



## **Review Article:**

# **Relationship of Nutritional Status With The Case of Primary School Student Caries**

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### **Abstract:**

Many junior high school graduates who wish to become officers at the Military Academy Failed to follow the entrance test because there were more than two rear teeth with caries. In addition to the cavities of some of the molars also found disappeared because it was removed. Caries incidence in adolescents has begun when the child is still in elementary school. Caries in permanent first molars become the main cause of high prevalence of retraction because the first molar teeth are the first tooth eruption, as well as the anatomical form of first molar teeth with pits and fissures to which food remains attached. Diet when elementary school becomes a factor of caries, high carbohydrate consumption contained in snacks and high consumption of sugar in the daily meal content is one factor that affects the process of dental caries. The purpose of writing this article is to discuss the occurrence of dental caries in primary school children caused by excessive consumption of child feeding, both in children with good nutritional status and moderate nutritional status or less. The results of the previous study showed that the highest percentage of children with permanent first molar caries were found in children with nutritional status of obese, while the smallest percentage was in children with normal nutritional status.

**Keywords:** Dental caries, nutritional status, primary school children.

### **INTRODUCTION**

Developing countries like Indonesia dental caries cases are still very high and the prevalence reaches 80%, meaning that every 10 children 8 of them have suffered from

a tooth cavity, and ends with removal, patching and remaining roots that are left behind that can cause infection. Based on the Basic Health Research (RISKESDAS) in 2013, the DMF-T index increased with age of 1.4 in the age group of 12 years, then 1.5 at age 15 years, 1.6 at 18 years and 89% Children under 12 have dental caries. The latest data released by Oral Health Media Center in April 2012, shows as many as 60-90% of school-aged children and almost all adults worldwide have dental problems. <sup>[1,2]</sup>

Damage to the teeth due to caries is due to the intake of carbohydrates that have low molecular weight such as sugar, so permeated into the plaque and metabolized quickly by bacteria. <sup>[3,4]</sup> Factors that play a role in the process of caries, dental tissues, bacteria, food sources such as carbohydrates, tooth-shielding factors such as saliva, and its components, as well as time. In addition, there are also external risk factors that are oral hygiene, education level, economic level and nutritional status. <sup>[5]</sup>

Nutritional status is one of the factors that affect the process of dental caries, it is related to the fulfillment of nutrients needed for bone growth and defense of caries. If non-fulfillment of the nutrients needed during the growth and development of teeth, the tooth does not have an immune system against dental caries. <sup>[6]</sup> Nutritional status is a state of the body due to the consumption of food and the use of nutrients that can be measured and assessed and differentiated in some categories namely very poor nutritional status, lack of nutritional status, normal nutritional status, more nutritional status and nutritional status is more or commonly called With the term obesity. <sup>[7]</sup> Nutrition is more or less the cause of caries, but if caries causes infection and inflammation then otherwise intake of food in the body will be hampered because the child sick when chewing food.

According to Miko Hadiyat in 2002, less nutrition can occur due to infection factors in the body including the oral cavity of children uisa 1-5 years. <sup>[7]</sup>

According to Riskesdas in 2010, the prevalence of nutritional status in Indonesia based on Body Mass Index (IMT / U) for children aged 6-14 years ie nutritional status less 7.6% and nutritional status over 9.2% while for the normal category of 78.6% . Most primary school children had less than 66% of the nutritional status of 66% and the severity of primary school children's caries included in the high category was 74%. <sup>[8,9]</sup>

## **DISCUSSION**

Children with preliminary damage to the back molars are most likely to be in obese children compared to children with less nutritional status. Research conducted in some primary schools in Indonesia in children aged 8-9 years has a large percentage of permanent primary caries large enough. In children aged 6 years, permanent first molars as permanent teeth first erupted in the oral cavity, so the child has not been able to maintain dental hygiene and mouth so that with deep pit and fissure on the occlusal surface to place the buildup of food scraps and microorganisms so acid production By bacteria will be faster and cause holes in the teeth. The results of McDonald's (2011) study suggest that the high frequency of caries on the occlusal surface of permanent first molars in children aged 8 years is due to short eruption periods. It is further explained that permanent first molars are the first teeth of eruption in permanent tooth growth so that it becomes the determinant for the remaining permanent teeth that have not been erupted. The first permanent molars have a maximum root surface area that is considered to be the fulcrum of the movement of the tooth, supporting the movement of mastication of the oral cavity, and affecting the vertical distance of the maxilla and mandible, the height of the occlusal distance, and the aesthetic aspect of the tooth arrangement. A study by JD Wang (2012) showed that a 9-year-old child in Wuhan had a high permanent first permanent caries percentage of 67%.

