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Email : editorijhess@gmail.com

The Correlation Between Consuming High-Risk Foods and Sedentary Activities with Nutritional Status at SMAN 1 Uluan of Toba Regency in 2021

Yoseva F Simanjuntak [1)], Rd. Halim [2)]
[1,2)] Community Health Science, Faculty of Medicine and Health Sciences, Jambi University

*Corresponding Author
Email : halim75@unja.ac.id

Abstract

Currently, Indonesian adolescents are facing three nutritional issues (triple burden of malnutrition), namely malnutrition, overweight, and micronutrient deficiencies with anaemia. This study was aimed to discover the correlation between consuming high-risk foods and sedentary activities with nutritional status at SMAN 1 Uluan of Toba Regency. A correlational study with cross-sectional design was the method used in the study. This study took 61 students of XI class as the sample selected through proportional stratified random sampling technique. The data were analysed through the Chi-Square Statistical Test. The study results indicated that the high-risk foods which were categorized as frequently consumed encompassed high-fat/high-cholesterol/fried foods (50.8%), grilled foods (55.7%), processed foods with preservatives (55.7%), flavour-enhanced foods (57.4%), soft drinks (54.1%), energy drinks (55.77%), and instant foods (63.9%). While the foods that were categorized as rarely consumed encompassed sweet foods and beverages (50.8%) and salty foods (50.8%). On the sedentary activity variable, the majority of respondents conducted sedentary activities with high intensity (>5 hours/day) (47.5%), while the nutritional status variable showed overnutrition (32.8%). According to the results of statistical test, a significant correlation between consuming high-risk foods (sweet foods and beverages (p = 0.000), salty foods (p = 0.003), high-fat/high-cholesterol/fried foods (p = 0.000), grilled foods (p = 0.004), processed foods with preservatives (p = 0.003), flavour-enhanced foods (p = 0.002), soft drinks (p = 0.003), energy drinks (p = 0.042), and instant foods (p = 0.007)) and sedentary activities (p = 0.000) with nutritional status. Good and healthy consumption patterns in addition to proper physical activities/exercises are expected.

***Keywords**: Consuming High-Risk Food, Sedentary Activities, Nutritional Status*

INTRODUCTION

WHO (2018) stated that the primary health issues affecting adolescents at present include malnutrition and overnutrition, micronutrient deficiencies, and lack of physical activities. More than 1.1 million adolescents aged 10-19 years old died in 2016, and more than 3,000 of them died every day due to nutritional problems. Currently, Indonesian adolescents are facing three nutritional issues (triple burden of malnutrition), namely malnutrition, overweight, and micronutrient deficiencies with anaemia. In the data of Basic Health Research of 2018, it is known that 8.1% of adolescents aged 16-18 years old were malnourished. The prevalence of overnutrition in the age group of 16-18 years old was 13.5%. In the Province of North Sumatra, the malnutrition prevalence was 4.39% while overnutrition reached 14.9%. Meanwhile, in Toba Samosir Regency, the prevalence of malnutrition was 1.03% while overnutrition peaked at 18.62%.

According to the 2018's Basic Health Research, it was elucidated that nutritional status was correlated with high-risk food consumption and lack of physical activities or sedentary activities. High-risk foods are food that potentially generate degenerative diseases. High-risk foods encompass sweet foods/beverages, salty foods, high-fat/high-cholesterol/fried foods, grilled food, processed foods with preservatives, flavour-enhanced foods, soft drinks, energy drinks, and instant foods. The national data indicate that the largest proportions of high-risk food consumed by people include flavour-enhanced foods (77.6%), high-fat foods (41.7%), sweet foods (40.1%), and salty foods (29.7%). The largest proportions of high-risk food consumed by people in North Sumatra Province

are sweet foods (58.5%), flavour-enhanced foods (45.6%), and high-fat foods (21.3%). The largest proportions of high-risk food consumed by people in Toba Regency encompass sweet foods (64.1%), high-fat foods (31.6%), salty foods (31.4%), and flavour-enhanced foods (26%) .

