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Relationship of Diet with Gastritis in Nursing Students of Universitas Klabat

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Abstract

Diseases that arise today result from an instant lifestyle and dietary errors such as eating frequency, type of food, and the portion of food, which has become a trend today. One of the diseases that many people complain about is gastritis. Gastritis can attack all levels of society from all levels of age and gender and can be acute and chronic. The percentage of gastritis incidence in Indonesia, according to WHO, is 40.8%. According to the order of disease in the Puskesmas, gastritis ranks 4th with 10,260 sufferers. The purpose of this study was to examine the relationship between diet and gastritis in students of the nursing faculty of the University of Klabat. This type of research is quantitative with a cross-sectional approach. The research sample is nursing students totaling 186 respondents who were taken by consecutive sampling methods. The data obtained were then carried out with statistical tests of the percentage and spearman rank. The results of the analysis showed that there was no relationship between eating frequency (p-value 0.947 > 0.05), type/variety of food (p-value 0.496 > 0.05), and meal portions (p-value 0.352 > 0.05) with gastritis. Recommendations to further researchers are to expand the research area by increasing the number of respondents, using different research designs, and adding other variables such as age, gender, cigarette use, coffee and alcohol consumption, gas drinks, and stress that is thought to be associated with gastritis.

Keywords: diet, eating frequency, gastritis, meal portion, type of food

INTRODUCTION

Diseases that arise today are more and more due to the increasingly modern lifestyle of humans as well as bacterial transmission. This is characterized by an instant lifestyle and eating mistakes that are a trend today. Examples that can be seen are by consuming instant food such as junk food or fast food, often drinking soft drinks, drinking alcoholic beverages, often eating instant noodles, eating unhealthy snacks, eating too fast, eating until full, and often snacking carelessly to the point of not paying attention to the cleanliness and nutritional value of the food. This eating pattern error becomes an unhealthy habit and can cause various diseases, one of which is gastritis which is currently being complained of by an irregular eating pattern. Diet is closely related to the production of stomach acid (Hidayah, 2012).

Gastritis, also known as an ulcer, is a very annoying disease. Gastritis occurs due to inflammation that occurs in the lining of the stomach so that the stomach feels sore or experiences heartburn. *Helicobacter pylori* bacteria can enter the body through the food that is consumed. Gastritis can attack all levels of society from all levels of age and gender and can be acute and chronic (Brunner & Suddarth, 2014).

According to the World Health Organization (WHO), the incidence of gastritis in the world is around 1.8-2.1 million of the total population each year. Canada 35%, China 31%, and France 29.5%, UK 22%, and Japan 14.5%. For Southeast Asia, it is about 583,635 of the total population every year. The presentation of the incidence of gastritis in Indonesia according to WHO is 40.8%. The incidence of gastritis in several areas in Indonesia is quite high, with a prevalence of 274,396 cases (Budiana in Syamsu, Rumpiati & Rista, 2017). According to the order of magnitude of the disease at the Puskesmas, gastritis ranks 4th with 10,260 sufferers (Manado City Health Office, 2012).

Research conducted by Salahuddin and Rosidin (2018) on 140 students found 65.7% had a high incidence of gastritis, and there were 99 students with a poor diet. This study found that there was a significant relationship between diet and the incidence of gastritis in grade X semester I SMK YBKP3 Garut. In another study by Syamsu, Rumpiati, and Rista (2017), of the 95 adolescent respondents studied, there were 62 respondents (65.3%) who had gastritis. These teenagers often eat late, rarely eat three times a day, often consume foods that are at risk of causing gastritis such as spicy, sour and eat instant food (fast food) and drink soft drinks.

Students are part of the community and the next generation of the nation who do not escape from high activity. If students do not pay attention to their health, they will be very vulnerable to diseases that can certainly interfere with learning activities and academic achievement. Dense activity greatly affects his healthy lifestyle, especially in his daily diet. Gastritis can be asymptomatic and is usually taken for granted, but it is the beginning of a disease that can complicate a person's life.

