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Sea Food Consumption Relationship to the Dental Caries Numbers in Public Elementary School ff Mulyorejo I-237

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Abstract

Health conditions depend on the level of consumption. The level of consumption is determined by the quality and quantity of the dish. If the composition of the dish meets the needs of the body, both in terms of quality and quantity, the body will get the best nutritional health conditions. In this case the pattern of fish consumption has an impact on dental health, especially the problem of dental caries. The purpose of this study was to measure the consumption patterns of marine fish in students, measure dental caries index in students, and analyze the relationship of consumption patterns of marine fish with the incidence of dental caries in students at Mulyorejo Elementary School I-237. The type of this research was analytic with cross sectional approach with a sample of 220 students in grade VI SD Negeri Mulyorejo I-237 using Simple Random Sampling. The method of data collection in this study used observation and questionnaires. Data analysis was processed by chi square test. The results of the study concluded that the pattern of consumption of marine fish in students at SD Negeri Mulyorejo I-237 the majority of consumption patterns of marine fish are included in the category very often. The dental caries index in students at Mulyorejo Elementary School I-237 the majority of the student dental caries index was included in the medium category. There is a relationship between consumption patterns of marine fish with the incidence of dental caries in students at Mulyorejo Elementary School I-237. Respondents with a pattern of consumption of marine fish often experience a low category of dental caries.

Keywords: consumption patterns of marine fish, dental caries

1.0 INTRODUCTION

Indonesia is country with fish consumption as 34 kilograms per capita per year. The number is still very far compared with fish consumption in Japan as 120 kilograms per capita per year (Ronny, 2013). The happening children development improvement in Japan in several last times, is assumed by consumption pattern changes to fish consumption patterns as animal protein sources and consuming other sea sources related to many essential nutrients. According to Wahyuni quoted by Nilawati (2006), culture of eating many fish in Japanese people has proved the happening health and intelligence quality improvements of children in Japan. In the different research, elder people in Japan who consume fish and other sea result sources, have lower risks toward heart and blood vessel diseases.

One of food materials that contains high nutrient values is fish. Fish is food material that contains complete nutritions and Omega-3 very good for increasing intelligences, maintaining healths and improving staminas. In toddler ages, proteins are considerably needed for body growth and brain development. Fish protein contents are not inferior to proteins derived from meats, milk, eggs. Besides that, fish is one of animal protein sources that is cheaper than other animal protein sources such as beefs and chickens. Many researches prove that fish is accepted by majority of religions, races, and ethnics (Marine and Fisheries Department of West Sumatera Province, 2011).

According to Baliwati (2009) food consumption pattern is arrangement of food types and amounts consumed by someone or certain people groups. Health condition depends on consumption levels. Consumption levels are determined by dish qualities and quantities. Dish qualities show all nutrients needed by body in dish conditions and one comparison to others. Quantities show the totals of each nutrient toward body needs. If dish arrangement meets body needs, both from quality and quantity aspects, so the body will get nutrition health conditions as well as possible. The research result conducted by Firdayanti, et.al (2012) found that there are relationships of fish consumption patterns and dental caries cases and periodontal diseases. Fitriyanti, et al. (2012) in her research showed that there are

significant differences between fish consumption patterns and oral health statuses of coastal and non-coastal children in Jepara Regency in 2012. The research of Widayati (2014) showed that there are strong relationships or correlations between the habits of giving sweet, sticky foods and drinking milk and dental caries cases of 4 to 6 years old children. So, for preventing dental caries severities, so it needs counseling about giving sweet, soft, and sticky foods toward dental caries influences and how to give formula milk and breast milk to children so that it does not happen rampant caries. From the research results of Putri, et al. (2015) there are 4 factors relate to fish consumption patterns of the students of Public Elementary School of 060919 in Medan Sunggal District, such as: knowledges, socio-cultures, economics and mother supports.

Caries or dental hole is a disease in oral cavity caused by bacterial decay activities against dental hard tissues (enamel, dentin and cementum). If this decay is not handled promptly, it will spread and expand soon. If continuing neglected, dental hole will cause pain, the tooth falls out, infection, even death (Sandira, 2009). So, the causes of caries are bacterias of *Streptococcus mutans* and *Lactobacilli*. These specific bacterias change glucose and carbohydrate in food to be acid through fermentation processes. Acid continues produced by bacterias and finally, it decays dental structures little by little. Then, plaques and bacterias begin to work for 20 minutes after meal (Pratiwi, 2007).

