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The Relationship Between Dietary Patterns and Stress and the Incidence of Gastritis at the Catherine Booth Clinic in Amurang

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ABSTRACT

Gastritis, as one of the most common digestive health problems, affects all age groups, from adolescents to the elderly. Factors that trigger gastritis include eating patterns, smoking habits, coffee consumption, stress, and the use of NSAIDs (Nonsteroidal Anti-Inflammatory Drugs). In 2024, there were 204 patients who experienced gastritis, and from July to September 2025, there were 121 patients who experienced gastritis at the Catherine Booth Amurang Clinic. The purpose of this study is to determine the relationship between dietary patterns and stress with the incidence of gastritis at the Catherine Booth Amurang clinic. This research is a quantitative study using an analytical survey with a cross-sectional approach. This research was conducted at the Catherine Booth Clinic in Amurang, South Minahasa Regency, North Sulawesi, from May to October 2025. The population in this study consists of all outpatient patients at the Catherine Booth Clinic in Amurang from July to September 2025, totaling 3,184 people. The sample size is 100 people, selected using purposive sampling technique. The research instruments were questionnaires, and the data were analyzed using univariate and bivariate analysis with the Chi-Square test. The research results show a relationship between dietary patterns and the occurrence of gastritis (p value 0.000) and stress and the occurrence of gastritis (p value 0.000). Based on these results, it can be concluded that there is a relationship between dietary patterns and stress and the occurrence of gastritis.

INTRODUCTION

Gastritis is a disease caused by inflammation of the gastric mucosa. In the community, gastritis itself is better known as ulcers or heartburn that appears suddenly. In general, gastritis can be both acute and chronic. Gastritis can be acute if it appears suddenly or suddenly and can be chronic if it occurs for months or even years (Rohmah, 2024).

The causes of gastritis are poor diet, medications, alcohol, bacterial infections, stress and disease. In addition, a heavy workload coupled with endless life problems can also affect a person to develop gastritis (Sylvia & Suwahyu, 2024). Before the onset of gastritis, gastritis sufferers will feel some of the symptoms that usually occur in gastritis sufferers before gastritis itself appears. Symptoms of gastritis can usually be recognized when the person with gastritis feels pain, pain such as burning in the upper abdomen and the pain can get better or even worse when eating. According to Rohmah (2024), symptoms of gastritis that usually appear such as nausea, vomiting, loss of appetite, flatulence, feeling sore and full in the upper abdomen after eating, and can experience weight loss.

Factors that trigger gastritis such as diet, smoking habits, coffee consumption, stress, and the consumption of OAINS (Non-Steroidal Anti-Inflammatory Drugs). Diets such as eating frequency and poor and irregular types of food can cause a person to easily develop this disease. An irregular diet results in stomach acid digesting the stomach mucosal layer, causing pain experienced by gastritis sufferers (Yang *et al*., 2020).

Gastritis is one of the most common digestive tract health problems in all age groups, from adolescents to the elderly. The incidence of gastritis occurs due to an unhealthy lifestyle such as irregular diet, long-term consumption of painkillers, coffee consumption, alcohol, smoking, physical stress, psychological stress,

autoimmune disorders*, chrone disease,* bile reflux *disease*, bacterial infections and other diseases such as HIV/AIDS, parasitic infections and liver or kidney failure. Symptoms that arise in gastritis are an unpleasant taste felt in the stomach, bloating, headache, nausea and a layered tongue (Tilla, Arneliwati & Zulfitri, 2024).

Data from *the World Health Organization* (2020) shows that the population of gastritis patients aged 25 to 34 years is 0.1%, gastritis patients aged 35-54 are 0.2%, gastritis patients aged 55 to 74 are 1.4%, and gastritis is 12.2% and gastritis is 12.2%. At a productive age, a person ranges from experiencing gastritis because it is caused by a level of busyness, a lifestyle that does not pay attention to health, and also stress easily occurs (Mustika, 2021). In several countries in the world, the percentage of gastritis incidence is 22%, China is 31%, Japan is 14.5%, Canada is 35%, and France is 29.5%. The incidence of gastritis in the world ranges from 1.8-2.1 million of the total population each year.

In Southeast Asia alone, the incidence of gastritis is around 583,635 of the total population every year. The incidence of gastritis in Indonesia is 40.8%. The incidence rate of gastritis in several regions in Indonesia is quite high with a prevalence of 274,396 cases from 238,452,952 residents (Putra & Wardhani, 2023).