Based on interviews with nursing students in the class, there were 13 out of 28 students who had a history of gastritis. They say they have an irregular diet and eat foods that stimulate the production of stomach acids, such as spicy foods and vinegar. As a result, the impact of gastritis can interfere with daily activities due to the emergence of various complaints such as burning pain in the pit of the stomach, nausea, vomiting, no appetite, and weakness. If this disease is left chronic, gastritis will develop into a peptic ulcer which in turn will experience bleeding, gastric perforation, and even death. That is why researchers are interested in carrying out a study entitled the relationship between diet and gastritis in nursing students at the University of Klabat. The formulation of the problem taken is an overview of eating patterns based on eating frequency, type/variety of food, and meal portions, then see if there is a significant relationship between eating patterns based on eating frequency, type of food, and meal portions with gastritis in Unklab nursing students.

METHODOLOGY

This research is a quantitative research using a cross-sectional method as the research design. Data analysis used univariate and bivariate analysis. To answer the problem statement using statistical tests of percentages and nonparametric Spearman’s rank because the data of all variables are not normally distributed with a significance level of $p < 0.05$ %, 95% confidence interval.

Data collection was obtained through primary data, namely a questionnaire that was directly linked to it (https://forms.gle/VqCgSB3PSCLuGDRq8) to respondents in the form of a google form. The researcher sent a link to this questionnaire through the WhatsApp group at each parallel grade level also asked students to send the link to friends who had not filled out the questionnaire. After that, data collection was carried out, followed by data processing, data presentation, analysis

and interpretation, and drawing conclusions. Samples were taken using a consecutive sampling technique according to the inclusion and exclusion criteria and obtained as many as 186 respondents. The research was conducted during the first semester of 2020/2021 online lectures, namely in October, November, and December 2020.

The inclusion criteria were nursing students who were registered and actively studying, while the exclusion criteria were students who were wrong in answering questions because they answered two answer items to the same question and students who were not willing to fill out the questionnaire sent via google forms.

The researcher used a questionnaire adopted from Pratiwi (2013), which was valid and reliable. Using the value of alpha = 0.05, df = n-2 (28) and r table = 0.374. This questionnaire has also been tested for reliability and obtained Cronbach's Alpha 0.905. It is said to be reliable if the Cronbach alpha value is > 0.60 (Hidayat, 2017). The questionnaire in the diet contains the habit of eating frequency, type of food, and meal portion. To measure the frequency of eating (main meal and snack), contains 8 questions answered by respondents with always = 5, often = 4, sometimes = 3, rarely = 2 and never = 1. The assessment uses a Likert scale while using the Gutman scale for the type of food and the portion of the meal. There are four questions for the type/variety of food and five questions for the portion of the meal. Research questions consist of positive and negative. Respondents answered with true or false answers. For positive questions, respondents who answered correctly were given a value of 1 and, if incorrect, were given a value of 0. For negative questions, respondents who answered correctly were given a value of 0 and, if incorrect, were given a value of 1. The gastritis incidence questionnaire contained 16 questions using the Gutman scale. , i.e., if the answer is yes gets a score of 1, and if the answer is no, it gets a value of 0.

For an overview, the frequency of eating is divided into more than 2x/day and less than 2x/day. The frequency of eating in question is the frequency of the main meal or the frequency of eating three main meals a day, namely breakfast, lunch, and afternoon/evening. An overview of the type of food is divided into categories that do not taste sour and spicy as well as sour and spicy. To illustrate, the portion of food is divided into less than 300-500 grams (<3-5 plates of rice a day) and as much as 300-500 grams (>3-5 plates of rice). An overview of the frequency of gastritis occurrence is divided into gastritis and no gastritis. For the relationship between eating frequency and gastritis, use good and poor categories. For the relationship between the type of food and gastritis, the non-irritating and irritating categories are used. For the relationship between food portions and gastritis, the category is 300-500 grams (good) and less than 300-500 grams (less).

