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Relationship between Diet using Food Frequency Questionnaire and The Incidence of Dysmenorrhea

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ABSTRACT

Introduction: Students' eating habits are strongly shaped by their busy schedules and active social lives, which often encourage a preference for fast food and reduce the consumption of fiber-rich foods.

Methods: This study uses a cross-sectional methodology and is an analytical observational study.

Methods: Descriptive observational with a retrospective approach and the research design used is Cross Sectional Study.

Result: The results of the distribution of patients with tonsillitis based on age, the most at the age of 5 - 11 years, as many as 20 people (50%). Based on gender, the highest number was female as many as 23 people (58%). Based on the size of the tonsils, the largest size was T2- T2 as many as 17 patients (43%). Based on the diagnosis, there were 23 patients (58%) with acute tonsillitis.

Conclusion: Acute tonsillitis was the most common diagnosis with a patient age range of 5 - 11 years, where most were female and tonsil size was T2-T2.

Keywords: Characteristics; tonsillitis; Tabaringan health center



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Introduction

Diet is an organized meal that includes the amount, type of food, which is usually consumed at a certain time¹. The correct diet is staple foods, side dishes, fruits and vegetables, and consumed in moderation and not excessively. If it is fulfilled, it will provide sufficient energy, building substances and nutritional regulating substances for the body, making adequate nutrition for the body and not susceptible to disease because of a good immune system. Time availability, influence of friends, and economic status, education and nutritional knowledge are part of the factors that influence consumption patterns². Diet is the main factor in meeting a person's nutritional needs. The body will become hungry and eventually lose weight if it is deficient in specific nutrients, particularly energy and protein in the early stages. It will also cause a decline in productivity at work³.

During adolescence, there are several changes that can affect food consumption. During this period, physical, social and psychological changes usually occur. During adolescence, there are also changes in lifestyle, behavior, and experiences in choosing food consumed or eating habits⁴. This change in eating behavior also applies to students as a group of individuals in the adolescent stage. The diet of students who tend to prioritize practicality in choosing food. Students often consume unhealthy foods, are irregular, snack and often forget breakfast or lunch⁴.

According to data collected, 49.8% of medical students only eat twice a day, and their diet of fruits, vegetables, meat, and dairy items is deemed insufficient shows that medical students do not consuming foods with balanced nutrition⁵. Increased activity, social life and busyness of students will affect their diet. Students nowadays are fond of fast food such as instant noodles, so they do not consume foods that are high in fiber. Fast food usually contains limited or low nutrients (calcium, riboflavin, vitamin A, vitamin C, folate and fiber). Additionally, fast food diets are typically heavy in calories, sugar, and fatty substances⁶.

Consumption of fast food does not provide optimal nutrition for the body and only provides excess fat, sugar and sodium to the body, it can cause the risk of gynecological disorders such as dysmenorrhea⁷. The pelvic cramping discomfort known as dysmenorrhea is brought on by menstruation and the transfer of prostaglandin molecules. Dietary variables are one of the risk factors that contribute to dysmenorrhea, which frequently manifests at an early age. Eating a lot of fast food is one diet that frequently results in dysmenorrhea⁸. Omega-3 fatty acids are in modest concentrations in fast food, while saturated omega-6 fatty acids are abundant. Saturated fats trigger the release of prostaglandins via the cyclooxygenase pathway, which narrows the blood channels in the myometrium and results in dysmenorrhea⁹.

The food Frequency Questionnaire (FFQ) is one of the food consumption assessment methods. The general principle in using FFQ is the frequency of food consumption as a risk factor for malnutrition. The

frequency of food consumption must be measured precisely using the FFQ method¹⁰. An initial investigation to determine which food elements should be on the FFQ list is the first step towards the systematic measurement of the FFQ method. The food items on the list are modified based on the relationship between the likelihood of consuming them and the development of a disease. Foods that are not associated with the risk of disease should be removed from the FFQ list. Deletion aims to be time-efficient and precise in the interpretation of results¹⁰. The FFQ method is semi-qualitative in that the information about the foodstuffs consumed is only in the form of names while the quantities are not strictly distinguished. The FFQ method only requires data on whether a certain type of food is often or not often consumed and the frequency of consumption¹⁰.