The food consumption proportions as shown above prove that the consumption of high-risk foods is still high and the most consumed foods at national, provincial, and regional levels are flavour-enhanced foods, sweet foods, high-fat foods, and salty foods. A sedentary activity is one's habit that does not commit any physical activities in a day (<30 minutes/day). This lifestyle usually done by adolescents who are lacking in movements, such as sitting too long, laying down, reading, watching television, and playing with handphone.

According to the Basic Health Research of 2013, there was a proportion of 24.1% of Indonesian citizens with sedentary behaviour of ≥ 6 hours per day. While in general, there was a proportion of 26.1% of people who lack physical activities [6]. According to the Basic Health Research of 2018, in general, there was a proportion of 33.5% of people who lack physical activities, indicating an increase in the proportion of minimum physical activities. Some factors affecting nutrition as shown above are supported by various studies—indicating that nutritional problems in the majority of adolescents are caused by consuming high-risk foods and sedentary activities. For instance, a study conducted by Hidayat, which indicated that high-risk food consumption was correlated with nutritional status, and the types of high-risk food which correlated with nutritional status were fried and flavour-enhanced foods as well as soft drinks.

The study conducted by Pribadi (2008) showed a correlation between sedentary activities and nutritional status on X Class students of Mojokerto City, and the number of X Class students who conducted sedentary activities in high category reached 79.2%. It is understood that the correlation between consuming high-risk foods (sweet foods and beverages, salty foods, high-fat/high-cholesterol/fried foods, grilled foods, processed foods with preservatives, flavour-enhanced foods, soft drinks, energy drinks, and instant foods) and sedentary activities with nutritional status needs to be studied. By discovering if there is a correlation between consuming high-risk foods and sedentary activities nutritional status, we can minimize the patterns of high-risk food consumption and sedentary activities while finding proper actions in an effort to improve adolescent nutrients and the health level of people.

Based on the literature study and the acquired data, the author is interested in researching the correlation between the frequency of high-risk food consumption and sedentary activities with nutritional status at SMAN 1 Uluan of Toba Regency in 2021.

RESEARCH METHODS

A quantitative correlational study with cross sectional design was used as the research method. The total population of the study was 169 XI Class students. 61 people were made as the sample of the study. The sample was taken through a proportionate stratified random sampling technique. This study was conducted to analyse the correlation between independent variables (the frequency of high-risk food consumption and sedentary activities) and dependent variable (nutritional status) on respondents. The variable of the frequency of high-risk food consumption was measured by using the Form of Food Frequency Questionnaire (FFQ), the variable of sedentary activities was measured through Adolescent Sedentary Activity Questionnaire (ASAQ), and nutritional status was measured through Body Mass Index per age (BMI/A). The data were analysed through an univariate test to see the depiction of the frequency distribution of each variable (independent and dependent), a bivariate test was applied to see the correlation between independent variables and dependent variable conducted through the Chi-Square test

RESULTS AND DISCUSSION

The characteristics of respondents based on gender indicated that the majority of respondents were female with a total of 36 (59.0%) respondents. The majority of respondents aged 17 years old (60.7%). About 21.3% of respondents were malnourished, 45.9% fell into the normal nutritional status, and 32.8% were overweight. The respondents' characteristics are presented in Table 1.

Table 1. Respondents' Characteristics

	Variable	n : 61	%
	Gender		
1.	Male	25	41.0
2.	Female	36	59.0
	Age		
1.	15	2	3.3
2.	16	14	23.0
3.	17	37	60.7
4.	18	8	13.1
	Nutritional Status		
1.	Lacking	13	21.3
2.	Normal	28	45.9
3.	Over	20	32.8

The assessment on the consumption of high risk foods is measured by the mean if the data are normally distributed and the median if the data are not normally distributed. The categories of high-risk food consumption are varied. The high-risk foods consumed frequently by the majority of respondents were high-fat/high-cholesterol/fried food (50.8%), grilled foods (55.7%), processed foods with preservatives (55.7%), flavour-enhanced foods (57.4%), soft drink (54.1%), energy drinks (55.7%), and instant foods (63.9%). While the high-risk foods consumed rarely were sweet foods and beverages (50.8%) and salty foods (50.8%). On the sedentary activity variable, the majority of respondents conducted sedentary activities with moderate intensity. The assessment results on the frequency of high-risk food consumption and sedentary activities are presented in Table 2.