The general purpose of this research is knowing the relationships of sea food consumption patterns and dental caries cases in the students of Public Elementary School of Mulyorejo I-237. Whereas, the special purposes of this research are measuring sea food consumption patterns in the students, measuring dental caries indexes in the students, and analyzing the relationships of sea food consumption patterns and dental caries cases in the students of Public Elementary School of Mulyorejo I-237.

2.0 THEORETICAL REVIEWS

2.1 Knowledge

According to Notoatmodjo (2012), knowledge is result from knowing and it happens after people conduct sensings toward some certain objects. In the Indonesia Dictionary (2012), knowledge is something known related to learning processes. These learning processes are influenced by several factors from the inside such as motivations and the outside factors such as the available informational facilities, and socio-cultural conditions. Knowledge is information or declaration known or realized by someone.

2.2 Consumption Patterns

Consumption patterns are many informations that give images about types, frequencies, and the total food materials eaten daily by one person or characteristics for some certain people groups (Santoso, 2004). According to Baliwati (2009) Food consumption patterns are arrangements of food types and amounts consumed by someone or certain people groups.

Health conditions depend on consumption levels. Consumption levels are determined by dish qualities and quantities. Dish qualities show all nutrients needed by body in dish conditions and one comparison to others. Quantities show the totals of each nutrients toward body needs. If dish arrangements meet body needs, both from quality and quantity aspects, so the body will get nutrition health conditions as well as possible. Consumptions that result nutrition healths as well as possible are called by adequate consumptions. If the consumption, both in quantities and qualities in the totals of exceeding the body needs, it is called by excessive consumption, so it will happen some excessive nutrition condition. Fish pattern consumption measurements can be measured through several indicators that refer to Apriani (2012) such as: fish consumption frequencies, the fish types consumed, fish processing forms and cooking methods consumed, the reasons of consuming fish and fish protein contents.

2.3 Dental Caries

Caries or dental hole is some disease in oral cavity caused by bacterial decay activities against dental hard tissues (enamel, dentin and cementum). If this decay is not handled promptly, it will spread and expand soon. If continuing neglected, dental hole will cause pain, the tooth falls out, infection, even death (Sandira, 2009). Dental caries (cavitation) is area that decays in the tooth that happens because of some processes that gradually dissolve enamel (hard outer tooth surface) and continues developing to the inside of the tooth (Hamsafir, 2010). So, the causes of caries are bacterias of *Streptococcus mutans* and *Lactobacilli*. These specific bacterias change glucose and carbohydrate to be acid through fermentation processes. Acid continues produced by bacterias and finally decays dental structures little by little. Then, plaques and bacterias begin to work for 20 minutes after meal (Pratiwi, 2007).

3.0 RESEARCH METHODOLOGY

This research type was analytical one by cross sectional approach. The population in this research consists of the students of sixth class of Public Elementary School of Mulyorejo I-237. The total samples in this research are determined by Slovin formula (Notoatmodjo, 2002), so it was gotten samples as 220 students of sixth class of Public Elementary School of Mulyorejo I-237. The method of taking sample was using Simple Random Sampling.

The data collection method by using observation. The instruments used are questionnaire sheets for knowing the student knowledges of Public Elementary School of Mulyorejo I-237. The data analysis used for examining whether there are relationships according to the problems that will be researched is processed by the test of chi square and analyzed by using SPSS computer program aid (Statistical Package for Social Science) of version 17.0.

4.0 RESULTS

3.1 General Data

Table 1. Gender Frequency Distributions of The Students of Public Elementary School of Mulyorejo I-237

Number	Gender	Frequency	Percentage
1.	Male	19	45.2
2.	Female	23	54.8
Total		42	100

Source: Primary Data, 2016

From the table 1 above, it can be explained that majority of the students of Public Elementary School of I-237 who are become these research subjects are female students, was as 23 students (54.8%), whereas the male students are as 19 students (45.2%).