Methods

This study uses a cross-sectional methodology and is an analytical observational study. This study used a survey strategy with questionnaire items in collecting data to determine the correlation between diet and the incidence of dysmenorrhea in students of the Faculty of Medicine, Universitas Muslim Indonesia, class of 2020, Makassar, South Sulawesi. The population in this study was 201 students of the Faculty of Medicine, Muslim Indonesia University, Class of 2020. Purposive sampling is the sample measurement method employed in this study, and it is this method that determines the research sample. It takes into account a few factors by establishing inclusion and exclusion criteria with the goal of obtaining more representative data later on. so that the sample size in this study was found to be 100 respondents who both satisfied and exceeded the requirements for being included or excluded. The independent variable in this study is diet, and the dependent variable is dysmenorrhea. A questionnaire was used as the method of data collection. Two types of data analysis were conducted with: univariate and bivariate analysis.

Result

This study was conducted using an online purposive sampling technique by distributing questionnaires via Google form on July 11 2023 to August 012023. Respondents in this study were UMI Class of 2020 medical faculty students who both satisfied and exceeded the requirements for being included or excluded. The results of this study are in the form of univariate and bivariate analysis.

Univariate Analysis

Table 1. Distribution of food frequency

No.	Variabel	Infrequently		Frequently	
		(n)	(%)	(n)	(%)
1.	Consume Carbohydrate				
	Rice	3	3%	97	97%
	Cassava	97	97%	3	3%

sweet potato	96	96%	4	4%
Bread	66	66%	34	34%
Noodles	74	74%	26	26%
2. Consume Proteins				
Beef	81	81%	19	19%
Chicken	32	32%	68	68%
Lamb	97	97%	3	3%
chicken eggs	52	52%	48	48%
Fish	64	64%	36	36%
tofu/tempe	42	42%	58	58%
Nuts	77	77%	23	23%
3. Consume Fat				
vegetable oil	90	90%	10	10%
4. Consume Fast food				
fast food	42	42%	58	58%
soft drink	51	51%	49	49%
fried food	37	37%	63	63%
5. Consume Fiber				
Vegetables	47	47%	53	53%
Fruits	60	60%	40	40%

Table 1 shows rice (97%) as the main carbohydrate source, chicken (68%) as the most frequent protein, fried foods (63%) as the most frequent fast food, and vegetables (53%) as the main fiber source.

Table 2. Research frequency distribution

Consume Carbohydrate	(n)	(%)
Infrequently	60	60%
Frequently	40	40%
Total	100	100%
Consume Proteins	(n)	(%)
Infrequently	50	50%
Frequently	50	50%
Total	100	100%
Consume Fat	(n)	(%)
Infrequently	90	90%
Frequently	10	10%
Total	100	100%
Consume Fast food	(n)	(%)
Infrequently	30	30%
Frequently	70	70%
Total	100	100%
Consume Fiber	(n)	(%)
Infrequently	39	39%
Frequently	61	61%
Total	100	100%
Incidence of dysmenorrhea	(n)	(%)
No dysmenorrhea	11	11%
Mild dysmenorrhea	51	51%
Moderate dysmenorrhea	30	30%

Severe dysmenorrhea	8	8%
Total	100	100%

Bivariate Analysis

Table 3. The relationship between food frequency and the incidence of dysmenorrhea

Gamma Correlation Test		
No.	Category	<i>p-Value</i>
1.	Carbohydrate	0.718
2.	Proteins	0.767
3.	Fat	0.956
4.	<i>Fast food</i>	0.000
5.	Fiber	0.699

Based on table 3, the correlation between the frequency of dietary patterns and dysmenorrhea is displayed in. Test results showed that the frequency of consumption of carbs, protein, fat, and fiber had a $p\text{-value} > 0.05$. This suggests that there isn't a meaningful connection to the prevalence of dysmenorrhea. A $p\text{-value} < 0.05$ was found in the gamma correlation test results regarding the frequency of fast-food eating. This demonstrates that there is a connection between the prevalence of dysmenorrhea and eating fast food.

