potential to damage their teeth more, so it is necessary to instill the habit from an early age, so that this habit will carry over until adulthood.[9] Based on the results of research from Wijayanti & Rahayu, it is stated that getting used to brushing your teeth is the main action in efforts to improve dental and oral health. Knowledge is a very important domain in shaping a person's actions (overt behavior).[10] According to written research experience by Handayani and Ratnaningsih in Rusmali that behavior based on knowledge will be more lasting than behavior that is not based on knowledge. Knowledge is justified true belief, which means confirming the truth of a belief based on observation.[11]

The dental and oral hygiene status (OHIS) of respondents in this study was in the moderate criteria, namely 95 (48%). Dental and oral hygiene status (OHI-S) is an indicator of dental and oral health in terms of hygiene. Efforts to keep your teeth and mouth healthy and clean are necessary, you have to go to the nearest dental and oral health service facility, whether it is a health center, hospital or private service clinic, at least twice a year to have it checked according to recommendations. This status is the result of combining the Debris Index (DI) and Calculus Index (CI) values. If these values are combined, a person's dental and oral hygiene status will be depicted. This status can be included in the Good criteria if the value is 0.0-1.0, the medium criteria if the combined value is 1.13.0 and the worst is if the combined value is ranging from 3.1-6.0.

Teeth with a lot of tartar will cause buildup on the teeth and make the oral cavity smelly. If a large amount of tartar is not cleaned for a long time, it can cause the teeth to become loose. The degree of mobility of the teeth will cause the mouth to feel painful when chewing while eating and drinking, as a result the teeth are an indication for extraction. Teeth should stay in a person's oral cavity longer, with good teeth the digestive process in the digestive tract will still be good.[12–14]

Based on research results from Wijayanti & Rahayu, it is stated that getting used to brushing your teeth is the main action in efforts to improve dental and oral health. Teeth are healthy and clean if the teeth do not have cavities, when used they do not feel painful, there is no tartar, the color of the gums is pink. The best way to do this is to brush your teeth properly and regularly.[10] According to Arianto, factors related to dental and oral hygiene maintenance behavior (OHI-S) and oral hygiene maintenance attitudes (OHIS) have a value of p=0.018, knowledge of maintenance behavior with a value of p=0.044, maintenance actions dental and oral hygiene (OHIS) p = 0.013. OR=1,749 value. Oral hygiene status (OHIS) affects the DMF-T rate of 16.4% and the siq. 0.03 <0.05, this value shows that the influence of dental and oral hygiene is very large and very significant in influencing the occurrence of cavities.[15]

The behavior of adolescents in brushing their teeth on average with a frequency of 2x a day is 67.7%. However, the 2x a day must be adjusted according to the time such as: Why do you brush your teeth after breakfast, because after you have breakfast your mouth will have a rest period so you don't chew food while someone is active. Thus, during rest, acidogenic germs will not metabolize cariogenic food waste in the oral cavity, so that the process of demineralization or shedding of the tooth enamel layer does not occur. Brushing your teeth before going to bed at night, because when we sleep with a clean oral cavity, we can avoid the demineralization process mentioned above. A person's behavior or habit of brushing their teeth properly and regularly, which is done every day, can have an influence on the occurrence of dental caries of (R = 0.570 = 57.0%) and the siq value. 0.000 < 0.05. The behavioral factor turns out to have a very large influence, reaching 57.0%, behavior is a habit and is usually carried out every day by someone.[16]

Behavior does not mean it cannot be changed, but it can be done even though it takes time because it depends on the person's wishes. According to Covey in the book The Seven Habbits, this habit can be quickly adopted if it is started from childhood, so that later when an adult someone is used to these positive things. These habits require knowledge, so knowledge is a very important domain for behavior change to occur. Human behavior is an action that is influenced by several factors such as custom, emotion, ethics and others. Activities can be interpreted in a broad form, therefore these activities can be observed directly or indirectly, human behavior is a form of emotion that is stimulated from outside.[17]

The behavior of Indonesian children in maintaining dental and oral health is still very low, dental care is considered not very important even though it is very useful in supporting health and appearance. This behavior arises from children's lack of knowledge about the importance of maintaining healthy teeth.[18,19] It was recorded that behavior from the results of this research had a 15% influence on tooth brushing behavior. Behavior can change once there is knowledge. So it is necessary to cultivate habits from an early age.

The average respondent who became the research sample was 40.4% aged 13 years and 25.3% aged 14 years, according to WHO the youth category is between 12 years and 25 years old. This means that teenagers who are currently the sample in this study can still be guided and directed on how to maintain healthy teeth and mouths to stay healthy. Nurwati said that one of the factors that influences the occurrence of dental caries is age.[20] It turns out that age can also affect the occurrence of one's dental caries, the magnitude of the influence of the age scale for the occurrence of dental caries is (R = 0.107 = 10.7%), meaning that it is also necessary to pay attention to it because it has quite a large effect. Tooth decay is strongly influenced by age, as evidenced by the results of this study showing the magnitude of the influence of age is 21.3% and is very significant. Siq value. 0.00 <0.05, meaning that a person's age has a very significant influence on the occurrence of cavities, it is possible that at the age of 13 he is still unstable or indeed his knowledge is still limited, especially about maintaining healthy teeth and mouth.