The results of a survey at the North Sulawesi Health Office recorded that in 2021 the number of gastritis sufferers was 29,260 cases (Kuna & Mokodompit, 2023). Based on the information obtained, gastritis is included in the category of the 10 most diseases at Catherine Booth Amurang Clinic and other diseases include essential hypertension (primary), acute respiratory tract infections, dyspepsia, diabetes mellitus, low vision in both eyes, diarrhea and gastroenteritis which are suspected to be caused by infections, chronic ischemic heart disease, myalgia and viral infections.

In 2023 there will be 223 gastritis patients, in 2024 there will be 204 patients who experience gastritis and in 2025 throughout July – September there will be 121 patients who experience gastritis at the Catherine Booth Amurang Clinic. Based on this data, the average monthly visits of gastritis patients at the Catherine Booth Amurang Clinic show fluctuations, namely 16 patients per month in 2023, 17 patients per month in 2024, and increase to 22.5 patients per month in 2025. The increase in average visits by 32.4% from 2024 to 2025 indicates that there is a higher case burden and requires serious attention from the local clinic and health office.

Cases of gastritis usually occur due to irregular eating frequency so that the stomach becomes sensitive when stomach acid increases. An irregular diet will cause the stomach to have difficulty adapting, if this continues continuously, there will be excess stomach acid so that it can cause irritated gastric mucosa and gastritis (Sumatra, 2020).

Stress adversely affects the neuroendocrine work of the digestive tract, so there is a risk of gastritis. In stressful situations, such as workload, panic and rush, gastric secretions will increase beyond normal. This decrease in gastric pH due to gaster hypersecretion can irritate the gastric epithelium and cause inflammation and if left untreated, the individual can suffer from gastritis at any time. As well as some people, stress is usually unavoidable. Because on that basis, the key is to control it effectively, which is susceptible to psychological distress (Antony *et al*, 2022). Stress factors are also seen in daily activities, both work and education. Being referred and the demands of life are increasing with existing problems, being busy with work and education makes a person think more and feel stressed, so that his diet is irregular or eats unhealthy foods and sometimes eats something unhealthy that can irritate the stomach. Stress can also cause various other problems and are prone to disease, especially triggering the occurrence of Gastritis (Rizka Ausrianti, 2019).

The occurrence of gastritis can be prevented by eating regularly, eating small and frequent portions, avoiding taking over-the-counter medications, but must use a doctor's recommendation or prescription. Don't smoke because the nicotine in cigarettes stimulates stomach acid to come out more. Avoid alcoholic beverages, alcohol irritates and erodes the mucosal lining in the stomach and results in bleeding. Live a healthy and balanced life by eating healthy food, not excessively, and also balancing it with rest and exercise (Tilla, Arneliwati & Zulfitri, 2024).

Research by Sylvia & Suwahyu (2024) found that 54.3% with acute gastritis, 60.0% with a good diet and 60.0% with mild stress. Bivariate results were obtained that there was a relationship between diet and stress with the incidence of gastritis, *the p value* of the two variables was 0.00. Based on research conducted by Aritonang (2021) on gastritis patients at Dr. Pirngadi Hospital Medan in 2020, it was found that there was a relationship between stress and the frequency to gastritis recurrence with values of p=0.002 and r=0.732 which means there is a strong relationship, diet is related to the frequency to gastritis recurrence with *a p-value* = 0.009 and r=-0.645 which means there is a strong relationship, obtained by using *the Spearman Rank* test. Research from Sartika *et al*. (2020) also showed a significant relationship between diet (*sig*.=0.002) and stress level (*sig*.=0.000) with the incidence of gastritis in outpatients at the Pajang Health Center in Surakarta.

On the other hand, research from Firdausy *et al*. (2021) showed that there was no significant relationship between diet and the incidence of gastritis with *a p value* = 0.565. Research from Lola & Fachrin (2024) also found no significant relationship between stress levels and gastritis symptoms (p=0.552) in nurses at Labuang Baji Makassar Hospital. Research from Shofah & Widiyawati (2022) also found a similar thing where stress levels (p=0.213) and diet (p=0.134) did not have a significant relationship with the incidence of gastritis.

The inconsistency of these results suggests that the relationship between diet and stress with gastritis is likely influenced by different location, time, population, and research method characteristics. In addition, these studies are generally conducted on the islands of Java, Sumatra, and South Sulawesi, while in the North Sulawesi region, especially South Minahasa Regency, similar research has never been carried out. The latest data from the Catherine Booth Amurang Clinic shows a fluctuating trend of gastritis cases with an increase from 204 cases (2024) to 270 cases (2025). Therefore, this study is important to confirm the relationship between diet and stress and the incidence of gastritis in different locations and time periods, as well as to provide local evidence as the basis for public health interventions at the Catherine Booth Amurang Clinic.

