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The Relationship between Instant Noodle Consumption and Dental Caries in a Boarder in Medan, Indonesia

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ABSTRACT

This research is motivated by the fact that food, as a food substrate, plays an important role in the development of dental caries. Carbohydrates, fats, and proteins are the main components of the human diet. One of the most effective and cheap fast foods is instant noodles. Consuming instant noodles for a long period of time and not having your teeth checked regularly by going to the dentist can result in various problems in the oral cavity. This research looks at the relationship between instant noodle consumption and caries in a boarder in the city of Medan in 2023. The type of research used includes observational analytics. The results of the research show that most children have consumption habits of instant noodles in the medium category, namely 7 boarders. Most boarders had a caries incidence in the medium category with a total of 9 boarders. Therefore, it is concluded that there is a relationship between the habit of consuming instant noodles and dental caries. The higher the habit of consuming instant noodles, the higher the potential for dental caries.

1. Introduction

The most common dental and oral diseases in Indonesia are damaged teeth, cavities, and pain (45.3%). Meanwhile, swollen gums or canker sores (abscesses) account for 14% of all dental and oral health problems faced by Indonesian people. In North Sumatera, active caries increased from 41.1% (2007) to 46.6% (2013). A number of local factors, such as previous dental caries, poor oral hygiene, dental plaque, tooth structure, cariogenic consumption patterns, and tooth brushing behavior, as well as external factors, such as age, gender, race and culture,

smoking, economic status, and education, increasing the risk of dental caries. When there are interrelated and supporting causal variables, such as the host (saliva and teeth), microorganisms, substrate, and time, food is a crucial component of dental caries. The main foods of humans are carbohydrates, lipids, and proteins. Various studies reveal the relationship between carbohydrates and caries, as well as a complete relationship between other components.¹⁻³

Instant noodles are one of the foods that make you hungry faster than rice. However, the carbohydrates in instant noodles and rice are not the same. Rice

carbohydrates are complex carbohydrates that provide a feeling of fullness for longer. On the other hand, the carbohydrates in fast food noodles are simpler and easier for the body to absorb. As a result, instant noodles satisfy hunger faster than rice. Instant noodles contain many calories and are low in nutrients such as vitamins, minerals, and fiber, which are dangerous for your health. Carbohydrates, starchy proteins, and lipids make up the majority of its composition. This simple carbohydrate content reduces the production of various mucins, saliva, and enzymes in the metabolic process, thereby potentially reducing oral hygiene.⁴⁻⁷ This study aims to determine the relationship between instant noodle consumption and the incidence of dental caries in a boarder in Medan, Indonesia.

2. Methods

This study is a descriptive observational research. This study uses primary data obtained from observations of research subjects. The research was held in 2 different places. The first is X boarding house, which is located at Jl. Dipanegara, Padang Bulan Medan. The second is the Y boarding house, which is located at Jl. Perkutut Medan. A total of 30 research subjects participated in this study, where the research subjects met the inclusion criteria. The

inclusion criteria for this study were subjects over 18 years old, living in a boarding house for at least 1 year, and willing to take part in this study, as indicated by signing an informed consent. This study has received approval from the medical and health research ethics committee of Universitas Prima Indonesia. This study observed instant noodles consumption and the incidence of dental caries. Data analysis was carried out using SPSS version 25 software. Data analysis was carried out univariate. Univariate analysis was carried out to present the frequency distribution of each test variable.

3. Results and Discussion

The research results showed that the distribution of instant noodle consumption among boarders in Medan was that 3 respondents consumed instant noodles once a week with a percentage of 10%, while 2 times a week 2 respondents had a percentage of 6.67%, 3 times a week, there were 7 respondents with a percentage of 23.33%. , 4 times a week as many as 7 respondents with a prevalence of 23.33%, 5 times a week with 8 respondents with a percentage of 26.67%, 6 times a week with 1 respondent with a prevalence of 3.33%, and 7 times a week with 2 respondents with a percentage of 6.67% (Table 1).

Table 1. Frequency distribution of instant noodle consumption in boarders.

Instant noodle consumption	Frequency	Percentage (%)
1 time a week	3	10
2 times a week	2	6.67
3 times a week	7	23.33
4 times a week	7	23.33
5 times a week	8	26.67
6 times a week	1	3.33
7 times a week	2	6.67
Total	30	100

Table 2. DMFT in boarders.

DMFT criteria	DMFT	
	Frequency	Mean DMFT
Very low	0	0
Low	7	4,2
Moderate	9	3,3
High	7	4,2
Very high	7	4,2

From Table 2, it can be seen that respondents obtained a very low caries index of 0 or none. There were 7 respondents who had a low caries index with an average of 4.2. Respondents obtained a moderate caries index of 9 respondents with an average of 3.3. There were 7 respondents who had a high caries index mean of 4.2, and respondents with a very high caries index were 7 respondents with a mean of 4,2.

Instant noodles are a practical and easy-to-make food, so they are often a choice for daily consumption. However, long-term consumption of instant noodles can increase the risk of dental caries. Dental caries is a condition of tooth decay caused by acids produced by bacteria. These bacteria thrive on leftover food stuck to the teeth. Sticky food residue, such as instant noodles, can become a breeding ground for caries-causing bacteria. Apart from that, instant noodles also contain high levels of sugar. Sugar is a source of carbohydrates that can be converted into acid by bacteria. The acid produced by these bacteria can erode the tooth enamel layer, which can cause dental caries. The potential for dental caries due to the consumption of instant noodles can increase if instant noodles are consumed regularly and excessively. Apart from that, the risk of dental caries can also increase if instant noodles are consumed without being balanced with the consumption of healthy foods and drinks, such as fruit and vegetables.⁸⁻¹¹

Dental caries is a condition of tooth decay caused by acids produced by bacteria. These bacteria thrive on food residue stuck to the teeth. Sticky food residue, such as instant noodles, can become a breeding ground for caries-causing bacteria.

When bacteria thrive on food waste, they produce acid. This acid can erode tooth enamel, which is the outermost and strongest layer of teeth. If tooth enamel is eroded, bacteria can attack the dentin layer, which is the middle layer of the tooth. If dentin is eroded, bacteria can attack the pulp layer, which is the deepest layer of the tooth and contains nerves and blood vessels.¹²⁻¹⁴

4. Conclusion

There is a relationship between the habit of consuming instant noodles and dental caries. The higher the habit of consuming instant noodles, the higher the potential for dental caries.

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