

# The Correlation of Knowledge of Dental Health with Prevalence of Free Permanent First Molar Dental Caries in Islamic Boarding School

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## ABSTRACT

**Background:** Children aged between 6-12 years or school-age children are groups who are susceptible to oral diseases, especially caries, permanent first molar because they still have self-defeating habits in oral health. In addition, this erupted tooth does not replace any primary teeth and is located behind.

**Purpose:** The knowledge of the correlation between students' knowledge of cariogenic food and the low prevalence of free caries for permanent first molars in students of Secondary School of DARUL HIKMAH Al Hidayah Islamic Boarding School in Surabaya.

**Method:** Type the research conducted was sectional analytic research. The sampling technique in this study was simple random sampling. Based on the simple random sampling technique, the target of this study was 102 students aged 12 years. Data collection method used observation. Data analysis techniques used the Pearson test. Results: there was a correlation between students' knowledge of cariogenic food and the low prevalence of the number of caries-free in permanent first molars in students of Secondary School of DARUL HIKMAH Al Hidayah Islamic Boarding School in Surabaya. **Conclusion:** The prevalence of caries-free number of permanent first molars in Secondary School of DARUL HIKMAH Al Hidayah Islamic Boarding School Surabaya in the low category.

**Keywords:** knowledge, cariogenic food, caries-free of permanent first-molar

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## INTRODUCTION

Dental and oral health is part of the health of the body that cannot be separated from one another, because oral health will affect the health of the body. The maintenance of dental and oral hygiene is one of the efforts in improving oral health[1]. The role of the oral cavity is very large for human health and well-being[2]. Therefore, oral health is very instrumental in supporting the health of the human body [3].

The reason is because cariogenic foods are more delicious to be eaten by school students without thinking about the impact that will be caused by food if they neglect dental and oral hygiene[4]. The higher the child who often consumes cariogenic food, the higher the dental caries index[5]. Food that sticks to the tooth surface if left unchecked will produce more acidic substances, thus increasing the risk of dental caries [6].

Children who are of school age have a high risk of caries[7-9]. Almost all parents think that the tooth will be replaced, and as a result of cleaning teeth that lack nearly 50% of the first molar teeth in children at the age of 8 years the teeth have caries or pit[10]. The government through the school dental health unit program in 2012 has a short-term target of 2014 and a long-term goal in 2020. One of the short-term targets of 2014 is the prevalence of caries-free in the first permanent molars of 50% [11].

Whereas the DMF-T Index according to age group refers to the WHO Global Goals Oral Health 2020, which are 12 years, 15 years, 18 years, 35-44 years and > / = 65 years. In children aged 12 years, the WHO target of DMF-T is ≤

1[12]. While the results of research in the UK states that children at the age of 10 years as many as 62% have experienced caries of permanent first molars[13]. The Public Health Center inside the Islamic Boarding School has conducted periodic examinations and health counseling activities such as maintenance of oral health, dental and oral hygiene, correct tooth brushing techniques, dental caries, causes of dental caries, and foods that cause dental caries[14,15].

Consuming cariogenic foods both types, patterns, ways of consuming, time, and frequency of consuming excessive cariogenic foods is thought to increase the risk of dental caries in children[16,17]. Anatomical conditions of permanent first molars have many deep fissures and pits, moreover permanent first molars are teeth the first permanent eruption, so that the tendency for caries in the first molar at an early age is very high [18].

This study was conducted to determine the relationship of students' knowledge about dental health with the low prevalence of caries-free number of permanent first molars in students of Secondary School of DARUL HIKMAH Al Hidayah Islamic Boarding School in Surabaya in 2019.

## MATERIALS AND METHODS

The type of research that will be used is a cross sectional analytic observational study with a simple random sampling technique. The location of the study was conducted at Secondary School of DARUL HIKMAH Al Hidayah Islamic Boarding School in Surabaya. The study

## The Correlation of Knowledge of Dental Health with Prevalence of Free Permanent First Molar Dental Caries in Islamic Boarding School

was conducted in the months of October 2019 to December 2019. The number of samples in this study were 102 students aged 12 years. The criteria for assessing cariogenic food knowledge through the questionnaire sheet in this study is that the correct answer is 1, while one is 0. The prevalence of caries-free prevalence in the study is that if a student does not have a single permanent molar dental caries of 4 in each student. This research was approved by the ethics commission with the number:

### RESULTS

**Table 1.** Frequency Distribution of Student Knowledge Categories about Cariogenic Foods

| Knowledge Category | N   | %    |
|--------------------|-----|------|
| Good               | 36  | 35,3 |
| Medium             | 26  | 25,5 |
| Less               | 40  | 39,2 |
| Total              | 102 | 100  |

The majority of respondents have less knowledge about cariogenic foods.

