



FACTORS ASSOCIATED WITH GASTRITIS SYMPTOMS IN HIGH SCHOOL ADOLESCENTS

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ABSTRACT

Gastritis is an inflammatory process of the gastric mucosa and submucosa that, if not treated immediately, can lead to very dangerous complications. Adolescents often do not pay attention to their health because they are busy with school activities. This makes adolescents vulnerable to gastritis symptoms. Symptoms of gastritis that often appear include burning in the stomach, decreased appetite, heartburn, nausea, vomiting, bloating, and frequent burping. Factors causing gastritis include diet, age, knowledge, medications, stress, and bacteria. Objective: identify factors associated with gastritis symptoms in adolescents. Method: This study used a descriptive correlation research design using a cross-sectional approach. The population of this study was all first-grade and second-grade students in high school; the sample used totaled 112 students, and the sampling technique used was proportionate stratified random sampling. Data analysis in this study used univariate and bivariate analyses. The form of univariate analysis in this study is in the form of distribution and percentage, while the bivariate analysis uses the Chi-square test. Results: The results showed that adolescents in high school who experienced gastritis symptoms were 48 respondents (42.9%). Correlation test between age and gastritis symptoms obtained p-value 0.000, gender with gastritis symptoms obtained p-value 0.022, diet with gastritis symptoms obtained p-value 0.032, stress with gastritis symptoms obtained p-value 0.003, consumption of NSAID drugs with gastritis symptoms obtained p-value 0.000, and smoking with gastritis symptoms obtained p-value 0.246. Conclusions: Factors associated with gastritis symptoms in adolescents in high school include age, gender, diet, stress, and consumption of NSAIDs. As for smoking, it was not associated with gastritis symptoms in adolescents in high school.

Keywords: adolescents; diet; gastritis symptoms; medication consumption; smoking; stress

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INTRODUCTION

Gastritis, which is also known as stomach ulcers, is a condition where the stomach lining becomes inflamed due to irritation of the gastric mucosa (LeMone et al., 2016). Though it is sometimes dismissed as a mere inconvenience, gastritis can actually be the first sign of a serious illness that has a detrimental effect on a person's entire well-being. As a matter of fact, it can cause severe side effects, including malabsorption of vitamin B12, constriction of the pyloric antrum region, decreased iron absorption, and potentially fatal upper gastrointestinal haemorrhage. In extreme circumstances, gastritis can potentially lead to the development of peptic ulcers and stomach cancer (Maria Roesler, 2019).

Commonly observed symptoms of gastritis include a burning sensation in the stomach, decreased appetite, heartburn, nausea, vomiting, bloating, and frequent burping (Miftahussurur et al., 2021). The factors that contribute to gastritis include dietary habits, age, medication usage, stress, and bacterial infection. Research also suggests that chronic gastritis can stem from *Helicobacter pylori* infection, chronic bile reflux, stress, and immune disorders, while acute gastritis may be linked to prolonged use of non-steroidal anti-inflammatory drugs (NSAIDs) and alcohol consumption (Bachrudin & Najib, 2016). It is worth noting that gastritis is a condition that can affect individuals of all ages, from children to the elderly (Jannah, 2020). However, some studies indicate that a higher percentage of adolescents experience gastritis compared to other age groups (Asiki et al., 2020). This may be due in part to the fact that adolescents often prioritize school activities over healthy eating habits (Nurus et al., 2019). Additionally, many adolescents follow restrictive diets in an effort to achieve their desired body shape, particularly young girls who may feel pressure to lose weight quickly (Shalahuddin & Rosidin, 2018).

According to Kemala et al. (2023), an improper diet is often the primary cause of gastritis. Previous studies have linked diet to the incidence of gastritis among adolescents, and this is usually measured through questionnaires with yes or no options (Restiana, 2019). However, the most appropriate way to measure diet is through food record analysis. This method is commonly used to assess individual and family food intake (Gibson & Ferguson, 2008). The food record involves recording all food and drinks consumed over a 24-hour period (Gibson & Ferguson, 2008). Additionally, the use of non-steroidal anti-inflammatory drugs can significantly increase the risk of experiencing gastritis symptoms (Ismail et al., 2023). These drugs are commonly used and can lead to gastric distress, as well as other serious issues such as upper gastrointestinal bleeding and gastric perforation. Stress is also a factor that plays a significant role in the development of gastritis (Ismail et al., 2023). Some sources suggest that smoking may also increase the incidence of gastritis, as the nicotine in cigarettes can damage the blood vessels in the stomach wall (Astuti & Wulandari, 2020).

