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The Relationship Between the Causes of Caries (Food, Drink, Diet, And Habits) and the Rate of Caries in Children Aged 10-12 Years

Lyfia Nurul Novicha[1], Apri Utami Patra Santi[1]

[1] PGSD, Education, University of Muhammadyah Jakarta, Cireunde, South Tangerang, Indonesia

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Corresponding Author
lyfianurul41@gmail.com

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ABSTRACT

This research is motivated by the high level of dental caries in school-aged children. The purpose of this research is to find out whether or not there is a relationship between the causes of caries (food, drink, diet, and habits) with the level of caries in students aged 10-12 years, and the categories of relationships that result. This research was conducted at Pondok Kacang Timur Elementary School 03. This research was conducted with a quantitative survey method, using the Spearman Correlation test as a hypothesis test. . The sample in this study were 182 children who were 10-12 years old and had caries. The hypothesis formulation in this study is that there is a relationship between the causes of caries (food, drink, diet, and habits) with the level of caries in children aged 10-12 years. The results of the Spearman Correlation test showed that the p-value = 0.000 <0.05 or H_0 was rejected, so there was a significant relationship between the causes of caries (food, drink, diet, and habits) with caries level and included in the category of a very strong relationship.

Keyword: Causes of Caries, Caries Level, Age 10-12 years

INTRODUCTION

Dental caries is a disease that results in damage to the tooth structure to the form of a hole, which is caused by microbial activity that converts glucose from food waste into acid that can damage teeth (Ningsih, Tuti, and Rita, 2016: 1). The process of caries begins with the fermentation of food residues in the oral cavity caused by the bacterial microorganism Streptococcus mutans. The formation of caries can occur over a long period of time, where food residues containing glucose will form dental plaque. Along with the bacterium Streptococcus mutans, dental plaque that makes the atmosphere acidic will cause a demineralization process and can cause caries in the teeth. Foods that contain glucose will become acidic and cause a decrease in saliva pH (Reca, 2018: 3). Low saliva pH will make the development of Streptococcus mutans bacteria easier.

The cause of caries can also be caused by the consumption of drinks that contain simple carbohydrates that have high concentrations such as glucose, fructose, and sucrose. The glucose or sucrose contained in the drink will cause enamel scraping. The erosion mechanism itself occurs when the acidic solution comes into contact with enamel, and that erosion can cause caries (Sungkar, Sri, and Intan, 2016: 2). The activity of eating and drinking can make the pH of the saliva decrease and become acidic, where this acidic state can make Streptococcus Mutans bacteria work well to form caries. Eating patterns in children that are often done such as consuming snacks between meals, such as when watching TV, and while playing. Children usually consume sugary and sticky foods such as chocolate, candy, candied fruit, and biscuits while playing. Foods that contain carbohydrates such as candy, chocolate, and biscuits can accelerate tooth decay, where these foods can be distributed by bacteria that can cause a decrease in saliva pH. Another factor that can cause caries is bad habits that like to do things like not cleaning teeth after eating or before going to bed.

Brushing teeth aims to clean food residues that stick to teeth, because if food sticks to teeth, eating will make the state of saliva acidic. Another bad habit is chewing on one side, which can cause the condition of the unused teeth to become dirtier. The rate of tooth decay in children around the world, especially Indonesia, will continue to increase if the awareness of parents and children is still very minimal about the importance of maintaining dental health and the lack of restrictions on consuming food or drinks that can trigger tooth decay. Each school has carried out several stages in improving student health, one of which is SDN Pondok Kacang Timur 03 has carried out various activities regarding dental health and has collaborated with health centers and Unilever. Based on the results of interviews with the health center, every new school year dental examinations are held at the elementary school. Improving health and healthy lifestyles carried out by schools is not necessarily carried out by students, but all school residents, even a healthy environment by collaborating with school residents and parents of students.