There are several weaknesses that become limitations in this study. The research design uses cross-sectional or cross-sectional where the weakness cannot explain the causal relationship but only explains the relationship. In theory, there are many problems that need to be researched in relation to gastritis among students. In this study, researchers only examined several dietary factors such as frequency of eating, type of food, and the portion of food associated with gastritis. The number of samples is also a limitation because it cannot take all according to the population, namely 501 students due to the pandemic.

RESULTS AND DISCUSSION

An overview of the distribution of students' frequency of eating can be seen in Table 1.

Table 1: Frequency distribution of respondents based on eating frequency

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Eating freq.<2x a day (less)	99	53.2	53.2	53.2
	Eating freq. > 2x a day (good)	87	46.8	46.8	100.0
	Total	186	100.0	100.0	

Based on Table 1, it is known that of the 186 respondents studied, there are 99 respondents (53.2%) who have a frequency of eating < 2 times a day and 87 respondents (46.8%) who have a frequency of eating > 2 times a day. These results indicate that the majority of respondents eat more often than they eat well. The frequency of eating that is meant here is the frequency of eating three main meals a day (morning, afternoon, evening/evening).

According to Brunner and Suddarth (2014), the stomach produces gastric acid in small amounts naturally. After 4-6 hours after eating, usually, the level of glucose in the blood has been absorbed a lot so that the body will feel hungry, and at that time, stomach acid will be stimulated. If a person eats 2-3 hours late, more gastric acid is produced so that it can irritate the gastric mucosa and cause pain around the epigastrium. According to Suhardjo (2010), the frequency of eating is said to be good if the frequency of eating is three main meals a day or two main meals with one snack, and is considered less if the frequency of eating is two main meals a day or less so that there is a risk of gastritis.

An overview of the distribution of students' frequency of food types/varieties can be seen in Table 2.

Table 2: Distribution of respondents by type/variety of food

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Irritating foods	123	66.1	66.1	66.1
	Non-irritating foods	63	33.9	33.9	100.0
	Total	186	100.0	100.0	

Based on Table 2, it is known that of the 186 respondents studied, and there were 123 respondents (66.1%) who consumed irritating foods and 63 respondents (33.9%) who consumed

non-irritating foods. So the majority of respondents like foods with irritating types of food, such as spicy, sour foods, compared to non-irritating foods.

Brunner and Suddarth (2014) state that spicy and acidic foods can stimulate the stomach wall to secrete stomach acid, which in turn will decrease the strength of the stomach wall. This condition can cause injury to the stomach wall.

The description of the distribution of students' frequency of eating portions is shown in Table 3.

Table 3: Distribution of respondents based on food portions

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Total meal <300-500 grams (<3-5 plates of rice/day)	122	65.6	65.6	65.6
	Total meal 300-500 grams (=3-5 plates of rice/day)	64	34.4	34.4	100.0
	Total	186	100.0	100.0	

Based on Table 3, it is known that of the 186 respondents studied, and there are 122 respondents (65.6%) with a total meal of <300-500 grams or <3-5 plates of rice/day and 64 respondents (34.4%) with a total meal of 300-500 grams. 500 grams or > 3-5 plates of rice/day. The results of this study indicate that the majority of respondents have fewer food portions.

According to Sediaoetama (2010), the portion of food that is eaten every day must follow general guidelines for balanced nutrition, which is composed of 3-5 servings of staple food/day, 2-3 servings of side dishes/day, 2-3 servings of vegetables/day, and fruit 3-5 servings/day. According to Sulistyoningsih (2016), in compiling a balanced menu, knowledge of food ingredients is needed because the nutritional value of each food ingredient in each group is not the same. The recommended staple food group for students is 300-500 grams of rice or 3-5 plates of rice a day. For sides, 100 grams of animal side dishes or two pieces of fish or chicken. For vegetable side dishes, as much as 100-150 grams or 4-6 pieces of tempeh. Tempe can be replaced with tofu or dry beans. For the vegetable group in a day, 150-200 grams or as much as 1.5-2 bowls of mixed vegetables in a cooked state. The portion of fruit in a day 2-3 pieces can be papaya or other fruits.

