

ORAL HEALTH STATUS AND BEHAVIOR OF TUNAS HARAPAN ELEMENTARY SCHOOL STUDENTS

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ABSTRACT

Caries can be caused by a lack of knowledge that shapes attitudes and behavior of neglecting oral hygiene. Caries is the main problem that is often found in children. To increase knowledge of the importance of dental and oral health in children, an approach was made through the UKGS program fostered by the Puskesmas. It is hoped that this survey result will serve as material for evaluating UKGS activities for Puskesmas and schools. Objective of this research is To determine the oral health status and behavior of SDS Tunas Harapan students. A survey with a cross-sectional design was conducted among students in grades I-VI at SDS Tunas Harapan. Data collection used the def-t index, DMF-T, OHIS, and a behavioral questionnaire. Data analysis used the univariate method and presented in tabular form. The average value of def-t is 4.6, DMF-T is 1.3, and OHIS is good (58%), fair (38%), bad (4%). The results of filling out the questionnaire showed good knowledge (86%), moderate (14%) and less (0%). Good attitude (92%), moderate (8%) and less (0%). Practice is good (72%), moderate (28%) and less (0%). A total of 109 SDS Tunas Harapan students had dental caries (87%) out of a total of 128 students who attended the examination.

Keywords: aged 6-12 years, behavior, dental caries

INTRODUCTION

Oral health is an integral part of overall health that can affect quality of life. Poor oral hygiene can continue to be a risk factor for various diseases in the oral cavity such as caries and periodontal tissue disease. (Rizaldy, Susilawati, & Suwargiani, 2017) One of the oral health problems as the main cause of pain in the oral cavity and tooth loss is dental caries. (Siagian, 2016) Caries is a multifactorial chronic infection that can affect both primary and permanent teeth, where significant pain and dysfunction due to caries can interfere with basic functions such as eating, sleeping, and speaking which have an impact on an individual's quality of life. (Sutanti et al., 2021)

The process of caries is caused by four main factors, namely host, substrate, microorganisms, and time. The interaction between cariogenic microorganisms and fermentable carbohydrates for a certain time can cause tooth demineralization, which can then develop into loss of tooth structure or the formation of dental cavities. (Garg & Garg, 2010) RISKESAS 2018 report that the largest proportion of oral problems in Indonesia were caries (57.6%) with the distribution of the age group 5-9 years of 92.6% and 10-14 years 73.4%, as well as the National DMF-T index of 7,1. DMF-T index and def -t is used to measure caries experience based on the number of decayed teeth, missing teeth, and filling teeth through a thorough examination. (Kemenkes, 2018) This index is influenced by behavior in maintaining oral health, where knowledge is a very important domain for the formation of one's behavior. (He et al., 2022)

Oral health problems can be caused by lack of knowledge of the importance of these problems, resulting in attitudes and behaviors that ignore oral health maintenance. (Widodo & Adhani, 2022) A person's knowledge, attitudes, and practice regarding the importance of maintaining oral health can be measured using a questionnaire. (Ghufroni, Primarti, Chemiawan, & Febriani, 2021) Meanwhile, oral hygiene assessment can be measured using

the Oral Hygiene Index-Simplified (OHI-S), which is a combination of the Debris Index-Simplified assessment (DI-S) and Calculus Index-Simplified (CI-S). (Tandra, Mintjelungan, & Zuliari, 2018)

Children aged between 6-12 years generally do not know and understand how to maintain oral hygiene, while children have a higher frequency of consuming sweet and sticky foods. (Rizaldy et al., 2017) As the closest environment to children, parents and teachers considered to have an important role in teaching school-age children various basic matters regarding oral and dental health which will have an impact on a child's behavior. (Fitri, Zubaedah, & Wardani, 2017; Rizaldy et al., 2017) One approach that can be taken to improve children's oral health is through the School Dental Health Business program (UKGS) as a promotive and preventive measure for dental caries.