This activity was carried out to create a healthy school and make its students aware of the importance of maintaining dental health. However, this is outside of what is expected, in fact the results of observations that have been carried out at the school show that children still experience problems with their teeth such as cavities, and tooth loss. This kind of incident can cause pain in the teeth so that the child cannot follow the lessons as they should. Dental caries is still one of the serious health problems in school-age children, caries occurs caused by food, drinks, diet, and habits

that have been described above because, usually children snack on sugary foods or drinks that stick easily to their teeth, and these snacking activities are often carried out outside of mealtimes. Based on this discussion, the researcher was moved to conduct a study on "The Relationship between the Causes of Caries (Food, Drinks, Diet, and Habits) with the Rate of Caries in Children Aged 10-12 Years"

METHOD

The method used in this study is a quantitative method, which is a research method based on the philosophy of positivism, used to research on certain populations or samples, data collection using research instruments, quantitative/statistical data analysis, with the aim of testing the hypothesis that has been determined (Sugiyono, 2011: 8). This study uses quantitative surveys, where survey methods are used to obtain data from certain natural places, but the research conducts treatment in data compilation, for example by circulating questionnaires, tests, structured interviews and so on (Sugiyono, 2008: 6). The hypothesis test in this study is to use the Spearman Rank Correlation test analysis. The correlation test used by is the Spearman rank correlation test to see how big the relationship between variables is.

This research was conducted at SDN Ponjok Kacang Timur III, which is located at JL. Raya Pondok Kacang No.6, Pondok Kacang Timur, Kec. Pondok Aren, Kota Tangerang Selatan, Prov. Banten. The research has been conducted from November 2018 to April 2019. The total population obtained is 292 students. In this study, the researcher used purposive sampling as a sampling technique with predetermined sample criteria. The keretia is a child aged 10-12 years, and a child with caries in their teeth so that the following samples are obtained:

Table 1. Respondent Profile

Criterion	Respondents
Age 10-12 years old	292 Respondents
Experiencing dental caries	182 Sponging

Based on table 1, the sample used in this study is 182 children because, this number has the desired criteria, namely the age of 10-12 years and has a history of caries in their teeth. The instrument used in this study is in the form of a questionnaire with 19 statements related to the causes of dental caries. The questionnaires that were distributed previously have been tested for the validity and reliability of the instruments, which were carried out in other schools and also used expert judgment. In the study, the number of cavities in children was also examined using mouth glasses, handscoons, and alcohol swabs.

The data that has been obtained then in the group is then presented with a frequency distribution table after which analysis is carried out in each table presented to later draw conclusions about the cause of caries from cavities experienced by children in the school, for frequency distribution using the SPSS ver 16 program.

RESULT

The research that has been conducted at SDN Pondok Kacang Timur 03 with a sample of 108 students, obtained the following results:

Table 2. Frequency Distribution of Dental Caries Responders By Age

Class	*Pretest Average*	*Posttest Average*	N-Gain *Score*
Experiment	60,36	87,13	0,7
Control	56.82	66,62	0,21

Based on table 2, respondents aged 11 years experienced dental caries with the highest number of 63 people (34.6%), while 12-year-olds experienced dental caries with the lowest number of people (31.3%). From this data, it can be concluded that more respondents with the age of 11 years have dental caries.

Table 3. Frequency Distribution of Dental Caries Responders Based on the Number of Caries

Caries Criteria	Sum	Percentage
Little (1)	43	23,6
Medium (2)	62	34,1
Many (≥3)	77	42,3
Total	**182**	**100**

Based on table 2.2, it is stated that as many as 77 people (42.3%) are stated into the category of having a lot of carious teeth. Respondents who have the most caries in terms of consuming food and drinks are certainly different from respondents who have little caries in their teeth.