**Table 2.** Frequency Distribution of Student's Knowledge of Understanding Cariogenic Foods

| No    | Question                  | Answer  |       |           |      | N   |
|-------|---------------------------|---------|-------|-----------|------|-----|
|       |                           | Correct |       | Incorrect |      |     |
|       |                           | F       | %     | F         | %    |     |
| 1     | Sense of cariogenic foods | 93      | 91,2  | 9         | 8,8  | 102 |
| 2     | Food that damages teeth   | 83      | 81,4  | 19        | 18,6 | 102 |
| Total |                           | 176     | 172,6 | 28        | 27,4 |     |
| Mean  |                           | 88      | 86,3  | 14        | 13,7 |     |

**Table 4.** Frequency Distribution of Student Knowledge About Types of Cariogenic Foods

| No    | Question  | Answer  |       |           |       | N   |
|-------|---|---------|-------|-----------|-------|-----|
|       |   | Correct |       | Incorrect |       |     |
|       |   | F       | %     | F         | %     |     |
| 1     | Food that is cleaning teeth                               | 79      | 77,5  | 23        | 22,5  | 102 |
| 2     | Foods that cause cavities                                 | 75      | 73,5  | 27        | 26,5  | 102 |
| 3     | Drinks that you consume                                   | 57      | 55,9  | 45        | 44,1  | 102 |
| 4     | Snacks are often consumed                                 | 62      | 60,8  | 40        | 39,2  | 102 |
| 5     | Good food for dental health                               | 73      | 71,6  | 29        | 28,4  | 102 |
| 6     | Which includes sweet and sticky foods that cause cavities | 72      | 70,6  | 30        | 29,4  | 102 |
| Total |   | 418     | 409,9 | 194       | 190,1 |     |
| Mean  |   | 70      | 68,3  | 32        | 31,7  |     |

Most of them know the types of cariogenic foods well, but some respondents lack knowledge about drinks and snacks that are often consumed, including types of

The majority of respondents answered correctly the question of understanding cariogenic foods. So that concluded the level of student knowledge about the understanding of cariogenic foods included in both categories.

**Table 3.** Frequency Distribution of Student Knowledge About Understanding Dental Caries

| No    | Question                     | Answer  |       |           |       | N  |
|-------|------------------------------|---------|-------|-----------|-------|----|
|       |                              | Correct |       | Incorrect |       |    |
|       |                              | F       | %     | F         | %     |    |
| 1     | The meaning of Dental Caries | 49      | 86    | 8         | 14    | 57 |
| 2     | The meaning of Cavities      | 47      | 82,5  | 10        | 17,5  | 57 |
| 3     | Causes of Cavities           | 13      | 22,8  | 44        | 77,2  | 57 |
| 4     | How to prevent Cavities      | 51      | 89,5  | 6         | 10,5  | 57 |
| Total |                              | 160     | 280,8 | 68        | 119,2 |    |
| Mean  |                              | 40      | 70,2  | 17        | 29,8  |    |

Most respondents know the meaning of dental caries but lack knowledge about the causes of cavities. So, it can be concluded that the level of student knowledge about the understanding of dental caries is included in the sufficient category.

cariogenic foods. So, it was concluded that the level of student knowledge about the types of cariogenic foods included in the category enough.

## The Correlation of Knowledge of Dental Health with Prevalence of Free Permanent First Molar Dental Caries in Islamic Boarding School

**Table 5.** Frequency Distribution of Student Knowledge About Time and Appropriate Actions After Consuming Cariogenic Foods

| No    | Question                                      | Answer  |       |           |       | N   |
|-------|---|---------|-------|-----------|-------|-----|
|       |   | Correct |       | Incorrect |       |     |
|       |   | F       | %     | F         | %     |     |
| 1     | What not to do after eating donuts            | 66      | 64,7  | 36        | 35,3  | 102 |
| 2     | As a result of eating snacks, and not cleaned | 65      | 63,7  | 37        | 36,3  | 102 |
| 3     | What to do after eating cotton candy          | 37      | 36,3  | 65        | 63,7  | 102 |
| 4     | The right time to eat sweet snacks            | 9       | 8,8   | 93        | 91,2  | 102 |
| 5     | The right time to brush your teeth            | 49      | 48    | 53        | 52    | 102 |
| 6     | maintenance of proper dental hygiene          | 80      | 78,4  | 22        | 21,6  | 102 |
| Total |   | 306     | 299,9 | 306       | 300,1 |     |
| Mean  |   | 51      | 50    | 51        | 50    |     |

In particular, most respondents lack knowledge about the right time to consume cariogenic food and the right time to brush their teeth. So, it can be concluded that the level of students' knowledge about the time and the right action after consuming cariogenic food is included in the less category.