An overview of the distribution of students' frequency of gastritis is shown in Table 4.

Table 4: Respondent distribution based on gastritis

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Gastritis	94	50.5	50.5	50.5
	No gastritis	92	49.5	49.5	100.0
	Total	186	100.0	100.0	

Based on Table 4, it is known that from 186 respondents who were studied, there were 94 respondents (50.5%) who had gastritis and 92 respondents (49.5%) who did not. The results of this study show that respondents who have gastritis are more than those who do not have gastritis.

According to Brunner and Suddarth (2014), the risk factors for gastritis include: 1) people who have irregular eating patterns, when the stomach must be filled but left empty or delayed filling, the stomach acid will digest the gastric mucosal layer, causing pain. 2) Contaminated with Helicobacter pylori, a gram-negative bacterium that can cause chronic inflammation of the stomach lining. 3) Eating 2-3 hours late can make gastric acid produced more and more so that it irritates the gastric mucosa. 4) Excessive consumption of spicy food can stimulate stomach acid. When it comes to young age, it is usually more related to an unhealthy lifestyle (Soetjiningsih, 2013). 5) psychological stress can increase the production of stomach acid, for example, in heavy workloads, panic, and haste. 6) Physical stress due to major surgery, injury, trauma, bile reflux burns, or severe infections can cause gastritis.

Various complaints as a result of gastritis are pain in the pit of the stomach, burning, bloating, nausea and vomiting, weakness, no appetite, shortness of breath, pale face, dizziness, belching, and other complaints. If not handled optimally, gastritis will develop into a peptic ulcer with complications of bleeding, gastric perforation, peritonitis, and death (Wijoyo, 2009 & Zakaria 2013).

In this study, as many as 49.5% of respondents answered that they never eat breakfast every day, 84.4% of respondents like spicy and instant food, 67.7% of respondents answered that ulcers recur when they are late to eat, 75.5% of respondents complain of heartburn and weakness when experiencing ulcers, 74% of respondents feel decreased appetite when experiencing ulcers, 65.6% of respondents complained of bloating, 53.1% of respondents' faces looked pale, 51% of respondents felt dizzy, 50.5% complained of burning in the stomach, 49.5% of respondents complained of nausea and vomiting, 43.2% of respondents experienced belching, 32.3% respondents feel shortness of breath, and 54.7% of respondents experience ulcers at least two times a month.

The relationship between eating patterns based on eating frequency with gastritis in nursing students at Klabat University can be seen in Table 5.

Table 5: The relationship between eating frequency and gastritis

			kategori_gastritis			
			ada gastritis	tidak ada gastritis	Total	P-value
kategori_frek_makan	Freq. of eating <2x a day (less)	Count	49	50	99	
		% of Total	26.3%	26.9%	53.2%	.947
	Freq. of eating > 2x a day (good)	Count	45	42	87	
		% of Total	24.2%	22.6%	46.8%	
Total		Count	94	92	186	
		% of Total	50.5%	49.5%	100.0%	

Table 5 shows the analysis of the relationship between eating frequency and gastritis in nursing faculty students, namely from 99 respondents at a frequency of eating < 2 times a day, there are 49 respondents (26.3%) who have gastritis and 50 respondents (26.9%) who do not have gastritis. While 87 respondents (46.8%) whose frequency of eating > 2 times a day were 45 respondents (24.2%) had gastritis and 42 respondents (22.6%) did not have gastritis. The results of statistical tests obtained p-value = .947 > 0.05, so it can be concluded that there is no significant relationship between the frequency of eating with gastritis, or there is no difference in the frequency of eating < 2 times a day and > 2 times a day.

