



Factors Associated with Gastritis Symptoms Among Collage Students

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Abstract. Gastritis is a global health issue affecting all age groups, including university students. This study aimed to identify dominant risk factors for gastritis among students in Medan City in 2024. An analytical observational study with a cross-sectional approach was conducted on 513 respondents selected through purposive sampling, with a minimum sample size of 286 based on the Lameshow formula. Data were analyzed using bivariate and multivariate methods to determine the relationship between independent variables and gastritis symptoms at a 95% significance level. The Chi-square test revealed a significant relationship between dietary patterns ($p = 0.021$) and stress ($p = 0.005$) with gastritis symptoms. Other variables, such as age, eating habits, residence, and sleep patterns, were not statistically significant ($p > 0.05$). Multivariate analysis showed diet as the most dominant risk factor ($OR = 3.045$). Nutrition education, healthy eating habits, and improved access to nutritious foods are essential to reduce gastritis prevalence among students.

Keywords: Gastritis, Risk factors, Diet, Stress patterns, College Students

1 Introduction

Gastritis or widely known as ulcer disease is one of the non-communicable diseases that is often found in various walks of life [8]. Gastritis is an inflammatory condition of the gastric mucosa that occurs due to infection with bacteria such as Mycobacterium and Helicobacter pylori. Common symptoms include nausea, vomiting, heartburn and headache [23]. The increasing incidence of ulcers indicates that this disease is still a global health problem. This is shown by data from the World Health Organization (WHO) in 2022 which recorded a high prevalence of ulcer disease in several regions, namely in Africa at 69%, South America 78%, and Asia 51%. Even globally, the number of ulcer sufferers reaches 1.8 to 2.1 million people each year. In Southeast Asia alone, there are around 583,635 cases [14]. In Indonesia, ulcer disease generally affects all age groups,

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but is most prevalent in productive age between 15 to 64 years. WHO states that the prevalence of ulcer disease in Indonesia reaches 40.8% [14]. Areas with high incidence rates include Medan (91.6%), Surabaya (31.2%), Denpasar (46%), Jakarta (50%), Bandung (32.5%), Palembang (35.3%), Aceh (31.7%), and Pontianak (31.2%) [19].

College students are one of the groups that are prone to ulcer disease, this is due to busy activities and high academic pressure. Irregular activities often lead to stress, poor diet, and low sleep quality [24]. Academic stress, the most common type of stress among college students, plays an important role in increasing the risk of ulcers [20]. Research suggests that individuals who experience psychological stress have a 3,240 times greater risk of developing an ulcer than those who do not experience stress ([21]). When stressed, the body will increase the production of stomach acid, accompanied by an irregular diet and insufficient rest [20].

Not only stress, poor diet is also a cause of gastritis. Irregular meal times, consumption of spicy food, fast food are identified as contributing factors [18]. A poor diet can trigger an increase in gastric acid secretion that irritates the mucosa. This condition is exacerbated by the stomach's inability to digest food properly [8]. Poor sleep patterns, which are common among college students, are also a risk factor that cannot be underestimated. Poor sleep quality can increase levels of pro-inflammatory cytokines that impair the protection of the gastric mucosa, making it more susceptible to irritation and inflammation [6]. In Indonesia, more than 90% of adolescents sleep less than 8-10 hours per night, while another 10% sleep less than 6 hours. Poor sleep quality has been shown to increase the risk of digestive diseases, including gastrointestinal [6]. Based on the above background, this study aims to determine and analyze the dominant risk factors for the incidence of gastritis in university students in Medan City.

2 Literature Review

Gastritis is a disease that often occurs in people who have an irregular diet. When the stomach is left empty, it causes stomach acid to digest the mucosal lining of the stomach, causing abdominal pain. The frequency of meals, type of food, and amount of food are important components of a diet [14]. Diet is a way of regulating the type and amount of food consumed according to the body's needs to maintain health, fulfill nutritional needs, and prevent disease [14].

A diet consists of three important components, namely the type of food, the frequency of eating, and the number or portion of meals. Meal frequency refers to how often a person eats, whether in the morning, afternoon, evening, or as a snack. The type of food consists of a variety of foods consumed every day, such as staple foods, animal side dishes, vegetable side dishes, vegetables, and fruits. The amount or portion is the amount of food consumed at each meal [1]. Research shows that students have a tendency to eat unhealthy foods; a research study showed that 97.9% of students had an eating pattern that contradicted the Healthy Eating Plate guidelines [3]. Poor diet, including meal irregularities, is

associated with an increased risk of Gastroesophageal Reflux Disease (GERD) in university students [2]. Busy activities also often lead to irregular eating patterns and are associated with functional dyspepsia, especially in medical students [25].