UKGS aims to maintain and improve the oral health of all target school students supported by individual health efforts. UKGS activities include training for teachers and little doctors, oral health education and counseling according to the curriculum, mass toothbrushes, fluoridation activities (fluorine tablets and fluorine rinses), surveys (DMF-T, PTI, and OHI-S), emergency treatment for pain relief, basic dental medical services, and referrals. High caries rates are the basis for the need to organize UKGS activities in order to be able to overcome problems regarding oral health status, while surveys in this activity are carried out as output or evaluation material from these activities. (Indonesia, 2016) Where the UKGS program is organized by the government and the private sector fostered by puskesmas through the School Health Program (UKS). (Marliny, 2021)

This survey was conducted to determine the oral health status and behavior of SDS Tunas Harapan students who are assisted by schools in implementing the UKGS program implemented by the Puskesmas Grogol Petamburan. It is hoped that this result survey will be useful as material for evaluating the UKGS program that has been implemented.

METHODS

This survey aims to see an overview of the oral health status and behavior of SDS Tunas Harapan students. The survey was conducted at SDS Tunas Harapan RT.2/RW.4, Wijaya Kusuma, Grogol Petamburan District, West Jakarta City, Special Capital Region of Jakarta. The survey was conducted on Tuesday 21 February 2023.

The population in this survey is students of grade I to VI SDS Tunas Harapan. The survey sample used total sampling method, totaling 128 students. While the sample in the behavioral survey was SDS Tunas Harapan students from grade III to IV, totaling 72 students. Data collection on the DMF-T and def-t index variables as well as the OHI-S index was carried out visually by intraoral examination, assisted by a mouth mirror and WHO probe, then the results were recorded in the examination form sheet that had been made, then calculated and adjusted according to the criteria for each index. Variables of knowledge, attitudes, and practice were collected using questionnaire sheets for students in grades III to IV SDS Tunas Harapan with guidance from survey operators and teachers. Data were analyzed using univariate analysis method using software in the form of Microsoft Excel, the results were then presented in tabular form.

RESULT

The data obtained in the examination of SDS Tunas Harapan students can be seen in the table 1.

Table 1. Distribution of the DMF-T index

| Variable | Samples | D | M | F | Total DMF-T | Average |
|---------------|---------|-----|---|---|-------------|---------|
| Grade | | | | | | |
| 1 | 35 | 26 | 2 | 0 | 28 | 0,8 |
| 2 | 22 | 22 | 0 | 0 | 22 | 1 |
| 3 | 20 | 24 | 1 | 0 | 25 | 1,2 |
| 4 | 9 | 5 | 0 | 0 | 5 | 0,6 |
| 5 | 23 | 50 | 2 | 0 | 52 | 2,3 |
| 6 | 19 | 35 | 2 | 1 | 38 | 2 |
| Gender | | | | | | |
| Female | 69 | 101 | 6 | 1 | 108 | 1,6 |
| Male | 59 | 61 | 1 | 0 | 62 | 1,1 |

Examination using the DMF-T index showed that teeth with the highest DMF-T score were found in 5th-grade elementary school students, with an average of 2.3 meaning that out of 23 students, there were at least 2 cavities in each student. The DMF-T score was also quite high in 6th-grade students with an average of 2 meaning that out of 19 students there were at least 2 cavities in each student. Overall the total DMF-T score, the number of carious or decayed teeth is the highest index component, which is 162 out of 170. If observed based on gender distribution, women have a higher total DMF-T than men with a total of 108 in women and 62 in men. Overall, the DMF-T average for SDS Tunas Harapan students was 1.3, meaning that out of 128 students there was at least 1 permanent tooth with cavities.