Discussion

Dietary distribution based on food frequency

In this study, it was found that 93% of respondents obtained their carbohydrate source from rice and least often from cassava. Cassava is one type of tuber that is often found in Indonesia, even often made as a source of carbohydrates in certain areas. But the majority of Indonesians consume rice as the main source of carbohydrates. In the research of Seidelmann et al. (2017) obtained data on the consumption of energy sources from carbohydrates in Asian countries by $> 60\%$ and in this study, was found that the consumption of rice was 93% ¹⁵.

The protein sources most often obtained from chicken meat, namely 68% and the least source of protein from goat meat. In Winda's research (2016) meat, eggs and milk are livestock products that are often consumed by the community. Chicken flesh is one of the foods that significantly contributes to the requirement for animal protein. One dietary item that has animal protein in sufficient amounts to satisfy human needs is chicken flesh. The public has a strong preference for chicken meat since it is simple to prepare and cook. Furthermore, chicken meat is more affordable than other meats and has a flavor that is acceptable to all segments of society ¹⁵. Goat meat, on the other hand, is the least popular since it is more expensive than other meats and requires more processing.

For sources of fat obtained from vegetable oil, as many as 90 respondents (90%) consume vegetable oil as a fat source infrequently. and as many (10%) respondents consume vegetable oil as a fat source infrequently. Vegetable oil or vegetable oil containing high unsaturated fat comes from extracts of nuts, seeds, avocados and olives. Vegetable oil containing high unsaturated fat is easy to find in the market, however, the price is quite expensive from other oils causing many people to rarely use it for consumption every day.

Furthermore, in this study it was found that 63% of respondents often consumed fast food obtained from fried foods. In the research of Leak et al. (2018) adolescents more often consume their own food which results in a rise in the frequency of consuming sugar-filled drinks and fast food (16). 50% of adolescents in Indonesia were found to have Na consumption more than the recommended amount every day and 50% of the consumption was sourced from fast food¹⁵.

The respondents of this study about 53% often consumed fiber obtained from vegetables and 60% of respondents rarely consumed fruits. According to certain research, there is a relation between the availability and intake of fruits and vegetables. Research conducted by Anggraeni & Sudiarti, (2018) explains that someone with good availability of fruits and vegetables has a higher average intake of fruits and vegetables compared to respondents with reduced availability of veggies and fruits¹⁷.

Distribution of Dysmenorrhea

This study was discovered that 51 respondents (51%) had mild dysmenorrhea, 30 respondents (30%) experienced moderate dysmenorrhea, 8 respondents (8.3%) experienced severe dysmenorrhea and 11 other respondents (11%) did not experience dysmenorrhea. Research conducted by Juniar (2015) in Jakarta on respondents aged 12-21 years, 87.5% of respondents experienced dysmenorrhea with 20.48% mild dysmenorrhea, 64.76% moderate dysmenorrhea, 14.76% severe dysmenorrhea¹⁷. Dysmenorrhea is often experienced by women at reproductive age, which is around 45% to 93% and the highest incidence of dysmenorrhea is experienced by adolescents¹⁸.