Food is naturally processed in the body through the mouth to the intestines as a digestive tool. The duration of food in the stomach depends on the nature and type of food. If the average stomach is empty between 3-4 hours, then the frequency of eating <2 times a day can cause gastritis due to late eating (Brunner & Suddarth, 2014). However, in this study, 49.5% of respondents answered that they always eat lunch every day, and 40.6% of respondents answered that they like to snack, which means that even though the main meal frequency is < 2 times a day, if it is interspersed with eating snacks, stomach acid will still be controlled.

The results of this study are in line with research from Pratiwi (2013), where there is no relationship between food frequency and gastritis, with a p-value = 0.165. Likewise, research from Handayani and Thomy (2018), where the results also have no relationship between food frequency and gastritis, with a p-value = 0.165.

The relationship between eating patterns based on the type of food category with gastritis in nursing students at Klabat University can be seen in Table 6.

Table 6: Relationship between types of food and gastritis

			kategori_gastritis			
			ada gastritis	tidak ada gastritis	Total	P-value
kategori_jenis_ragam_makan	Type of irritaing foods	Count	59	64	123	
		% of Total	31.7%	34.4%	66.1%	.496
	Type of non-irritating foods	Count	35	28	63	
		% of Total	18.8%	15.1%	33.9%	
Total		Count	94	92	186	
		% of Total	50.5%	49.5%	100.0%	

Table 6 shows analysis of the relationship type/variety of food with gastritis in nursing faculty students, namely from 123 (66.1%) respondents on the type of irritating food there are 59 respondents (31.7%) who have gastritis and 64 respondents (34.4%) who do not have gastritis. As for the type of food that irritates the 63 respondents (33.9%), there are 35 respondents (18.8%) who have gastritis and 28 respondents (15.1%) who do not. The results of statistical tests obtained p-value = .496 > 0.05, so it can be concluded that there is no significant relationship between types/varieties of food with gastritis.

According to Sediaoetama (2010), spicy foods, vinegar, pepper are irritating foods because they are corrosive, so they can damage the gastric mucosa and cause edema and bleeding, which has the potential to cause gastric ulcers. According to Notoatmojdo (2017), consuming spicy and acidic foods in excess can cause heartburn, heartburn, nausea, and vomiting. These symptoms can make sufferers decrease their appetite and cause gastritis. In line with the writing of Smeltzer (2014) states that spicy and acidic foods can stimulate the stomach wall to secrete stomach acid, which in turn will reduce the strength of the stomach wall, not infrequently this condition can cause wounds so that gastritis occurs. In this study, there were 31.7% of respondents who consumed irritating foods such as spicy and sour foods had gastritis, and 34.4% of respondents consumed irritating foods but did not have gastritis. Researchers can assume why there is no relationship because as many as 88% of respondents make rice as a breakfast menu, and 82.3% of respondents answered trying to reduce ulcer symptoms by eating regularly.

The results of this study do not support research from Handayani and Thomy (2018) and research from Rantung, Kaunang, and Malonda (2019), where the results show a relationship between the type of food and gastritis with a p-value = 0.023.

The relationship between eating patterns based on food portion categories with gastritis in nursing students at Klabat University can be seen in Table 7.

Table 7: Relationship between food portions and gastritis

			kategori_gastritis			
			ada gastritis	tidak ada gastritis	Total	P-value
kategori_porsi_makan	Amount of food <300-500 grams (<3-5 plates of rice/day)	Count	62	60	122	
		% of Total	33.3%	32.3%	65.6%	.352
	Amount of food 300-500 grams (=3-5 plates of rice/day)	Count	32	32	64	
		% of Total	17.2%	17.2%	34.4%	
Total		Count	94	92	186	
		% of Total	50.5%	49.5%	100.0%	

Table 7 shows the analysis of the relationship between food portions and gastritis in nursing faculty students, namely from 122 respondents (65.6%) in the amount of food < 300-500 grams (< 3-5 plates of rice/day), there are 62 respondents (33.3%) who have gastritis and 60 respondents (32.3%) who did not have gastritis. While the amount of eating as much as 300-500 grams (> 3-5 plates of rice/day), there are 32 respondents (17.2%) who have gastritis and 32 respondents (17.2%) who do not. Statistical test results obtained p-value = .352 > 0.05, so it can be concluded that there is no significant relationship between food portions and gastritis.

