



The Relationship Level of Knowledge of Teeth-Brushing to The Dental Caries Incidence in School-Age Children

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Abstract

Background: The most common dental and oral diseases are dental caries and periodontal disease. The prevalence of dental caries in Indonesia is 88.8% with a root caries prevalence of 56.6%. Children aged 5-9 years have a prevalence rate of 92.6%. **Purpose:** To determine the relationship between the level of knowledge of brushing teeth and the incidence of dental caries in school-age children at Genengsari 01 Elementary School, Polokarto District. **Method:** This type of research is correlational (correlation) with a cross sectional approach. This study used a purposive sampling technique on school-age children or grades 1-3 as many as 48 respondents. Data analysis using Somers'd test. The research instrument used a questionnaire and observation of dental examination. **Result:** The results of this study showed that the level of knowledge was less and the number of dental caries was higher. Somers'd test results, p value 0.001 (<0.05), so it is proven that H0 from this study can be rejected, indicating a significant correlation was found between the level of knowledge of brushing teeth and the incidence of dental caries in school-age children in SD Negeri Genengsari 01 Polokarto District. The correlation coefficient value was obtained at 0.516, this means that there is a relationship between the two variables that is sufficiently correlated. **Conclusion:** There is a knowledge level of brushing relation to the incident of tooth caries in school-age children at Genengsari 01 Elementary School, Polokarkto District.

Keywords: Dental caries, Level of knowledge, School-age children

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1. BACKGROUND

The dental and oral health of children in Indonesia is still very concerning, therefore it is necessary to receive serious consideration from the principles of health. Because teeth and mouth are "gates" for

germs and bacteria to enter so that they can affect the health of other organs of the body. Dental and oral health is often not a priority for many people (Abdullah, 2018). Dental and oral diseases can be caused by the environment, habits, and dental health

service facilities. If problems related to dental and oral health can be resolved and repaired, it is hoped that there will be an increase in quality of life (Nurfatimah et al., 2019). Health is one of the priorities in human life, including dental health, dental health is part of physical health that cannot be separated from one another. Disturbed dental health can be a sign or can even be a factor in the emergence of other health problems (Abadi & Suparno, 2019).

The most common dental and oral diseases are dental caries and periodontal disease. World Health Organization (WHO) 2020, around 90% of the population has experienced dental disease, most of which are actually preventable. As many as 78% of children in the world, which is about 573 million children, suffer from untreated dental disease. Dental disease besides causing discomfort also affects productivity and quality of life. The prevalence of dental caries in Indonesia is 88.8% with a root caries prevalence of 56.6%. The prevalence of dental caries tends to be high (above 70%) in all age groups. Children aged 5-9 years have a prevalence rate of 92.6%. In Central Java, 43.4% of the population has dental caries (Ministry of Health, 2018). The prevalence in the Surakarta City residency is as follows: Surakarta City 35.66% Karanganyar Regency 35.44%,

Sragen Regency 35.94%, Wonogiri Regency 34.06, Klaten Regency 41.86%, Boyoliali Regency 45.13%, Regency Sukoharjo as much as 46.24% experienced cavities (Riskesdas, 2018). Based on data from the Sukoharjo District Health Office, Polokarto District has the highest number of referred cases with a total of 1,076 in all Districts in Sukoharjo. Data from the Polokarto sub-district health center found that the prevalence rate of dental caries in the Genengsari Village was 41 people

Dental caries often occurs in young children because young children prefer foods that can cause dental caries. Children's dental caries is caused by several factors, including microbiology, daily nutrition such as sweet foods (chocolate, candy, and ice cream), as well as oral hygiene conditions (Hafizah, 2021). Children's health is now a major concern today. Because dental caries can be a sign of a child's readiness for a program aimed at improving dental health, the problem of dental caries in children is very important (Sholekhah, 2021).

Oral health problems have potential in the general development of children, as well as in general public health and children's dental quality of life. Because dental caries is a sign of a child's ability to maintain his health, the presence of dental caries in children is very important (Santi

& Khamimah, 2019). Teeth for every child is a very important factor in the process of growth and development. The function of the teeth is very necessary in childhood, namely as a tool for chewing, supporting the aesthetics of the child's face and especially primary teeth are useful as a guide for the growth of permanent teeth (Amelia et al., 2020).

Based on the results of a preliminary study conducted on January 21 2023, out of 30 school-age children consisting of 10 students in grade 1 and 10 children in grade 2, 10 children in grade 3 at Genengsari 01 Public Elementary School. 23 children had dental caries and only 7 children who did not experience dental caries data obtained from the examination, while for the level of knowledge of the 30 children who received the high category consisted of 4 children, 10 children in the medium category, and 16 children in the low category the data was obtained from distributing questionnaires.