3.2 Special Data

After the data are collected and tabulated, then they are served in the simple table form for distributions of fish consumption pattern knowledge levels and dental caries cases. The following ones are fish consumption pattern knowledge levels:

Table 2. Distributions of Fish Consumption Pattern Knowledge Frequencies

Number	Fish Consumption Pattern	Frequency	Percentage
1	Very Rarely	2	4.8
2	Rarely	2	4.8
3	Sometimes	9	21.4
4	Frequent	10	23.8
5	Very Frequent	19	45.2
Total		42	100

Source: Primary Data, 2018

From the table 2 above, it can be explained that majority of sea food consumption pattern knowledges are categorized as very frequent, was as 19 people (45.2%). Whereas, the sea food consumption pattern knowledges that are categorized as rarely are as 2 people (4.8%). The following ones are dental caries case levels:

Table 3. Distributions of Dental Caries Case Frequencies

Number	Fish Consumption Pattern	Frequency	Percentage
1	Very High	3	7.1
2	High	1	2.4
3	Moderate	16	38.1
4	Low	13	31
5	Very Low	9	21.4
Total		42	100

Source: Primary Data, 2018

From the table 5.3 above, it can be explained that majority of dental caries cases are categorized as moderate, was as 16 people (38.1%). Whereas dental caries cases categorized as very high are as 3 people (7.1%). The respondent with the dental caries cases categorized as high is 1 person (2.4%). And the respondents with the dental caries cases categorized as low are as 13 people (31%).

3.3 The Relationships Inter-Research Variables

The following ones are the relationships of fish consumption pattern knowledge levels and dental caries cases:

Table 4. Distributions of Fish Consumption Pattern Relationship and Dental Caries Case Frequencies

				Dental Caries Case					Total
				Very High	High	Moderate	Low	Very Low	
Sea food consumption pattern	Very rarely	Count	2	4	3	0	0	9	
		% of Total	.9%	1.8%	1.4%	.0%	.0%	4.1%	
	Rarely	Count	0	5	8	0	0	13	
		% of Total	.0%	2.3%	3.6%	.0%	.0%	5.9%	
	Sometimes	Count	4	3	35	5	0	47	
		% of Total	1.8%	1.4%	15.9%	2.3%	.0%	21.4%	
	Frequent	Count	0	5	17	21	6	49	
		% of Total	.0%	2.3%	7.7%	9.5%	2.7%	22.3%	
	Very frequent	Count	0	12	38	44	8	102	
		% of Total	.0%	5.5%	17.3%	20.0%	3.6%	46.4%	
	Total	Count	6	29	101	70	14	220	
		% of Total	2.7%	13.2%	45.9%	31.8%	6.4%	100.0%	

Source: Data processed

These analysis results show that the respondents with frequent sea fish consumption patterns, most of them have dental caries cases categorized as low, was 21 respondents (9.5%). The respondents with very frequent sea fish consumption patterns, most of them have dental caries cases categorized as low, was 44 respondents (20%). The respondents with very rarely sea fish consumption patterns, most of them have dental caries cases categorized as high, was 4 respondents (1.8%).

After the research data are processed, then the data examination is conducted for examining the relationships between sea fish consumption pattern knowledges and dental caries number cases by using chio square test, the results can be seen in the following summarizes.

Table 5. Test Results of Chi Square

Relationship	Pearson Chi Square	Sig.	Note
Relationship between sea food consumption pattern and dental caries cases	77.261	0.000	Significant

From the Chi Square test calculation results by using SPSS program, it is achieved the value of Pearson Chi square as 77.261 and the probability value as (sig.) 0.000 is smaller than alpha as (0.05). based on the criteria, it shows that

hypothesis zero is rejected and statistically, it concludes that there are relationships between sea fish consumption pattern knowledges and dental caries number cases significantly.

4.0 DISCUSSION

Sea Fish Consumption Patterns in The Students of Public Elementary School of Mulyorejo I-237

Based on the research results, it is known that majority of sea food consumption patterns of the students of Public Elementary School of Mulyorejo I-237 are categorized as very frequent, as 102 people (46.4%). Whereas sea fish consumption pattern knowledges of the students of Public Elementary School of Mulyorejo I-237 categorized as very rarely are as 9 people (4.1%).

Knowledges are someone's mental responses in the relationships toward the certain objects realized as available or happening. Knowledges can be wrong, because if some knowledges are really wrong, they cannot be assumed as knowledges. So, what are assumed as the knowledges have status changes to be beliefs only (Notoatmodjo, 2010). The knowledges are gotten from direct experiences and through other's experiences. Education influence learning processes, the higher the someone's education, so the easier the person for accepting informations from others and mass medias.

Knowledges are someone's knowledge results. The student knowledges in Public Junior High School of 006 South Bontang Coastal Region, East Kalimantan, are gotten from informations derived from mass medias and electronics. Many informations gotten, especially through televisions. In the night, it is the time most considerably utilized by the respondents for getting informations through televisions.