Brunner and Suddarth (2014) theoretically explain that the stomach will continue to produce gastric acid in small amounts. After 4-6 hours after eating, usually, blood sugar levels will decrease because it is used by the body so that the body will feel hungry, and at that time, the amount of stomach acid will be stimulated. If a person eats 2-3 hours late, then stomach acid will be produced more and more. In this study, 33.3% of respondents in the category of eating <300-500 grams (<3-5 plates a day) had gastritis, and 32.3% of respondents did not. This shows a very small difference. So the researcher can assume that even though the category of eating < 300-500 grams, 72.9% of respondents consume 100 grams of animal protein a day, 62% of respondents answer that they consume 150-200 grams of vegetables a day, and 64.1% of respondents consume fruits 2-3 times a day. This is in accordance with the balanced menu portion of the students, plus respondents who like snacks/interludes, so the results found that there was no difference in meal portions with gastritis.

The results of this study are in line with research conducted by Handayani and Thomy (2018), as well as Rantung, Kaunang, and Malonda (2019), where the p-value = 0.436, which means that there is no relationship between eating portions and gastritis. However, another study by Syamsu, Rumpiati, and Rista (2017), whereas many as 72 respondents (75.8%) had food portions that were

not in accordance with eating recommendations so that many respondents experienced gastritis, the result of p-value = 0.000, i.e., there was a relationship between diet and incidence of gastritis.

CONCLUSIONS AND RECOMMENDATIONS

1. An overview of eating patterns based on the frequency of eating in nursing students at the University of Klabat as many as 99 respondents (53.2%) who have less eating frequency (< 2 times a day) compared to good.

2. The description of eating patterns based on the type of food in nursing students at Klabat University has as many as 123 respondents (66.1%) with irritating foods.

3. The description of eating patterns based on the portion of food for nursing students at the University of Klabat as many as 122 respondents (65.6%) with the number of meals < 300-500 grams (< 3-5 plates of rice/day).

4. Overview of the incidence of gastritis in nursing students at the University of Klabat as many as 94 respondents (50.5%) who experienced gastritis.

5. There is no significant relationship between eating patterns based on eating frequency with gastritis in nursing students at Klabat University, with a p-value of 0.947 > 0.05

6. There is no significant relationship between a diet based on the type of food and gastritis in nursing students at Klabat University, with a p-value of 0.496 > 0.05

7. There is no significant relationship between eating patterns based on portion sizes and gastritis in nursing students at Klabat University, with a p-value of 0.352 > 0.05

Furthermore, it is recommended for students to pay attention to the intake of types of food that can irritate the stomach, such as spicy, sour food, avoid instant or fast food, and have to eat breakfast every day. For educational institutions, it is recommended to provide education in the form of a balanced nutrition education curriculum in class or the installation of posters wall magazines regarding diet. The participation of lecturers or related people around to provide information about the right diet. Finally, the research area should be expanded, using a different research design, as well as the number of respondents being multiplied again, and adding other variables such as age, gender, cigarettes, alcohol, caffeinated and gassy drinks, and stress which is thought to be associated with gastritis.

REFERENCES

Ardiansyah, M. (2012). *Medical surgery for students.* Yogyakarta: Diva Press.

Arikunto, S. (2016). *The research procedure is a practical approach.* Jakarta: PT. Rineka Cipta.

Brunner & Suddarth. (2014). *Medical Surgical Nursing*. Jakarta: EGC.