This research has a high urgency for several reasons. First, gastritis not only causes physical discomfort but also has an impact on decreased productivity, especially in the productive age group (18–35 years) which dominates patients in these clinics. Second, if not treated properly, chronic gastritis can develop into serious complications such as peptic ulcers, gastrointestinal bleeding, and even an increased risk of gastric cancer. Third, the absence of local evidence-based data on dietary factors and stress as determinants of gastritis in the South Minahasa Regency area has resulted in prevention and intervention programs that have been carried out so far have not been fully on target. Therefore, this study is important to provide scientific evidence that can be used as a basis for planning more effective public health programs at the Catherine Booth Amurang Clinic.

METHODS

Types of Research

This research is a type of quantitative research using an analytical survey with *a cross sectional* approach. The *cross sectional* approach is a type of research that emphasizes the measurement or observation time of independent and dependent variable data only once at the same time with the aim of describing the status of a phenomenon or relationship at a certain point in time (Nursalam, 2020). The *cross sectional approach* is used to look at the relationship (association) between independent variables (diet and stress) and dependent variables (gastritis incidence), not to prove an absolute causal relationship. The design of this study was to determine the relationship between diet and stress and the incidence of gastritis at the Catherine Booth Amurang Clinic.

Place and Time of Research

This research was carried out at the Catherine Booth Amurang Clinic, South Minahasa Regency, North Sulawesi. This research was carried out in May - November 2025.

Population and Sample

The population in the study is a subject (e.g. human; client) who meets the criteria that have been set (Nursalam, 2020). The population in this study is all outpatients at the Catherine Booth Amurang Clinic in July – September 2025 which totals 3,184 people. The sampling technique used in this study uses *the purposive sampling* technique, which is a carefully selected sampling method so that it is relevant to the research structure, where sampling by sampling people selected by the author according to specific characteristics and certain characteristics.

Data Analysis

Univariate Analysis

The purpose of univariate analysis is to describe the characteristics of each variable studied. Univariate analysis (percentage analysis) is an analysis used to obtain an overview of the distribution of respondents and describe independent variables and bound variables.

Bivariate Analysis

Bivariate analysis is carried out to find out the relationship between two variables so that there will be a significant difference between two or more variables. This study used bivariate analysis to find out whether or not there is a relationship between diet and the incidence of gastritis, and whether or not there is a relationship between stress and the incidence of gastritis. Independent bivariate analysis was analyzed using *the chi square* test because independent and dependent variables are categorical. The chi *square test* was performed to see whether there was an association between two variables with a confidence level of 95% or α=5% (0.05).

RESULTS

Univariate Results

Age

Table 1. Frequency Distribution of Respondent Characteristics

Respondent Characteristics	n	%
Age		
18 - 35 years old	73	73,0
36 - 54 years old	27	27,0
Total	100	100,0
Gender		
Women	63	63.0
Male	37	37.0
Total	**100**	**100,0**

Based on table 1, it shows that out of 100 respondents by age, most respondents aged 18-35 years amounted to 73 people (73.0%), while respondents aged 36-54 years amounted to 27 people (27.0%). By gender, most of the female respondents were 63 people (63.0%) and the male respondents were 37 people (37.0%)

Incidence of Gastritis

Table 2 Distribution of Respondent Frequency Based on Gastritis Incidence

Incidence of Gastritis	n	%
No	61	61.0
Yes	39	39.0
Total	**100**	**100**

Based on table 2, it shows that out of 100 respondents, most of the respondents did not experience an incidence of gastritis, totaling 61 people (61.0%). Meanwhile, the respondents who experienced the incidence of gastritis amounted to 39 people (39.0%).

Diet

Table 3 Frequency Distribution of Respondents Based on Diet

Diet	n	%
Good	54	54.0
Bad	46	46.0
Total	**100**	**100,0**

Based on table 3, it shows that out of 100 respondents, most of the respondents with a good diet amounted to 54 people (54.0%). Meanwhile, respondents with poor diets amounted to 46 people (46.0%).

Stress

Table 4. Distribution of Respondent Frequencies Based on Stress

Stress	n	%
Lightweight	59	59.0
Weight	41	41.0
Total	**100**	**100,0**

Based on table 4, it shows that out of 100 respondents, most respondents experienced mild stress totaling 59 people (59.0%). Meanwhile, respondents who experienced severe stress amounted to 41 people (41.0%).