Stress is a psychophysical condition that arises due to a response to a challenging situation, both physically and psychologically [13]. Stress in college students is a serious problem triggered by various factors, and can be defined as a condition of excessive emotional or physical tension [26]. In university students, stress is often a risk factor for ulcer disease, especially when undergoing busy lecture activities and preparing a thesis. In students who are completing a thesis, excessive stress can increase the risk of recurrent ulcers up to 8.4 times when compared to individuals who do not experience stress [4]. Sleep is one of the factors that can affect health, and can increase the risk of obesity, diabetes, and heart disease if you have poor sleep quality. Factors that affect sleep quality include physical discomfort, psychological stress, heavy workload, and individual lifestyle [27]. Poor sleep quality is also associated with the risk of ulcer disease (gastritis). According to a previous study, gastritis was detected in 66.4% of patients undergoing gastroscopic examination. Logistic regression analysis revealed that the risk of gastritis was 6.935 times higher (confidence interval: 3.023-15.908) in individuals with poor sleep quality compared to individuals with good sleep quality. These findings reinforce the importance of maintaining healthy sleep patterns to prevent various health problems, including ulcer disease [6].

Gastritis results from inflammation of the gastric mucosa, caused by a variety of causes, including *Helicobacter pylori* infection, drug use, and ingestion of toxic substances [9]. Gastritis is a common condition that presents with symptoms such as epigastric discomfort, nausea, and vomiting [5]. Lifestyle factors, such as an irregular diet and stress, make a considerable contribution to the occurrence of gastritis [5]. Gastritis can affect anyone, especially students. This is evidenced by the results of a study that showed a high incidence of gastritis in university students [11].

3 Method

This study is an analytic observational study using primary data and a cross sectional approach. Research on the relationship between dietary factors, sleep patterns, and stress with ulcer disease in students in Medan city from May 30 to August 27, 2024. In this study, the number of samples used by researchers was 513 people, while the Lemeshow formula suggests a minimum sample size of 286 people. Although the number of research samples exceeds the minimum number suggested by the Lemeshow formula, the use of a larger sample can provide advantages in population representation. However, researchers need to pay attention to other factors such as the error rate, degree of diversity, cost, time, and energy available in determining the right sample size. In this study, gastritis symptoms are the dependent variable, and age, diet, place of residence, stress, and sleep are the independent variables. Data was collected through filling out questionnaires. Data analysis conducted in this study is univariate and bivariate

and multivariate analysis. In this study, the Chi-square test is used in the bi-variate analysis, whereas distribution and percentage are used in the univariate analysis. Multivariate analysis used regresi linear. The gastritis symptoms questionnaire passed the validity test with r count of 0.349, greater than the r table, and the reliability test with a Cronbach's alpha value of 0.828, which indicated that the instrument was reliable and appropriate for use in research.

4 Result

Table 1. Univariate Analysis

Variable	Sub Categories	n	%
Age	< 20 years	473	92.2
	≥ 20 years	40	7.8
Eating habits	Eat carelessly	206	40.2
	Not eat carelessly	307	59.8
Place of residence	Rent house alone	303	59.1
	Live with parents/family	210	40.9
Level of stress	Not good	494	96.3
	Good	19	3.7
Diet	Unhealthy	494	96.3
	Healthy	19	3.7
Sleep pattern	Not good	493	96.1
	Good	20	3.9
Gastritis symptoms	No	342	66.7
	Yes	171	33.3

A survey on the incidence of gastritis in students in the city of Medan was conducted on 500 students. Based on Table 1, it is known that of the 513 respondents, the majority are 20 years old, namely 473 people (92.2%) with catering eating habits as many as 206 respondents (40.2%) Furthermore, the stress level of students is not good as many as 494 respondents (96.3%). There is a poor diet as many as 494 respondents (96.3%), poor sleep patterns as many as 493 respondents (96.1%), respondents do not have symptoms of gastritis as many as 342 respondents (66.7%).

Based on table 2 with bivariate chisquare test to test the relationship between independent variables and dependent variables. The results showed that the six independent variables showed a significant relationship with a p-value ≤ 0.05, namely level of stress (p=0.005). While the variables of age (p=0.352), Eating Habits (p=0.610), residence (p=0.703), diet (p=0.021) and sleep pattern (p=0.107) have a p value ≥ 0.05 so there is no significant relationship to gastritis symptoms. Variables that had a p-value ≤ 0.025 were continued for multivariate testing.