It is explained that the high prevalence of caries in permanent first molars is associated with occlusal surfaces of deep molar teeth with deep pit and fissures and the child's behavior in maintaining poor dental and oral hygiene. Studies conducted Veronica, et al (2011) in Romania show the same thing. According to the results of research conducted, environmental factors and socioeconomic conditions also affect the process of caries occurrence. <sup>[10,11,12]</sup>

The results of the study in children 10-11 years showed caries percentage in the first molar greater than children aged 8-9 years. Increase of caries percentage in permanent first molar at age 10-11 years according to research done by Kumar, et al (2014) that is equal to 53,08% bigger than 8-9 year old child that is 40,57% and highest percentage at Age of 12-13 years ie 65.04%. This may be associated with an increased incidence of dental caries as well as age increases that also correspond to studies conducted by Al-sayyab, et al (2013). <sup>[13,14]</sup>

In the various studies performed on children the percentage percentage of permanent first molars on the mandible was significantly different from the percentage of caries in the permanent first molars of the maxilla. This result is similar to that of Kumar et al (2014) showing that the permanent first molar of the lower jaw has a caries percentage of 65.77% and in the maxilla 34.74%. The high percentage of caries in the permanent first molars of the lower jaw can be attributed to the number of pits and more grooves so that this retentive area becomes susceptible to the onset of caries

Furthermore, in general, the first permanent first molars of the mandible first erupt the first molars of the upper jaw, so that these teeth first appear in the oral cavity causing the permanent first molars in the lower jaw to be susceptible to caries rather than the maxillary first molars. <sup>[14]</sup>

Research on caries is a major challenge because it is multifactorial as maintenance of oral hygiene, composition and frequency of food, socioeconomic status, salivary immunoglobulin properties, and fluoride consumption. Research on weight and oral health in children is controversial. Frequency of high calorie sugar consumption is generally the cause of the incidence of caries and obesity and obesity in children and adolescents. The caries factor in the milk tooth period may also be one of the causes of caries in permanent first molars, especially if it is associated with higher dietary consumption so that children may be obese and caries at the same time. Caries in children is closely related to parents' control of food consumption and child behavior in maintaining oral hygiene, which can reduce the risk of both diseases. However, if parents do not take precautions against oral hygiene and control the consumption of child food, especially the consumption of sugar, the tendency to experience caries in the milk tooth period which will eventually continue on the permanent dentition can occur simultaneously with excess weight Or obesity.

In this study found that the increasing age, the percentage of caries in children aged 9-12 years who have normal nutritional status is lower than children with nutritional status obese. Hilgers et al (2014) found that the incidence of permanent first molar caries in children was most prevalent in the proximal portion of the tooth. Mostafa Sadeghi, et al (2012) concluded that children who are at risk of overweight and overweight children have a higher DMFT or deft score than children with normal

nutritional status. The same is also put forward by Willerhausen (2011) and Johansson (2013) on the relationship of nutritional status with DMFT. <sup>[15,18]</sup>

Research report on the positive and negative correlation between consumption of foods containing sucrose and caries. In a study conducted Macek and Mitola (2012) in the US by increasing the distribution of sugar consumption that causes the occurrence of caries, the results obtained that there are differences that are not too significant. The close relationship between sugar consumption and caries development is seen when international data comparison is performed. The study conducted Sreeby (2011) using sugar supply in several countries and WHO caries prevalence data in 10-year-olds from 23 countries and 11-year-olds in 47 countries, showed an average daily consumption of sugar of 50 grams A day with a DMF score and def more than three. <sup>[20]</sup> In contrast to McDonald's and Avery's (2010) research, there was no significant difference between sugar consumption and caries prevalence. <sup>[19,21]</sup>

### **Suggestion**

Parental supervision is necessary in maintaining food intake for children, do not give excessive consumption of carbohydrates, teach children to brush the teeth properly. The role of parents is expected to bring children to the nearest dental care service, currently in Indonesia has started a family dentist service that is able to serve dental health in the nearest coverage area. <sup>[22]</sup>

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