Table 2. Distribution of the def-t index

| Variable | Samples | D | M | F | Total def-t | Average |
|---------------|---------|-----|----|---|-------------|---------|
| Grade | | | | | | |
| 1 | 35 | 247 | 61 | 1 | 309 | 8,8 |
| 2 | 22 | 99 | 26 | 0 | 125 | 5,7 |
| 3 | 20 | 71 | 10 | 0 | 81 | 4,1 |
| 4 | 9 | 29 | 6 | 0 | 35 | 3,9 |
| 5 | 23 | 18 | 6 | 0 | 24 | 1 |
| 6 | 19 | 5 | 8 | 0 | 13 | 0,7 |
| Gender | | | | | | |
| Female | 69 | 224 | 61 | 0 | 285 | 4,1 |
| Male | 59 | 245 | 56 | 1 | 302 | 5,1 |

From the examination using the def-t index, the highest total def-t results were obtained in grade 1 students, which were dominated by the caries or decayed index totaling 247 teeth, with an average of 8.8. This means that out of 35 students there are 8 to 9 cavities. The second highest total def-t was found in grade 2 students with a total of 125, which was dominated by a caries or decayed index of 99, with an average of 5.7. This means that out of 22 students there are 5 to 6 cavities. Based on gender distribution, male students had a higher total def-t than female students with 302 female students and 285 male students. Overall, the average def-t for SDS Tunas Harapan students was 4.6, meaning that out of 128 students, there were approximately 4-5 primary teeth with cavities.

Table 3. Distribution of the OHI-S index

| Variable | DI-S | CI-S | Good OHI-S | | Fair OHI-S | | Poor OHI-S | |
|----------|------|------|------------|------|------------|-----|------------|-----|
| | | | N | % | N | % | N | % |
| Gender | | | | | | | | |
| Female | 59,8 | 16,1 | 42 | 61% | 24 | 35% | 4 | 4% |
| Male | 54,2 | 12,6 | 34 | 58% | 23 | 39% | 2 | 3% |
| Grade | | | | | | | | |
| 1 | 36,1 | 4,9 | 20 | 57% | 15 | 43% | 0 | 0% |
| 2 | 20,4 | 4,3 | 16 | 73% | 6 | 27% | 0 | 0% |
| 3 | 17,4 | 2,9 | 6 | 30% | 13 | 65% | 1 | 5% |
| 4 | 8,8 | 2,7 | 5 | 56% | 33 | 33% | 1 | 12% |
| 5 | 18,4 | 6,1 | 15 | 65% | 5 | 22% | 3 | 13% |
| 6 | 12,9 | 7,8 | 13 | 68% | 6 | 32% | 0 | 0% |
| Age | | | | | | | | |
| 7 | 37,3 | 4,9 | 21 | 58% | 15 | 42% | 0 | 0% |
| 8 | 14 | 2,1 | 9 | 69% | 4 | 31% | 0 | 0% |
| 9 | 24 | 6,3 | 11 | 41% | 15 | 55% | 1 | 4% |
| 10 | 10,1 | 2,9 | 7 | 58% | 5 | 42% | 0 | 0% |
| 11 | 15,5 | 6,5 | 13 | 42% | 6 | 28% | 2 | 10% |
| 12 | 12,8 | 5,4 | 13 | 72% | 5 | 28% | 0 | 0% |
| 13 | 0,3 | 0,3 | 1 | 100% | 0 | 0% | 0 | 0% |

The DI-S examination results based on gender showed that the DI-S score for women was higher than that for men with a total score of 59.8 and 54.2, respectively. Distribution by class shows that the highest score is from class 1 with a score of 36.1, while the lowest DI-S score is from class 4 with a score of 8.8. The results of the DI-S examination based on age showed that students aged 7 years had the highest DI-S score with a score of 37.3. Students aged 13 years and 10 years had the lowest scores with scores of 0.3 and 10.1 respectively.

The results of the CI-S examination based on gender showed that the CI-S score of women was higher than that of men with a total score of 16.1 and 12.6, respectively. The distribution of CI-S by class shows that the highest CI-S score was obtained from class 6 with a score of 7.8 and the lowest CI-S score was obtained from class 4 with a score of 2.7. The results of the CI-S examination by age showed that 13-year-old students had the lowest CI-S score of 0.3, followed by 8-year-old students with a score of 2.1.