Handayani, M. & Thomy, TA. (2018). The relationship between frequency, type and portion of food with the incidence of gastritis in adolescents. *Jurnal Kesehatan Saelmakers Perdana, Vol. 1* (2). http://ojs.ukmc.ac.id/index.php/JOH

Hidayah, Ainun. (2012). *Diet errors that trigger a number of deadly diseases*. Yogyakarta: Blue Book.

Hidayat, A.A.A. (2017). *Nursing and health research methods*. Salemba Medika.

Nage, E., Mujahid & Muzzakir. (2018). The relationship between diet and the occurrence of gastritis in patients treated at the Makassar City Hospital. *Jurnal Ilmiah Kesehatan Diagnosis, Vol 12* (4), p.442-447. http://www.ejournal.stikesnh.ac.id/index.php/jikd/article/view/795

Notoatmodjo, S. (2010). *Public health science.* Rineka Cipta.

Notoatmodjo, S. (2018). *Health research methodology*. Rineka Cipta.

Pereira, Mark. A. (2005). Breakfast habits, nutritional status, body weight, and academic performance in children and adolescents. *Journal of the American Dietetic Association, Vol 105* (5), p. 743-760. https://doi.org/10.1016/j.jada.2005.02.007

Potter & Perry. (2015). Nursing fundamentals textbook: concepts, processes and practices. Jakarta: EGC.

Pratiwi, W. (2013). *Relationship between diet and gastritis in adolescents at Daar El-Qolam Gintung Islamic Boarding School, Jayanti, Tangerang*. Fakultas Kedokteran dan Ilmu Kesehatan Universitas Islam Negeri Syarief Hidayatullah Jakarta. Skripsi.

Rantung, E.P, Kaunang, W.P.J, & Malonda, N.S.H. (2019). Factors influencing the incidence of gastritis in Ranotana Weru Public Health Center Manado City. *Jurnal e-Biomedik (eBm), Volume 7*(2). p.130-136. DOI: 10.35790/ebm.7.2.2019.24902.

Mahaji, P, Rona Sari, Hanum A.& Wulansari. (2010). Relationship between diet and the incidence of gastritis in patients at the University of Muhammadiyah Malang. *Jurnal Keperawatan, Vol.1*(2), p. 156-164. DOI: 10.22219/jk.v1i2.406

Sediaoetama, AD. (2010). N*utrition science*. Jakarta: Dian Rakyat.

Shalahuddin, Iwan. & Rosidin, Udin. (2018). Relationship between Diet and Gastritis in Adolescents at YBKP3 Garut Vocational High School. *Jurnal Kesehatan Bakti Tunas Husada, Vol 18* (1). https://garuda.ristekbrin.go.id/documents/detail/1084146

Smeltzer, S.C. (2015). *Brunner & Suddarth medical-surgical nursing textbook*. Jakarta: EGC.

Soetjiningsih. (2013). *Child development*. Jakarta: EGC.

Suhardjo (2010). *Food and nutrition planning*. Jakarta: Bumi Aksara

Sulistyoningsih, H. (2016). Nutrition for maternal and child health. Graha Ilmu: Yogyakarta.

Suparyanto. (2012). *Etiology and management of gastritis*. http://dr-suparyanto.blogspot.com/2012/02/etiologi-dan-penanganan-gastritis.html

Suratun, L. (2010). *Nursing care for clients with gastrointestinal disorders*, volume 1. Jakarta: FKUI.

Syamsu, DW., Rumpiati & Rista, EML. (2017). Relationship between Diet and Gastritis Incidence in Adolescents. *Global Health Science, Vol.2* (2). http://jurnal.csdforum.com/index.php/ghs

ISBN 978-623-99026-0-5

Wijoyo, M. Padmiarso. (2009).15 herbs to cure gastritis. Bee Media Indonesia. Jakarta.

Zakaria, Rama. (2013). *Knowledge of the right diet and attitude in preventing the recurrence of chronic gastritis in the working area of the Mlarak Public Health Center, Ponorogo.* KTI FIK Universitas Muhammadiyah. Ponorogo.