School nurses play a critical role in promoting the health of school-aged children, working across multiple settings including homes, schools, and families (Holmes et al., 2016). By identifying children who may be at risk of health concerns early on, school health nurses can help ensure timely intervention and support (Doi et al., 2018). Furthermore, school health nursing programs have been shown to enhance children's overall health and well-being (Doi et al., 2018). Earlier studies have highlighted that certain factors can affect the likelihood of gastritis in adolescents, such as age, gender, diet, and food type (Rantung & Malonda, 2019). More recent research by Maidartati et al. (2021) has revealed that in addition to these factors, gastritis in adolescents is also linked to diet, coffee consumption, smoking, and anxiety. Interestingly, no significant relationship was found between gender and gastritis in this study (Maidartati et al., 2021). Therefore, further investigation is necessary to determine the precise factors that contribute to gastritis symptoms in adolescents.

METHOD

A cross-sectional method was employed in this study's descriptive correlation research design. This study has received ethical approval from Aisyiyah University Bandung, with letter number 761/KEP.01/UNISA-BANDUNG/IV/2024. In this study, gastritis symptoms are the dependent variable, and age, gender, diet, use of NSAIDs, stress, and smoking are the independent variables. The first and second graders in high school made up the study's population. Compound stratified random sampling was employed in this investigation, with a total of 112 respondents making up the sample. The selection of respondents is determined

using the absence number entered into the roulette application. The absentee number that comes out will be selected as the respondent. Bivariate and univariate analyses were used in this study's data analysis. In this study, the Chi-square test is used in the bivariate analysis, whereas distribution and percentage are used in the univariate analysis. Four types of instruments were used: a food record, a stress questionnaire, an NSAID usage questionnaire, and a questionnaire on symptoms of gastritis. The gastritis symptoms questionnaire passed the validity test with a r count of 0.339, greater than the r table, and the reliability test with a Cronbach's alpha value of 0.928, which indicated that the instrument was reliable and appropriate for use in research. The stress questionnaire yielded a reliability test Cronbach's alpha score of 0.950 and a r count of 0.429-1 for its validity. The NSAID medication usage questionnaire had a Cronbach's alpha score of 0.720 and an r count greater than 0.514.

RESULTS

Table 1.
Respondent characteristics (n= 112)

Respondent characteristics	f	%
Age		
15 years old	12	10.7
16 years old	60	53.6
17 years old	40	35.7
Gender		
Male	56	50.0
Female	56	50.0
Diagnosed history of gastritis		
Yes	8	7.1
No	104	92.9
Body Mass Index (BMI)		
Underweight	12	10.7
Normal	96	85.7
Overweight	4	3.6
Symptoms of gastritis		
Available	48	42.9
Not available	64	57.1
Diets		
Healthy	45	40.1
Less healthy	63	56.3
Unhealthy	4	3.6
Stress Level		
Heavy	4	3.6
Medium	39	34.8
Normal	69	61.6
NSAIDs consumption		
Using	26	23.2
Not using	86	76.8
Smoking history		
Smoking	1	0.9
Not smoking	111	99.1

Table 1. demonstrates the traits of the study's respondents. Adolescents between the ages of 15 and 17 made up the study's respondents, with the majority (53.6%) being 16 years old. Based on gender, the number is equal between male adolescents and female adolescents. Adolescents who had a history of gastritis diagnosis by a doctor were only 8 respondents (7.1%), while adolescents who experienced gastritis symptoms were 48 respondents (42.9%). Characteristics based on BMI: the majority of adolescents were in the normal category, but adolescents who had a healthy diet were only 45 respondents (40.2%). Based on stress level, the majority of adolescents in this study were at a normal level; 69 respondents (61.6%). Adolescents who

consumed NSAID drugs were only 26 respondents (23.2%), and the majority of adolescents in this study did not smoke (99.1%).

Table 2.
Correlation Test between Age, Gender, Diet, Stress, NSAIDs consumption, and Smoking with Gastritis Symptoms (n=112)

Dependent Variabel	Gastritis Symptoms						<i>p-value</i>	Correlation coefficient
	Available		Not available		Total			
	f	%	f	%	f	%		
Age								
15 years old	3	25.0	9	75.0	12	10.7	.000	.349
16 years old	18	30.0	42	70.0	60	53.6		
17 years old	27	67.5	13	32.5	40	35.7		
Gender								
Male	18	32.1	38	67.9	56	50.0	.022	.212
Female	30	53.6	26	46.4	56	50.0		
Diet								
Healthy	13	28.9	32	71.1	45	40.1	.032	.241
Less healthy	32	50.8	31	49.2	63	56.3		
Unhealthy	3	75.0	1	25.0	4	3.6		
Stress								
Heavy	3	75.0	1	25.0	4	3.6	.003	.306
Medium	24	61.5	15	38.5	39	34.8		
Normal	21	30.4	48	69.6	69	61.6		
NSAIDs consumption								
Using	21	80.8	5	19.2	26	23.2	.000	.388
Not using	27	31.4	59	68.6	86	76.8		
Smoking history								
Smoking	1	100.0	0	0.0	1	0.9	.246	-
Not Smoking	47	42.3	64	57.7	111	99.1		