Based on the results of the OHI-S examination, the prevalence of students who had good OHI-S criteria was 76 students out of 128 students with a percentage of 58% with the prevalence of female students being higher than male students, namely 42 students (61%) and 34 students (58%). The prevalence of students who have sufficient OHI-S criteria is 47 students out of 128 students with a percentage of 38% with the prevalence of male students being higher than female students, namely 23 students (39%) and 24 students (35%). The prevalence of students with poor OHI-S criteria was 5 students out of 128 students with a percentage of 4% with a higher prevalence of female students than males, namely 4 students (4%) and 2 students (3%).

Distribution by class shows that grade 2 students have the highest percentage of good OHI-S criteria, namely 73% with a total of 16 students and the percentage with moderate OHI-S criteria is the highest from grade 3, namely 65% with a total of 13 students. Meanwhile, the highest percentage of bad OHI-S criteria was from grade 5, namely 13% with a total of 3 students.

Distribution by age shows that the highest percentage of good OHI-S criteria is 13 years old with 100% percentage of 1 student, followed by 12 years of age with 72% percentage of 13 students. The distribution of OHI-S criteria is sufficient based on the highest age of 9 years, namely 55% with a total of 15 students, then followed by ages 7 years and 10 years with a percentage of 42%. The highest distribution of poor OHI-S criteria based on age was at the age of 11 years with a percentage of 10%.

Table 4. Distribution of Knowledge Assessment

| No | Questions | True (%) | False (%) |
|----|--|----------|-----------|
| 1 | Sweet and sticky foods are foods that can easily make cavities | 97% | 3% |
| 2 | The minimum frequency of brushing your teeth is 2 times a day | 75% | 25% |
| 3 | The right time to brush your teeth is after breakfast and before going to bed | 92% | 8% |
| 4 | Toothbrushes should be replaced every 2-3 months | 69% | 31% |
| 5 | The content of toothpaste that is useful for preventing cavities is fluoride | 72% | 28% |
| 6 | The correct way to brush your teeth is in a circular motion from the gums to the teeth | 96% | 4% |
| 7 | Fibrous foods such as vegetables and fruit are good foods for dental hygiene | 89% | 11% |
| 8 | The frequency of going to the dentist is at least once every 6 months | 69% | 31% |

Based on the results of filling out the questionnaire, it was found that the questions with the most percentage of wrong answers were the time to change the toothbrush and the time to visit the dentist, with the percentage of wrong answers being 31%. Then followed by the

question of selecting toothpaste containing fluoride with a 28% wrong answer percentage, then the right tooth brushing frequency question with a 25% wrong answer frequency. The questions about good nutrition for teeth have a percentage of wrong answers as much as 11%, the question about the right time to brush your teeth has a percentage of wrong answers as much as 8%, questions about how to brush your teeth have a percentage of wrong answers as much as 4% and finally the food item that can make cavities have the least percentage of errors, namely 3%.

Table 5. Distribution of Attitude Assessment

| No | Statement | Totally disagree | Do not agree | Doubtful | Agree | Strongly agree |
|----|--|------------------|--------------|----------|-------|----------------|
| 1 | In my opinion, brushing your teeth 2 times a day is necessary to maintain the health of my teeth | 0% | 1% | 4% | 58% | 37% |
| 2 | I feel that brushing my teeth after breakfast is important | 1% | 4% | 8% | 54% | 33% |
| 3 | Brushing my teeth before going to bed at night is good for my dental health | 0% | 1% | 0% | 66% | 33% |
| 4 | I will consume vegetables and fruit every day so that my dental hygiene can be maintained properly | 1% | 0% | 21% | 45% | 33% |
| 5 | I feel like going to the dentist every six months is what I need to do | 3% | 4% | 28% | 38% | 27% |
| 6 | I will replace my toothbrush every 2-3 months even though my toothbrush is not damaged | 10% | 4% | 7% | 42% | 37% |

Based on the results of filling out the attitude questionnaire at SDS Tunas Harapan from grade 3 to grade 6 elementary school students, 58% of students agreed that brushing their teeth 2 times a day is necessary to maintain healthy teeth. 54% of students think that brushing their teeth after breakfast is important. 66% of students agree that brushing their teeth before going to bed is good for dental health. 45% of students stated that they would consume vegetables and fruits every day so that dental hygiene could be maintained properly. 38% of students feel that it is necessary to visit the dentist every 6 months. 42% of students will replace their toothbrush every 2-3 months even though the toothbrush has not been damaged. The attitude questionnaire statement items with the highest percentage of doubtful answers were found in item 5, with a percentage of 28% of students doubting the importance of visiting the dentist every 6 months.