Relationship between Dietary Frequency and the Incidence of Dysmenorrhea

The study's findings demonstrated that there was no significant correlation between dysmenorrhea and the frequency of consuming sources of carbs. In Tiara's research (2022) it was also found that There was no correlation found between dysmenorrhea and the frequency of consuming sources of carbs¹⁴. In other studies, the correlation between carbohydrate consumption and the severity of dysmenorrhea is associated with an increase in blood pressure where dysmenorrhea occurs due to vasoconstriction of blood vessels¹⁴. Carbohydrates are a source of increased intake, so there will be no shortening of the luteal phase. Low blood glucose concentration can cause the body to produce the hormone adrenaline. Adrenaline can

stop the effectiveness of progesterone which functions to suppress the activity of estrogen hormone so that the menstrual cycle does not become longer. Increased adrenaline hormone can cause an increase in blood pressure¹⁹. In the research of Uche et al. (2021) during 3 menstrual cycles respondents who experienced dysmenorrhea and consumed carbohydrates showed an increase in blood pressure. This increase in blood pressure occurs because there is an increase in Angiotensin-II and VCAM-1 which causes vascular dysfunction, but the mechanism of increasing Angiotensin-II and VCAM-1 in respondents who experience dysmenorrhea with carbohydrate consumption is unknown²⁰.

The Approximate Significance value in the Gamma correlation test is p-value of 0.000 (p-value <0.005) so that there is a correlation between the frequency of fast-food consumption and dysmenorrhea. In the research of Pramanik et al. (2014) also found a significant correlation between the frequency of fast-food intake with menstrual irregularities in the study and dysmenorrhea. Where dysmenorrhea is more common in adolescent girls who often consume fast food²². Despite the fact that the pathomechanisms behind dysmenorrhea remain incompletely known, the intricacy of the biochemical interactions involving the endocrine, circulatory, immunological, and psychological systems has been demonstrated by previous research⁷. Diet with macronutrient and micronutrient content also showed an association with dysmenorrhea although the results in each study did not consistently show a significant relationship. This can occur because in consuming food a person will more often consume a variety of foods in one meal compared to consuming only one type of food. When a person consumes various types of food, the food contains various macronutrients and micronutrients where the nutritional effects of these foods will interact with each other, which can produce bias in the study⁷.

This study was found no significant correlation between the frequency of consumption of fiber sources on dysmenorrhea. This is in consistent with the study of Abu Helwa et al. (2018) which showed an insignificant relationship between fruit and vegetable consumption and dysmenorrhea²³. Vegetables and fruits contain many vitamins, beta carotene and antioxidants. Vitamin E is fat-soluble and has a function to reduce oxidized phospholipid levels. Vitamin C is a water-soluble vitamin that provides antioxidants by removing free radicals in oxygen. Beta carotene and zinc can reduce antioxidant levels which will detoxify increased oxidant levels²⁴. Vegetables and fruits contain calcium and magnesium. Previous research has studied the possible effects of a lack of calcium and magnesium intake on dysmenorrhea during menstruation. Calcium has a role in controlling how responsive muscle cells are to nerve signals. The uterine contraction-relaxation process itself is influenced by the presence of intracellular calcium which is regulated by agonizing substances that can affect the amplitude, frequency and duration of contractions. Because during menstruation there is a decrease in calcium levels in the blood, calcium intake is needed for the contraction-relaxation process²⁵.

Conclusion

Based on research that has been conducted on the Characteristics of Tonsillitis Patients at Tabaringan Health Center Makassar City 2019-2023, the author concluded that the characteristics based on age, most in the age group 5-11 years. Characteristics based on gender, mostly female. Characteristics based on tonsil size, the most commonly found with size T2-T2. Characteristics based on diagnosis, obtained are patients with acute tonsillitis.

Based on the data analysis and discussion conducted conclusions can be obtained namely diet based on the frequency of carbohydrate consumption most often is rice, the most frequent protein consumption is chicken meat, fat consumption is vegetable oil, the most frequent fast-food consumption is fried foods and the most frequent fiber consumption is vegetables. Furthermore, the most incidence of dysmenorrhea is moderate dysmenorrhea then mild dysmenorrhea and the least is the incidence of severe dysmenorrhea. The fast-food consumption and the prevalence of dysmenorrhea are significantly correlated among 2020 faculty of medicine Universitas Muslim Indonesia students.

Conflicts of Interest

There is no conflict of interest.

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