Table 2. displays the findings of the Chi-square test correlation between the independent and dependent variables. First, the age and gastritis symptoms correlation test yielded a *p-value* of 0.000, indicating a relationship, and a correlation coefficient of 0.349, indicating a weaker relationship between the two variables. Age-wise, 17 is the age at which the majority of teenagers with symptoms of gastritis (67.5%) present. Second, a *p-value* of 0.022 was achieved in the correlation test between gender and symptoms of gastritis, indicating a link between the two. With a correlation coefficient of 0.212, the association is deemed to be weaker. According to the findings, female adolescents were more likely than male adolescents to exhibit symptoms of gastritis (53.6%). Third, there appears to be a relationship between diet and symptoms of gastritis, as indicated by the correlation test's *p-value* of 0.032. The obtained correlation coefficient of 0.241 indicates a weaker association between the two variables. The majority of teenagers with symptoms of gastritis (50.8%) had less nutritious diets, according to the statistics. Fourth, there is a relationship between the two variables, as indicated by the correlation test's *p-value* of 0.003 between stress and symptoms of gastritis. With a correlation coefficient of 0.306, these two variables have a weaker link with one another. According to the study's findings, 24 respondents, or 61.5%, reported having moderate levels of stress when they developed symptoms of gastritis. Fifth, there is evidence to support the existence of a correlation between NSAID intake and gastritis symptoms, as indicated by the correlation test result of *p-value* 0.000. The two variables have a weaker association, as indicated by the correlation coefficient of 0.388 that was found. Twenty-one (80.8%) of the study's teenage participants took NSAIDs and developed symptoms of gastritis. Sixth, there is no association between smoking and gastritis symptoms in adolescents, according to a correlation test that found a *p-value* of 0.246.

DISCUSSION

The Association between Age and Gastritis Symptoms

All of the study's respondents are in the early stages of adolescence because their ages range from 15 to 17. Age and gastritis symptoms are related, according to the correlation test with Chi-square test findings, which had a *p-value* of 0.000. The correlation value between these two factors is 0.349, indicating a weak association between age and symptoms of gastritis. This is in line with research conducted by Maidartati et al. (2021), who found that age is related to gastritis symptoms because adolescents want to maintain ideal body proportions and are very afraid of fat. This ultimately affects the frequency of eating among adolescents, who often avoid breakfast and dinner or only eat once a day. Nurus et al. (2019) also found that most respondents (85.7%) were in the early adolescent category. Research conducted by Rantung & Malonda (2019) found that the majority of respondents who experienced gastritis (62.7%) were aged more than 16 years, for a total of 64 people.

The Association between Gender and Gastritis Symptoms

In the analysis with the Chi-square test on gender and gastritis symptoms, the *p-value* was 0.022. This shows that there is a relationship between gender and gastritis symptoms, and the correlation coefficient value generated from this test is 0.212, meaning that the strength of the relationship between the two variables is low. Based on the research, it was found that respondents who experienced gastritis were more likely to be female respondents. Shalahuddin & Rosidin's (2018) research also states that adolescent girls experience gastritis symptoms more often because they often go on the wrong diet to get an ideal body. This is in accordance with Rukmana's research (2019), which identified that women more often suffer from gastritis because they often over-diet, eat irregularly, and more emotional than men. This is also in line with research conducted by Rantung & Malonda (2019), where there is a relationship between gender and the incidence of gastritis. The odd ratio results show that females are 6.667 times more likely to experience gastritis than males. In other words, women have a higher risk of experiencing gastritis.