From filling out the action questionnaire, statement items with no answers were mostly questions regarding visits to the doctor once every 6 months with a percentage of 56%. Then followed by a statement regarding the consumption of vegetables and fruit every day with a percentage of no answers as much as 27%. Answers no to the statement items regarding the time to brush your teeth after breakfast and the statement items regarding changing your toothbrush every 2-3 months have the same percentage, which is as much as 20%. Items for statements about when to brush your teeth before going to bed with a percentage of not as much as 7%, then for statements about brushing your teeth at least 2 times a day with a percentage of no answers as much as 5%. Item statement regarding the use of toothpaste when brushing teeth with a percentage of no answers as much as 2%.

Table 6. Distribution of Practice Assessment

| No | Statement | Yes (%) | No (%) |
|----|---|---------|--------|
| 1 | I always brush my teeth at least twice a day | 95 | 5 |
| 2 | I always brush my teeth after breakfast | 80 | 20 |
| 3 | I always brush my teeth before sleeping at night | 93 | 7 |
| 4 | I always use toothpaste when brushing my teeth | 98 | 2 |
| 5 | I always consume vegetables and fruit every day | 73 | 27 |
| 6 | I always visit the dentist regularly every 6 months | 44 | 56 |
| 7 | I always change my toothbrush every 2-3 months | 80 | 20 |

DISCUSSION

Dental caries is experienced by many people, including children. The impact of caries on children is that children will have difficulty eating and the color of their teeth will turn black. (Khulwani, Nasia, Nugraheni, & Utami, 2021) Based on the results of caries data on SDS Tunas Harapan students, it can be seen that 109 students out of a total of 128 students have dental caries with a percentage of 85%. Gender shows a difference between girls and boys, this is in line with the results of previous studies which said that the prevalence of caries in girls is higher because girls' teeth erupt faster so they stay longer in the oral cavity and are more prone to caries. Based on the survey results, it was found that the highest caries prevalence was in 5th grade elementary school children with an average age of 11 to 12 years. This data is not in accordance with research conducted by Ramona D, et al that children aged 6 to 10 years tend to have higher caries because they like to consume foods that contain high sugar such as milk with sugar content, chocolate, and soft drinks. Another important factor, the high prevalence of caries is also influenced by social and economic conditions. (Dumitrescu et al., 2022) While the results of a study by Khusnul K, et al show that there is no relationship between caries and age. (Kiswaluyo, 2015)

The level of oral hygiene was assessed based on debris and calculus scores. Debris is leftover food found on the tooth surface. Debris buildup will trigger plaque formation. (Adrianton, Ramayanti, & Nofika, 2019) Calculus is a hard deposit formed due to calcification of dental plaque composed of calcium phosphate. (Aghanashini et al., 2016) The DI-S and OHI-S examination results based on gender showed that the DI-S and OHI-S in women were higher than those in men, this is in line with research by Wowor, et al that women have a higher awareness of appearance compared to men so this will affect their behavior in maintaining healthy teeth and mouth. (Wowor, 2013) In the DI-S examination based on class, it was found the highest DI-S score is from class 1 this also occurs in students aged 7 years, from these two results it can be concluded that at this age children are still less concerned about dental and oral health so they still need guidance from older people. (Mawuntu, Pangemanan, & Mintjelungan, 2015) Meanwhile to check the CI-S score, the highest score was found in women, this is not in line with the research conducted by Wowor, et al, which found that the percentage of CI-S in women was lower than men. (Wowor, 2013) Then the distribution of CI-S scores was based on class the highest score was obtained in grade 6, this happened because calculus was rarely found in primary teeth. (Syahida, Wardani, & Zubaedah, 2017) Based on class distribution, the results showed that grade 2 students had a good percentage of OHI-S criteria, this was not in line with research by Mawuntu M, et al, with the conclusion that

as you get older or increase in class level, it will be easier to understand information about dental and oral health, whether taught by parents, at school or in their experience. (Mawuntu et al., 2015)