Table 2. The Frequency Distribution of High-Risk Food Consumption and Sedentary Activities

No	Variable		N	%
1	Sweet Foods and Beverages	Frequent	30	49.2
		Rare	31	50.8
		Total	61	100
2	Salty Foods	Frequent	30	49.2
		Rare	31	50.8
		Total	61	100
3	High-fat/high-cholesterol/fried foods	Frequent	31	50.8
		Rare	30	49.2
		Total	61	100
4	Grilled foods	Frequent	34	55.7

		Rare	27	44.3
		Total	61	100
5	Processed Foods with Preservatives	Frequent	34	55.7
		Rare	27	44.3
		Total	61	100
6	Flavour-enhanced foods	Frequent	35	57.4
		Rare	26	42.6
		Total	61	100
7	Soft drinks	Frequent	33	54.1
		Rare	28	45.9
		Total	67	100
8	Energy drinks	Frequent	34	55.7
		Rare	27	44.3
		Total	61	100
9	Instant foods	Frequent	39	63.9
		Rare	22	36.1
		Total	61	100
10	Sedentary Activities	Moderate	32	52.5
		High	29	47.5
		Total	61	100
11	Nutritional Status	Lacking	13	21.3
		Normal	28	45.9
		Over	20	32.8
		Total	61	100

The results of the bivariate test between independent variables (high-risk food consumption and sedentary activities) and dependent variable (nutritional status) indicated that the consumptions of high-risk foods, such as sweet food and beverages, salty foods, high-fat/high-cholesterol/fried foods, grilled foods, processed foods with preservatives, flavour-enhanced foods, soft drinks, energy drinks, instant foods, and sedentary activities were significantly correlated with nutritional status of respondents ($p < 0.05$). The results of bivariate analysis are presented in Table 3.

Table 3. The Correlation Between the Frequency of High-Risk Food Consumption and Sedentary Activities with Nutritional Status on Respondents

Variable	Nutritional Status						P
	Lacking		Normal		Over		
	n	%	n	%	n	%	
Sweet foods and beverages							
Frequent	0	0	11	18.0	19	31.2	0.000*
Rare	13	21.3	17	27.9	1	1.6	
Salty Foods							
Frequent	4	6.6	10	16.4	16	26.2	0.003*
Rare	9	14.7	18	29.5	4	6.6	
High-fat/high-cholesterol/fried foods							
Frequent	0	0	16	26.2	15	24.6	0.000*

Rare	13	21.3	12	19.7	5	8.2	
Grilled foods							
Frequent	4	6.6	13	21.3	17	27.8	0.004*
Rare	9	14.7	15	24.6	3	5.0	
Processed foods with preservatives							
Frequent	2	3.3	17	27.8	15	24.6	0.003*
Rare	11	18.0	11	18.0	5	8.2	
Flavour-enhanced foods							
Frequent	2	3.3	20	32.8	13	21.3	0.002*
Rare	11	18.0	8	13.1	7	11.5	
Soft drinks							
Frequent	2	3.3	16	26.2	15	24.6	0.003*
Rare	11	18.0	12	19.7	5	8.2	
Energy drinks							
Frequent	4	6.6	15	24.6	15	24.6	0.042*
Rare	9	14..7	13	21.3	5	8.2	
Instant foods							
Frequent	4	6.6	18	29.5	17	27.8	0..007*
Rare	9	14.7	10	16.4	3	5.0	
Sedentary Activities							
Moderate	13	21.3	18	29.5	1	1.7	0.000*
High	0	0	10	16.4	19	31.1	

DISCUSSION

1. The Correlation Between the Frequency of High-Risk Food Consumption and Nutritional Status

The results of the study indicated the nine types of high-risk food that were studied have significant correlations with the nutritional status of students of SMAN 1 Uluan of Toba Regency, namely sweet foods and beverages (p = 0.000), salty foods (p = 0.003), high-fat/high-cholesterol/fried foods (p = 0.000), grilled foods (p = 0.004), processed foods with preservatives (p = 0.003), flavour-enhanced foods (p = 0.002), soft drinks (p = 0.003), energy drinks (p = 0.042), instant foods (p = 0.007).