The average area where respondents live is along the river coast, 108 (54.5%), where they live may also have an influence on the occurrence of cavities, the status of dental hygiene and so on, although it is less significant, it is strongly correlated, namely (0.61 %). This means that people who live on the coast of rivers or highlands can have an influence on the occurrence of dental caries. A living area is a place that shows that we live there, a living area is not just a living area because topographically there are differences in the reception of light, oxygen, etc., these differences in reception can affect the reception of oxygen (O2), for example, including a person's level of pain. This different acceptance will of course also affect a person's level of pain. The coastal area of the river is synonymous with lots of water, lots of fish etc. This assumption makes us think that in river coastal areas the teeth will definitely be in the good category, apart from consuming lots of fish, by eating lots of fish it is also hoped that the calcium levels will be sufficient to meet the needs of a person's bone and tooth growth. However, rivers are currently starting to be disrupted both in terms of function and usefulness, rivers could be polluted by home industry waste or large-scale industrial waste such as factories, meaning that rivers could be polluted by industrial waste.

A plateau is possible due to calcium levels obtained from the use of artificial well water if this water is consumed daily, as well as sources of vitamins and minerals as well as calcium obtained for daily needs. Based on the results of this research, it turns out that people living in highland areas can influence the occurrence of caries or cavities. Efforts that we can make are to increase knowledge through education about dental and oral health. The next step that can be taken is to apply high doses of flour to prevent the process of demineralization by germs on tooth enamel. It is hoped that the promotive and preventive efforts carried out will help prevent the occurrence of cavities. Regarding the area of residence, it also includes the food consumed, according to Ramayanti & Purnakarya in Rusmali et al stated that the role of food in the incidence of dental caries really needs to be paid attention to, because the type of food is cariogenic along with microorganisms, teeth as (Host) and time change the pH very quickly. Saliva reaches 5.5 and can drastically cause demineralization. Microorganisms can convert sugars such as glucose, especially sucrose, very effectively, because they have a more efficient ability to grow acidogenic microorganisms. Apart from that, there is a deficiency of several vitamins and minerals which can lead to dental caries such as deficiencies of vitamins A, B, C and D, Ca, Phosphorus, Fluorine and Zinc, therefore preventive measures are needed at primary, secondary or tertiary stages. Geographical differences greatly influence individual health, such as clinical and sub-clinical infections, namely intestinal infections, diarrhea, environmental enteropathy, worm infections, ARI, etc. The cultural factor of food is a basic human need, so it must be fulfilled and if the fulfillment is inadequate it will result in malnutrition or even stunting.[21]

The type of food consumed daily can influence the occurrence of dental caries, whether it is cariogenic or non-cariogenic. Of course, the type of food is very influential for people who frequently consume it, especially the type of cariogenic food, the type of cariogenic food is the type of food that sticks together easily when consumed and tastes sweet. Even though it is already known that this type of cariogenic food is a favorite for germs in our oral cavity to reproduce. This type of cariogenic food is metabolized by germs to become acid. This acid will dissolve (demineralize) the outer layer of the teeth, namely the enamel, until cavities occur. What can be done to prevent the demineralization process by germs is by brushing your teeth. Brushing your teeth is a real form of activity to break the chain of metabolism by germs. Microorganisms can convert sugars such as glucose, especially sucrose, very effectively, because they have a more efficient ability to grow acidogenic microorganisms. Apart from that, there is a deficiency of several vitamins and minerals that can lead to dental caries, such as deficiencies of vitamins A, B, C and D, Ca, Phosphorus, Fluor and Zinc.

In this study, 61.1% of teenagers usually consumed non-cariogenic foods. This figure of 61.1% may be related to the income of the students' parents, because students are also found living in private special school dormitories. However, the dental caries rate reached 32.3% and the dental and oral hygiene status was 48%, each in the moderate category. This means that non-cariogenic eating habits do not absolutely influence the incidence of cavities or oral hygiene. Teenagers who usually consume non-cariogenic foods are 61.1%. This figure of 61.1% may be related to the income of the students' parents, because students are also found living in private special school dormitories. However, the dental caries rate reached 32.3% and the dental and oral hygiene status was 48%, each in the moderate category. This means that non-cariogenic eating habits do not absolutely influence the incidence of cavities or oral hygiene. Therefore, preventive measures are needed at primary, secondary or tertiary stages.

CONCLUSION

The conclusion of this study is that the incidence of dental caries (DMF-T) has a significant effect on oral hygiene status (OHI-S). In addition, OHI-S status also has a significant effect on the incidence of dental caries (DMF-T) and age.

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