Table 2. Bivariate Analysis

Variable	Sub Categories	Gastritis Symptoms		p-value
		Yes	No	
Age	< 20 years	155	318	0.352
	≥ 20 years	16	24	
Eating habits	Eat carelessly	66	140	0.610
	Not eat carelessly	105	202	
Place of residence	Rent house alone	103	200	0.703
	Live with parents/family	68	142	
Diet	Unhealthy	160	334	0.021
	Healthy	11	8	
Level of stress	Not good	159	335	0.005
	Good	12	7	
Sleep pattern	Not good	161	332	0.107
	Good	10	10	

Based on the results of the study presented in (Table 3), multivariate analysis was carried out with logistic regression tests, where the most dominant influence was Diet with a sig value (p-value) of 0.026 (<0.05) where diet had a partial effect on ulcer symptoms with an Exp(B)/Odd Ratio of 3.045. And Stress Pattern with a sig value (p-value) of 0.095 (<0.05) where Stress Pattern partially affects ulcer symptoms with an Exp(B)/Odd Ratio of 0.866.

Table 3. Results of Logistic Regression Analysis

Variable	B	S.E.	Sig.	AOR	95% CI for AOR	
					Lower	Upper
Diet	1.113	0.499	0.026	3.045	1.144	8.102
Level of Stress	0.824	0.494	0.095	2.281	0.866	6.005

The results showed that the age variable did not have a significant relationship with gastritis symptoms in university students [17]. This is supported by previous research which found no relationship between age and gastritis symptoms. This result was obtained because the age range of the study subjects were all in young adulthood (18-25 years old). Young adults are prone to gastritis in developing countries due to poor eating habits [22]. The highest Odds Ratio (OR) value in this study was recorded in the diet variable, which was 3.045. Students with a regular and nutritionally balanced diet have a lower risk of gastritis symptoms when compared to students who have an irregular diet or often consume spicy, sour, and high-fat foods. Diet plays an important role, with a fast diet, eating hot or moldy foods, and irregular eating habits can increase the risk of gastritis symptoms [7]. Spicy food and frequent tea consumption can aggravate symptoms [12]. Maintaining a balanced diet and adopting healthy living

habits are recommended for prevention. Stress is also an important risk factor [12]. When stress or an unhealthy lifestyle occurs, students with a regular diet will be better able to fight gastritis symptoms due to a more stable stomach condition, and conversely, students with an irregular diet will be more susceptible to gastric inflammation or the onset of gastritis symptoms due to disturbances in stomach acid balance. In line with previous research, there is a significant relationship between diet and the incidence of gastritis. Most people who often skip breakfast also like to drink coffee and love fast food such as junk food and spicy food. Therefore, to prevent gastritis, it is recommended to pay attention, apply, and increase the intake of healthy and nutritionally balanced food.

Stress has been identified as a significant risk factor for gastritis in various studies. Research shows a strong association between stress and gastritis recurrence [10]. According to [8] stress is one of the triggers for gastritis. The results of this study indicate a significant relationship between stress patterns and the incidence of gastritis in students with the highest Odds Ratio (OR) value also recorded after diet, which is 3.045. The results of this study support the research of [21] who found that stress is one of the risk factors for gastritis at the Pajang Surakarta Health Center. Research by [20] also found that there was a significant relationship between stress and gastritis symptoms in level IV students of the Nursing Program with a value of $r = 0.455$ ($p = 0.000$). High stress in students can increase the risk of gastritis symptoms compared to students who are able to manage stress well. Excessive stress can stimulate excess stomach acid production and disrupt the balance of the digestive system, resulting in gastritis symptoms such as heartburn and nausea. According to [20] stress can have an impact on a person's diet and rest time. It causes hormonal changes in the body and an increase in stomach acid which can lead to gastritis. These findings highlight the multifactorial nature of gastritis and the importance of stress management in its prevention.

Sleep patterns did not have a significant association with the incidence of gastritis. According to [6] those with poor sleep quality had a 6.935 (CI: 3.023-15.908) times greater risk of gastritis than those with good sleep quality. Generally, while irregular sleep can affect the immune system, in this case, gastritis symptoms were dominated by other factors such as diet and stress. This suggests that although students have poor sleep patterns, it does not directly aggravate or affect gastritis symptoms compared to other risk factors that are more dominant.

5 Conclusion

In this study it was found that the main problem in the occurrence of gastritis symptoms in students is a poor diet and a pattern of stress that is not maintained by students. It is recommended for students to do health counseling about the importance of maintaining a healthy diet and how to control stress well.

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