2. METHODS

This type of research is correlational (correlation) with the research design used is Cross Sectional. This research will be conducted at Genengsari 01 State Elementary School, Polokarto District.

Held in January-July 2023. The population is the whole of the research subjects. The population of this study were all students in grades 1, 2 and 3 of Genengsari 01 Public Elementary School, Polokarto District, amount 73 students. In this study, taking 3 classes with the highest number of 6 classes. The research sample is 48 students obtained with simple random sampling, following inclusion criteria: 1st and 3rd class. Exclusion criteria are students who were not present during the research.

The research instrument that researchers use is to collect data in the form of a questionnaire. Questionnaire is a way of collecting data or a study to identify a problem by providing questions to a number of objects. Questionnaires in this study number 20 questions to show the level of knowledge brushing teeth either, enough or less. This questionnaire was adopted from the study (Putri, 2021). Question-19 question, clause 1 question is number 17. After knowing the score obtained is categorized the following: good knowledge: 76-100% of the total correct answer, knowledge is sufficient: 56-75% of the total correct answer, knowledge is less: <56% of the total correct answer (Amanda & Krisnani, 2019)

3. RESULTS

Characteristic of Child-age children

Table 1. Characteristic of school-age children in Genengsari 01 Elementary School, Polokarto (N=48)

| Characteristic of respondents | Frequency | Percentage (%) |
|-------------------------------|-----------|----------------|
| Age | | |
| 7 years | 17 | 35,4% |
| 8 years | 16 | 33,3% |
| 9 years | 15 | 31,2% |
| Gender | | |
| Male | 22 | 45,8% |
| Female | 26 | 54,2% |

Based on Table 1. Show that of the 48 respondents, the majority of children are 17 years of age (35.4%), the age of 8 is 16 children (33.3%), and the age of 9 is 15 children (31.2%). Based on gender

characteristic, most of the children had a female gender of 26 children (54.2%), while those with a male gender number 22 (45.8%)

Table 2. Frequency distribution of knowledge level of school-age children in Genengsari 01 Elementary School, Polokarto (N=48)

| Knowledge Level | Frequency | Percentage (%) |
|-----------------|-----------|----------------|
| Good | 4 | 8,3% |
| Enough | 10 | 20,8% |
| Less | 34 | 70,8% |

Based on Table 2. show that the most children have less knowledge than 34 children (70.8%), while those with a

knowledge level have as many as 10 children (20.8%), children with a knowledge level of 4 (8.3%).

Table 3. Distribution of the genesis frequency of tooth caries of school-age children in Genengsari 01 Elementary School, Polokarto (N=48)

| Genesis caries of teeth | Frequency | Percentage (%) |
|-------------------------|-----------|----------------|
| No grinding teeth | 7 | 14,6% |
| Tooth caries | 41 | 85,4% |

Based on Table 3. show that the most of the children had dental caries of 41

children (85.4%), whereas those who did not have tooth caries by 7 (14.6%).

The level of knowledge relationships brush teeth against tooth caries in school-age children in the 01 polokarto elementary school

Based on Table 4. show that Four respondents with a good level of knowledge did not experience dental caries, while respondents with a sufficient level of knowledge experienced dental caries as many as 7 children and without caries as many as 3 children with a less level of knowledge as many as 34 children.

By using somers' d analysis, p value 0.001 (< 0.05), and thus it can be proved that the H_0 of this study can be rejected, indicating that a significant correlation between the level of knowledge of brushing teeth against the incidence of toothies in school-age children at zero-one polokarsari elementary school district. Whereas a correlation covariation is gained by 0.516, this suggests that there is a correlation between the two variances that correlates sufficiently with the value range of sufficient correlation (0.40-0.599).

Tabel 4. The relationships beetwen the teeth brushing knowledge level with caries of school-age children in Genengsari 01 Elementary School, Polokarto (N=48)

| Knowledge Level | Genesis caries of teeth | | Correlation | P-Value |
|-----------------|-------------------------|-----------|-------------|---------|
| | Caries | No Caries | | |
| Good | 0 | 4 | 0,516 | 0,001 |
| Enough | 7 | 3 | | |
| Less | 34 | 0 | | |

4. DISCUSSION

The age and gender of school-age children

Based on table 1, distribution of children's ages, the majority of 7-year-olds as many as 17 children are found. Most children entering a school age are particularly susceptible to dental caries. The caries of teeth can be applied to any person and can rise on one or more surfaces and may extend to the deeper part of the teeth such as the email to dentin or caries, one of the causes of caries is carbohydrates.