The results of the study are consistent with the study conducted by Sitorus (2020) in which a positive correlation occurred between sweet foods and beverages and nutritional status with a p-value of 0.000 (p < 0.05). The study conducted by Fang et al (2021) also indicated that a higher intake of salty foods positively correlated with overweight/obesity on children and adolescents in China. A study on students in Seoul conducted by Huh et al. (2017) also indicated a correlation between the frequency of consuming sweets and sugar candies (cakes/cookies/pies/candies/chocolates), high-fat foods, processed foods (fresh bacon/beef ribs/grilled meat/tripe/ham/sausage) with a risk factor of cardiometabolic. The study results of Jusuf et al. (2020) indicated that the consumption of grilled foods correlated significantly with the prevalence of metabolic syndromes. Consuming grilled foods more than three times a week might improve the risk of metabolic syndromes 2.6 times. Similar to the study conducted by Hidayat which showed the correlation between high-risk food consumption (flavour-enhanced foods) and nutritional status on students. The results of the study are also consistent with the study conducted by Maulida and Fathurrahman (2021), which expressed that there was a correlation between fast food consumption frequency and nutritional status with a p-value of 0.034 < 0.05. This condition is

caused by the good taste, affordability, and fast-serving attributes of fast foods in addition to a large number of places that sell the foods, thus, teenagers are getting attracted to buy and consume them.

The consumption of high-risk foods is the main factor that encourages the occurrence of nutritional problems among adolescents. People who eat a lot tend to be overweight, and people with a low food consumption tend to have normal weight and skinny.

2. The Correlation Between Sedentary Activities and Nutritional Status

The results of the study indicated that the majority of respondents that were studied had moderate sedentary activities (> 5 hours/day), and the majority of respondents who conducted high-frequency sedentary activities were overweight respondents (31.1%). The analysis on the correlation between sedentary activities and nutritional status have acquired a p-value of 0.000. This condition showed that the p value which less than 0.005 means that there was a significant correlation between sedentary activities and nutritional status on students of SMAN 1 Uluan of Toba Regency.

This study is consistent with the study conducted by Pribadi (2018) which indicated a significant correlation between sedentary activities and nutritional status. This condition was caused by the high rate of sedentary activities, such as sitting for too long, watching television, and spending time in front of the screen, causing students to be lazy to move. The study conducted by Rahmad also showed that sedentary correlated significantly with overweight on adolescents (p = 0.002) [8]. The study conducted by Yulianti, Elies, and Faisal also indicated a correlation between sedentary behaviour and obesity on adolescents with a p value of 0.000. From this study, it was found that 26 (49%) respondents were not obese but conducted sedentary behaviour. This condition was motivated by the informants who did not have family history indicating obesity, respondents consumed balanced foods, but respondents often conducted sedentary activities, such as playing video games, sitting and using gadgets in a long time.

The study conducted by Firmansyah (2021) indicated that sedentary activities did not correlate significantly with nutritional status on Junior High School students during the pandemic. However, sedentary activities only contributed about 13.5% to nutritional status because the factors that influence nutritional status were multifactorial and in the study conducted by Firmansyah, the factor that affected nutritional status was the nutritional status of parents, both father and mother.

A poor life style and behaviour—such as sedentary activities—is a factor that causes nutritional problems. The lack of physical activities or doing sedentary behaviour tends to increase weight because energy is stored as fat. Therefore, physical activities done by a person might have a great impact on obesity, especially activities containing minimum movements/sedentary, such as sitting continuously, watching TV, using computer and starring at a screen in a long time.

CONCLUSION

There was a significant correlation between consuming high-risk foods (sweet foods and beverages, salty foods, high-fat/high-cholesterol/fried foods, grilled foods, processed foods with preservatives, flavour-enhanced foods, energy drinks, instant foods) and sedentary activities with nutritional status at SMAN 1 Uluan of Toba Regency, thus, healthy food consumption patterns and adequate physical activities/exercises are required.

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