**Table 6.** Distribution of Prevalence of Permanent First Molar Teeth

| Permanent First Molar status | n   | %    |
|------------------------------|-----|------|
| Caries                       | 76  | 74,5 |
| Free Caries                  | 26  | 25,5 |
| Total                        | 102 | 100  |

A small proportion of respondents have caries-free status of permanent first molars.

Relationship between knowledge of maintaining dental health with the prevalence of caries-free numbers for permanent first molars, the Pearson test has been obtained P Value = 0,000 while the significant value ( $\alpha$ ) set is 0.05 from the data shows the value 0,000 < 0.05 then  $H_0$  is rejected and  $H_1$  is accepted meaning that there is a relationship between students' knowledge about food cariogenic with the low prevalence of caries-free in permanent first molars of students of Secondary School of DARUL HIKMAH Al Hidayah Islamic Boarding School in 2019.

### DISCUSSION

Knowledge is a very important domain for the formation of one's actions. Respondents' knowledge is very important in underlying the formation of behavior that supports oral health. Such knowledge can be obtained naturally or in a planned manner, one of which is through the educational process[19]. The higher a person's formal education, the better the knowledge and attitudes about health that affect healthy living behavior, thus also the easier it is to get a job and the more income earned to meet their health needs [20].

This is the same as research studied by Prakoso [21] which states that children do not know the right time to consume cariogenic food, even it has become a habit for them at leisure or during breaks or outside main meal hours. Some respondents answered eating cariogenic food while relaxing or while watching TV. But this contradicts the statement of Ramadan [17] and is supported by the theory of Boediharjo (1985)[22], that eating foods containing sugar, at times of rest will accelerate the occurrence of damage to teeth (caries).

This is similar to the study of Anthonie[10], the majority of people think when bathing is a good time to brush their teeth. But the right time should be after eating (breakfast and lunch) and before going to bed at night. The habit of brushing teeth in the bath alone is not true. Because after brushing teeth while bathing, people will eat again[23]. Most erupted molars in the oral cavity will suffer damage to the occlusal surface [24].

Tooth decay occurs after the demineralization process is greater than the remineralization process. In the initial stages of damage, the cavity will be seen as a white spot on the tooth surface. Then the acid derived from this plaque will continue to erode the surface of the tooth and form a hole point which will gradually enlarge or increase in Ramadan [17].

The results of data analysis found there is a relationship of knowledge about cariogenic food with a low prevalence of caries-free number of permanent first molars. This study is in line with research conducted by Rosidi et al. (2013) This is the same as research studied by Prakoso[21] which states that children do not know the right time to consume cariogenic food, even it has become a habit for them at leisure or during breaks or outside main meal hours. Most respondents answered in accordance with their habits of consuming sweet snacks or cariogenic food purchased in the school canteen during school breaks and did not take any action after consuming the cariogenic food. Some respondents answered eating cariogenic food while relaxing or while watching TV. But this contradicts the statement of Ramadan[17] and is supported by the theory of Boediharjo (1985)[22], that eating foods containing sugar, at times of rest will accelerate the occurrence of damage to teeth (caries).

The level of knowledge is an external factor that influences the incidence of dental caries. The better the level of knowledge, the less likely the occurrence of dental caries[25]. This is consistent with the theory of L. Green and Blum cit. Notoatmodjo (2011), knowledge is included in one of the predisposing factors, which influences the formation of a person's behavior. Behavior if based on knowledge will be more lasting than behavior that is not based on knowledge[26].

### CONCLUSIONS

Knowledge of dental and oral health of students of Secondary School of DARUL HIKMAH Al Hidayah Islamic Boarding School in the category of lack. The prevalence of caries-free number of permanent first molars in Secondary School of DARUL HIKMAH Al Hidayah Islamic Boarding School Surabaya in the low category.

**Conflict of interest** : None

# The Correlation of Knowledge of Dental Health with Prevalence of Free Permanent First Molar Dental Caries in Islamic Boarding School

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