Carbohydrates in the form of flour or liquids that are sticky and easily crushed inside the mouth make it easier to erect caries than other physical forms, such carbohydrates as cakes, bread, ice cream, milk, candy, and so on. School-age children tend to consume foods and beverages that suit their wishes. Excessive sugar intake tends to lead to caries of teeth, diabetes, obesity and coronary heart disease. Aha (American heart association) finding a high intake of sugar is common in children, with 1-3 years old consuming 12 teaspoons of

sugar per day and a 4-8 years old consuming 21 teaspoons of sugar per day. Research (Panna, 2018) as to the correlation between the frequency of cariogenic food consumption and the severity of one permanent molar dental caries, shows 84 respondents who have a severity of the gear caries by 57% with a frequency of once a day having sweets. It's a school environment so it's out of parental supervision. Which suggests that there's a frequency of sugary foods with teeth of severity.

Many and frequent tooth-age caries in school-age children are likely to be due to a lack of parental attention on child dental care, most considering that the caries of teeth are only temporary and will be replaced by fixed teeth. This age often ignores their health, especially their dental health. Damage to teeth such as caries, malocclusion, dental plaque, dental tartar, can affect the health of other limbs, even if a child's teeth ache, a child's appetite is likely to decline, a parent's premature attention is needed. Role models, controllers, and motivators play an important role in the child's dental health, if not noticed then the child's dental health will develop into a problem that can interfere with the child's future (Kurdaningsih, 2018).

Based on table 1, the distribution of the gender of the child is found to be the

majority of children with tooth caries that appear to be girls as many as 26 children. The results of this study of more tooth caries are girls associated with the filling of questionnaires of foods that cause tooth caries and the way to brush teeth are more correct than girls. Girls are susceptible to teeth withdrawal symptoms because most girls prefer sweets to boys. This study harmonizes with research (Bukunusa & Koch, 2020), which says that this study shows that besides the age factors that affect dental caries, gender factors also significantly affect tooth caries. Where women are more likely to have a sweet, easy meal and less hygiene in their teeth and mouths. Women have faster tooth eruptions than men, because through eruption on women faster than men, thus longer exposure to cariogenic food.

The knowledge level of school-age children

According to table 2 shows that out of 48 respondents, most children have a knowledge level lacking. The results of this study are in harmony with (Hikmah & Laut, 2020) that a lack of knowledge about dental health is a predisposition factor in the development of disease, unknowledge-based behavior will be short-lived and conversely if knowledge-based behavior is based on knowledge, a positive awareness

and attitude will last a long time. An attitude can be a knowledge, but with a tendency to act in harmony with it.

The tooth caries of school-age children

According to table 3 shows that out of 48 respondents, most of the children had tooth caries. The caries of teeth in a child may be due to a number of factors such as a lack of knowledge about dental care, a lack of parental supervision over a child, too often of sweet eating and drinking. Dental status relating to foods consumed by children both at home and in the secular environment is important for parents.

The relationships between the teeth brushing knowledge level with caries of school-age children

The knowledge level of brushing of the action of the teeth caries of school-age children, shown at table 4.5 is known that out of 48 respondents, a statistical count of Somers would show a sufficient relationship with a p value of 0.001 with a correlation rate of 0.516. In this study girls suffer more tooth caries based on a few of the questionnaires propagated by researchers indeed most girls answer questions about the food cause of the tooth caries is still wrong. Women have faster tooth eruption than men, because women

cut more quickly than men, so exposure to cariogenic foods lasts longer.

The results of this study are in line with research (Ramadhan et al., 2018) that the high prevalence of dental caries can be caused by children not applying dental and oral health knowledge in their daily dental health behavior or maybe after eating chocolate or the like they don't brush their teeth. Knowledge of children in maintaining healthy teeth and mouth is very important to maintain oral hygiene and prevent caries. The role of parents and teachers is needed in educating and fostering children to maintain healthy teeth. Low knowledge about health is a predisposing factor for health behavior that leads to disease. This knowledge is also closely related to a person's attitude about the disease and its prevention efforts. The higher the level of the child's school, the role of knowledge will be more visible. Most school-age children have low knowledge about dental health.

5. CONCLUSION

Based on research results and discussions on the level of knowledge regarding the brushing of the teeth genesis of school-age children could be concluded: The level of knowledge brushing your teeth about dental care has a greater degree of knowledge lacking. The incidence of tooth

caries is mostly tooth karies as many as 41 children. The level of knowledge brushing your teeth against the incidence of tooth caries in school-age children indicates the level of ill knowledge as many as 34 children. There is a relationship between the level of knowledge of brushing teeth and dental caries in school-age children at Genengsari 01 Public Elementary School, Polokarto District. The suggestions for school is to increasing the teacher's interest in promoting health in students in improving health especially dental and oral health.

AUTHOR CONTRIBUTIONS

Substantial contributions to conceptualization, data curation, analysis, Supervision Writing - review & editing: Febriana Dwi Cahyaningrum and Hermawati. Manuscript revisions: Febriana Dwi Cahyaningrum

CONFLICT OF INTEREST

The authors declare no conflict of interest for this publication.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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