The Association between Diet and Gastritis Symptoms

A correlation between diet and symptoms of gastritis in teenagers was found by the Chi-square test analysis, yielding a *p-value* of 0.032. The correlation coefficient that is obtained is 0.241, indicating a weaker association between the two variables. The study's conclusions indicate that adolescents with gastritis typically have a less healthy diet (35 respondents, or 52.2 percent) in total. The results of this study are in accordance with the research of Wulandari and Saeful (2021), which obtained a *p-value* of 0.000, meaning that there is a relationship between diet and the incidence of gastritis in adolescents. Research by Maidartati et al. (2021) also received a *p-value* of 0.000 in the correlation test between diet and gastritis incidence, which means that there is a relationship between the two variables. Indonesians eat three times a day: breakfast, lunch, and dinner. Food is essential for growth and development, especially during adolescence. Consuming food that is lacking, both in quantity and quality, will result in metabolic disorders in the body, which will certainly lead to a disease (Arikah & Muniroh, 2015). An irregular diet causes an imbalance in the body; this anomaly is related to the timing of meals. Usually the stomach condition is too hungry, but sometimes it is too full, which causes the stomach and digestion to be disturbed (Tina et al., 2019). Based on the odd ratio, it was found that respondents with poor eating frequency had a 0.469 times higher chance of experiencing gastritis than respondents with good eating frequency (Rantung & Malonda, 2019). The odd ratio test results by Diliyana and Utami (2020), showed that respondents with a less healthy diet had a one-time greater chance of developing gastritis compared to respondents with a healthy diet.

The Association between Stress and Gastritis Symptoms

Analysis of the relationship between stress and gastritis symptoms obtained a *p-value* of 0.003, which means there is a relationship, and The correlation coefficient between these two variables is 0.306, which means that the strength of the relationship between the two variables is low. Based on these results, it can be identified that the higher a person's stress level, the higher the risk of experiencing gastritis symptoms. In the results of the study, it was found that the majority of respondents who experienced gastritis were at a moderate stress level, namely as many as 24 (50%). The body will release angiotensin II during stressful conditions, which causes reduced blood flow to the gastric mucosa and the formation of reactive oxygen species (ROS). Reduced blood flow makes the stomach more susceptible to ulceration due to pepsin acid and acid hypersecretion (Miftahussurur et al., 2021). This study is in accordance with the research of Ismail et al. (2023), which says that stress is a factor that causes gastritis. This is also supported by the theory of Robbins et al. (2013) that the factors that cause gastritis include diet, age, knowledge, drugs, stress, and bacteria. Arifiansyah et al.'s research (2022) also found that there was a relationship between stress and gastritis symptoms and obtained a *p-value* of 0.000. Stress is the physiological, psychological, and behavioural response of individuals trying to adapt to and regulate internal and external pressures. Stress is a specific reaction whenever there is a burden or demand. As a student, the various academic and social pressures that accompany an adolescent's life can cause stress (Arifiansyah et al., 2022).

Researching the Association between NSAIDs consumption and Gastritis Symptoms

The association between drug use and gastritis symptoms was examined by an analysis employing the Chi-square correlation test. NSAID drug use and symptoms of gastritis were significantly associated, as seen by the data, which had a *p-value* of 0.000. It was discovered that there was little link between these two variables; 0.388 was the correlation coefficient.. These findings suggest that NSAID drug consumption is linked to gastritis symptoms in adolescents, which is consistent with previous research conducted by Ismail et al. (2023), who found that individuals who are dependent on non-steroidal anti-inflammatory drugs have a 6.3 times higher risk of experiencing gastritis than those who are not dependent. Rukmana's research (2019) also supported these findings by demonstrating a significant association between NSAID consumption and gastritis recurrence with a *p-value* of 0.002. As NSAIDs are commonly used by the general public, it is important to note that gastric disorders such as upper gastrointestinal bleeding and gastric perforation are common side effects of these drugs (Ismail et al., 2023).

Investigating the Association between Smoking and Gastritis Symptoms

There is no significant correlation between smoking and gastritis symptoms, according to the results of the Chi-square test, which was used to investigate this link. The *p-value* for the test was 0.246. It is important to keep in mind, though, that the study only included one respondent who reported smoking, and the samples of smokers were small. The results of this study are similar to research conducted by Yusfar and Ariyanti (2019), namely that there is no relationship between smoking and gastritis symptoms in adolescents in high school with a *p-value* of 0.124. These results contradict the findings of Maidartati et al. (2021) who found a weak correlation between smoking and the incidence of gastritis in adolescents with a *p-value* of 0.012. It is important to note that cigarette consumption can increase stomach acid levels, slow healing, and increase the risk of developing stomach cancer.

CONCLUSION

Our research has led us to conclude that factors associated with gastritis symptoms in adolescents in high school include age, gender, diet, stress, and consumption of NSAIDs. For the smoking factor, it was not associated with gastritis symptoms experienced by adolescents in senior high school. Among 112 respondents, 48 (42.9%) experienced gastritis symptoms in high school. However, only 8 (7.1%) of them had been diagnosed with gastritis by a doctor. This suggests that many respondents may not have sought medical help for their symptoms.

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