Table 4. Spearman Rank Correlation Test Results

One-Sample Kolmogorov-Smirnov Test

		Unstandardized Residual
N		182
Normal Parameters	Mean	.0000000
	Std. Deviation	1.44236313
Most Extreme Differences	Absolute	.116
	Positive	.116
	Negative	-.068
Kolmogorov-Smirnov Z		1.570
Asymp. Sig. (2-tailed)		.014

Based on the results of the correlations above, in the preliminaries value r_s = 0.966 and p-value = 0.000 < 0.05 or H_0 rejected, there is a significant relationship between the causes of caries (food, drinks, diet, and habits) and the level of caries in SDN Pondok Kacang Timur 03 the level of relationship produced is very strong. The Correlation Coefficient above is a positive value, which is 0.966 so that the relationship is unidirectional which means that the more often the child consumes foods that contain carbohydrates such as chocolate, candy, and biscuits, the higher the level of caries produced. The more often a child consumes soft drinks with glucose content, the higher the level of caries, as well as if the child often eats unhealthy diets such as consuming snacks between meals, and often does bad habits such as not brushing his teeth after eating, then the rate of caries will also increase.

DISCUSSION

The hypothesis test that has been carried out using the SPSS program with the Spearman Correlation test from the results obtained a sig value. 0.000 < 0.05, then there is a significant relationship between the cause of caries and the incidence of caries at SDN Pondok Kacang Timur 03. The Correlation Coefficient above has a positive value, i.e., 0.966 so that the relationship is unidirectional. Caries caused either by food, drinks, diet, or habits that children like to do can cause tooth decay in children as explained in the previous chapter, that the cause of caries can be based on food, drinks, and diet. The cause of caries is influenced by the activity of microbes that convert glucose from food waste into acid that can damage teeth (Ningsih, Tuti, and Rita, 2016: 1). The process of caries begins with the fermentation of food residues in the oral cavity caused by the bacterial microorganism Streptococcus Mutans. The formation of caries can occur over a long period of time, where food residues containing glucose will form dental plaque. Along with the bacterium Streptococcus Mutans, dental plaque that makes the atmosphere acidic will cause a demineralization process and can cause caries in the teeth. Foods that contain glucose will become acidic and cause a decrease in saliva pH (Reca, 2018: 3). Low saliva pH will make the development of Streptococcus Mutans bacteria easier.

The cause of caries can also be caused by the consumption of drinks that contain simple carbohydrates that have high concentrations such as glucose, fructose, and sucrose. The

glucose or sucrose contained in the drink will cause enamel scraping. The erosion mechanism itself occurs when the acidic solution comes into contact with enamel, and that erosion can cause caries (Sungkar, Sri, and Intan, 2016: 2). The eating and drinking activities that are carried out can make the pH of the saliva decrease and become acidic, where this acidic state can make Streptococcus mutans bacteria work well to form caries. Another factor that can cause caries is bad habits that like to do things like not cleaning teeth after eating or before going to bed. Brushing teeth aims to clean food residues that stick to teeth, because if food sticks to teeth, eating will make the state of saliva acidic. Another bad habit is chewing on one side, which can cause the condition of the unused teeth to become dirtier. The incidence of caries at the age of 10-12 years or elementary school age is still a serious health problem, this is caused because, in general, children often snack on cariogenic snacks outside of meals, or consume soft drinks that contain glucose. The causes of caries such as food, drinks, diet, and bad habits that children like to do can be a link to the level of caries in children that always occurs, because in general children often consume food outside such as snacking time at school or playing with their friends.

CONCLUSION

From the research that has been carried out, it can be concluded that the incidence of caries at SDN Pondok Kacang Timur III is caused by:

1. The results of the relationship analysis obtained a p-value = 0.000 < 0.05 or H_0 rejected, there was a significant relationship between the causes of caries (food, drinks, diet, and habits) and the level of caries at SDN Pondok Kacang Timur 03.
2. The results of the analysis obtained a Correlation Coefficient value, namely 0.966 where the value is included in the category of having a very strong relationship.

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