4.1 Dental Caries Indexes in the students of Public Elementary School of Mulyorejo I-237

Based on the research results, it is known that majority of dental caries indexes of the students of Public Elementary School of Mulyorejo I-237 are categorized as moderate, was as 101 people (45.9%). Whereas the dental caries indexes of the students of Public Elementary School of Mulyorejo I-237 categorized as very high are as 6 people (2.7%). Caries or dental hole is some disease in oral cavity caused by bacterial decay activities against dental hard tissues (enamel, dentin and cementum). If this decay is not handled promptly, so it will spread and expand soon. If continuing neglected, dental hole will cause pain, the tooth falls out, infection, even death (Sandira, 2009).

4.2 The Relationships of Sea Food Consumption Patterns and Dental Caries Cased in the students of Public Elementary School of Mulyorejo I-237

Based on the frequency distribution table, it is known that the respondents with the sea food consumption patterns as frequent, majority of them have dental caries cases with low categories. (9.5%). The respondents with the sea food consumption patterns as very frequent, majority of them have dental caries cased with low categories (20%). The respondents with the sea food consumption patterns as very rarely, majority of them have dental caries cases with high categories (1.8%).

Based on the calculation results by SPSS conducted by using chi square test by $\alpha = 0,05$ it is achieved significant value in which $p = 0,000$, the value of Chi-square (X^2) = 77.261. This case means that sign $p < 0,05$ so H_0 is rejected, it means there are relationships between sea food consumption patterns and dental caries number cases significantly. This case supports the research of Firdayanti, cs (2012) that found that there are the relationships of sea food consumption patterns and dental caries cases and periodontal diseases. Fitriyanti, et al. (2012) in her research also showed that there are significant differences between fish consumption patterns and oral health statuses of coastal and non-coastal children in Jepara Regency in 2012. Widayati (2014) added that there are the strong relationships or correlations between the habits of giving sweet, sticky foods and drinking milk and dental caries cases of 4 to 6 years old children. So, for preventing dental caries severities, so it needs counseling about giving sweet, soft and sticky foods toward dental caries influences and how to give formula milk and breast milk to children so that it does not happen rampant caries. From the research results of Putri, et al. (2015) there are 4 factors that relate to the fish consumption patterns of the students of Public Elementary School of 060919 in Medan Sunggal District, such as knowledges, socio-cultures, economics and mother supports.

The respondents who have the good knowledges of sea food consumption patterns, majority of them do good meal patterns. Because they know the goodnesses from eating nutritious foods. According to Marine and Fisheries Department of West Sumatera Province (2011), one of food materials that contains high nutrition values is fish. Fish is food material that contains complete nutritions and very good Omega -3 contents for improving intelligences,

maintaining healths and increasing staminas. In the toddler ages, protein is considerably needed for body growth and brain development. Fish protein contents are not inferior to proteins derived from meats, milk or eggs. Besides that, fish is one of animal protein sources that is cheaper than other animal protein sources such as beefs and chickens. Many researches prove that fish is accepted by majority of religions, races and ethnics. The knowledges about sea food consumption patterns are gotten from many sources such as electronical medias, mass medias and schools. The knowledges gotten are applied in daily life later.

According to HL Blum, health status is influenced by four factors, such as environments, health services, heredities, and attitudes. The first factor is environment. If the oral cavity environment is bad, so it will impact on the dental health status so it enhances caries numbers. The second factor is health service. If the health service has bad qualities, so the people around the health service will be disturbed about their health statuses, so it impacts on dental caries numbers. The third factor is heredity. If someone has dental measures and jaw measures improper as the gotten from his/her parents that cause his/her teeth are crowded, so causing his/her teeth are difficult to clean, so it will increase dental caries numbers. The fourth factor is attitude. If fish consumption patterns are conducted continually, in which fish considerably contains mineral and fluor, so it can minimize the happening dental caries. But otherwise, if fish consumption patterns are rarely to conduct, so it will cause dental caries.

5.0 CONCLUSION

For sea food consumption patterns of the students of Public Elementary School of Mulyorejo I-237, majority of sea food consumption patterns are categorized as very frequent, For dental caries indexes in the students of Public Elementary School of Mulyorejo I-237, majority of the student dental caries indexes are categorized as moderate. There are the relationships of sea food consumption patterns and dental caries cases in the students of Public Elementary School of Mulyorejo I-237. The respondents with the sea food consumption patterns as frequent, majority of them have dental caries cases categorized as low. To researchers, they are useful as science and experience developments so they can add insights.

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