According to Santoso, et al, oral hygiene has a very important role in the field of dental health, because poor oral hygiene can lead to various local and systemic diseases. (RAHARJANTO, 2006) Based on the results of the data, it is known that female students have poorer oral hygiene. better than male students. This is consistent with previous studies which said that the oral hygiene index for women was better. (Ningsih, 2015) Based on class level, the best oral hygiene with the highest percentage was grade 2 students with 16 students (73%) and the lowest was grade 4 students, namely 5 pupils (5%). Then based on age, students aged 13 years have the highest percentage with good oral hygiene, namely 72%. In accordance with previous research by Oyedele et al which stated that children aged 13-16 years have good oral conditions. (Oyedele, Folayan, Chukwumah, & Onyejaka, 2019)

Brushing teeth is something that must be done by both children and adults. Brushing your teeth is an action to clean your teeth from food debris, bacteria and plaque. The time needed to brush your teeth is in the morning after breakfast and at night before going to bed. (Sutjipto, Wowor, & Kaunang, 2013) Brushing your teeth in the morning is done after eating to remove food debris and plaque that forms after breakfast so that it is hoped that the bacteria in the oral cavity will have less time to metabolize glucose. (Fibryanto & Widyastuti, 2022) Brush your teeth at night after dinner. At night saliva production decreases thereby reducing the ability of self-cleansing which is very important in preventing the formation of cavities. Therefore, brushing teeth is something that must be done to prevent the formation of carious teeth. (Fornari, Bergonci, Stein, Agostini, & Rigo, 2021) According to Potter and Perry, school children aged 6 to 12 years are often referred to as a vulnerable latent period because at that time the milk teeth begin to fall out. Based on the results of Sujipto's research, at the age of 6 to 12 years is the elementary school age and at the age of 10 to 12 is the mixed dentition period so good action is needed to maintain dental and oral health. (Sutjipto et al., 2013) The mixed dentition stage consists of three periods: the transition period, the inter-transition period, and the second transition period.

Based on the survey results shown in table 4, Tunas Harapan students have less knowledge when changing toothbrushes. In general, toothbrushes are recommended to be replaced before the first signs of worn filaments in the bristles appear. Filament wear often occurs 2-3 months after using a toothbrush. Filament wear is clinically characterized by fluctuating and shortening of the bristles. These blooming bristles can injure the gingiva and cannot clean plaque effectively. A toothbrush that is used for more than 3 months will become a nest of bacteria, so it must be replaced even though the toothbrush bristles are not yet blooming. (Zúñiga et al., 2022) Tables 4, 6, and 8 shows that SDS Tunas Harapan students have insufficient knowledge in terms of routine dental check-ups at least once every 6 months so that students do not visit the dentist regularly. Visits to the dentist regularly every 6 months are important because they can help maintain healthy teeth and mouth. (Behfarnia et al., 2020) During these visits, the dentist will examine oral hygiene, caries, calculus, and other problems. Calculus formation occurs over several months to several years. The results showed that scaling accompanied by instructions for maintaining oral hygiene at 6-month intervals provided maximum benefit in removing bacterial plaque and showed a significant increase in the health of the periodontal tissue.

CONCLUSION

Schools have a role in forming good dental and oral health knowledge. Providing education to children builds individual personal characteristics, behavior and perceptions.

Based on the results of dental caries data on SDS Tunas Harapan students, 128 out of a total of 147 students had dental caries with a percentage of 87%. The results at SDS Tunas Harapan showed that the highest caries prevalence was found in grade 1 students. From oral hygiene it was found that grade 2 students had the highest percentage, namely 73% or 16 students, and the lowest was in grade 4 students, namely 5 students (5%). The results of the questionnaire showed that SDS Tunas Harapan students had insufficient knowledge in terms of changing toothbrushes and routine dental checkups at least once every 6 months.

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