Bivariate Results

The Relationship of Diet to the Incidence of Gastritis

From the results of the research conducted, the results of cross-tabulation of the relationship between diet and the incidence of gastritis were obtained as follows:

Table 4. Distribution of the Relationship between Diet and Gastritis

Diet	Incidence of Gastritis				Total		OR	95% CI	p-value
	Yes		No						
	n	%	n	%	n	%			
Good	8	14,8	46	85,2	54	100,0	1 (ref)	4,55-31,04	0,000
Bad	31	67,4	15	32,6	46	100,0	11,8		
Total	**39**	**39,0**	**61**	**61,0**	**100**	**100,0**			

Based on table 5, it shows that of the 54 respondents who had a good diet, most did not experience gastritis, namely 46 people (85.2%), while 8 respondents (14.8%) experienced gastritis. Meanwhile, of the 46 respondents who had a poor diet, most of them experienced gastritis, namely 31 people (67.4%), while respondents who did not experience gastritis were 15 people (32.6%). These results showed that the incidence of gastritis was more common in respondents with a poor diet than in respondents with a good diet.

The results of statistical analysis using the Chi-Square test obtained a value of p=0.000 (<0.05), which means that H0 is rejected and Ha is accepted. Thus, there is a significant relationship between diet and the incidence of gastritis in patients at the Catherine Booth Amurang Clinic.

In addition, the results of *the Odds Ratio* (OR) analysis obtained a value of 11.8 with a 95% *Confidence Interval* (CI) of 4.55–31.04. This shows that respondents who have a bad diet have an 11.8 times greater risk of developing gastritis than respondents who have a good diet. A *confidence interval* value that does not pass the number 1 indicates that the relationship is statistically significant.

The Relationship of Stress to the Incidence of Gastritis

From the results of the research conducted, the results of cross-tabulation of the relationship between stress and the incidence of gastritis were obtained as follows:

Table 5. Distribution of the Relationship between Stress Levels and Gastritis

Stress Level	Incidence of Gastritis				Total		OR	95% CI	p-value
	Yes		No						
	n	%	n	%	n	%			
Weight	31	75,6	10	24,4	41	100.0	1 (ref)	7,05-55,43	0,000
Lightweight	8	13,6	51	86,4	59	100.0	19,76		
Total	**39**	**39,0**	**61**	**61,0**	**100**	**100,0**			

Based on table 6, it shows that of the 41 respondents who experienced severe stress, most experienced the incidence of gastritis, namely 31 people (75.6%), while respondents who did not experience gastritis were 10 people (24.4%). Meanwhile, of the 59 respondents with mild stress levels, most did not experience gastritis, namely 51 people (86.4%), while 8 respondents experienced gastritis (13.6%). These results showed that the incidence of gastritis was more common in respondents with severe stress levels than in respondents with mild stress levels.

The results of statistical analysis using *the Chi-Square test* obtained a value of p=0.000 (<0.05), which means that H0 is rejected and Ha is accepted. Thus, there is a significant relationship between stress levels and the incidence of gastritis in patients at Catherine Booth Amurang Clinic.

In addition, the results of the *Odds Ratio* (OR) analysis obtained a value of 19.76 with a 95% *Confidence Interval* (CI) of 7.05–55.43. This shows that respondents who experienced severe stress levels had a 19.76 times greater risk of developing gastritis than respondents with mild stress levels. A *confidence interval* value that does not pass the number 1 indicates that the relationship is statistically significant.

DISCUSSION

The Relationship of Diet to the Incidence of Gastritis

The results of the study show that diet is related to the incidence of gastritis where a person who has a poor diet has a chance of developing gastritis. Indonesians generally eat 3 meals a day. A person's habit often does not pay attention and care about meal times and even does not eat as usual, making the stomach empty for a long time (Yuliarsih, 2022). One of the changes in lifestyle due to modernization is seen in an unhealthy diet. Indonesian people usually consume food irregularly or unevenly (Pelealu, Moleong, & Pongoh, 2021).

Diet is a person's way or habit of consuming food that is done repeatedly. Many factors affect a person's diet such as socio-cultural, educational, economic, religious, environmental and habits. Eating habits can affect the occurrence of gastritis, where poor eating habits such as eating not on time, consuming too many foods that cause gastritis. If the stomach is left empty for 2-3 hours, it will produce excessive stomach acid so that it can irritate the stomach lining which can cause pain in the epigastric in addition to that it can cause pain and nausea (Barkah & Agustiyani, 2021).

The results of this study are in line with research conducted by Liliandriani *et al*., (2021) which showed that there was a relationship between diet and the incidence of gastritis in students of the Faculty of

Public Health, Al Asyariah Mandar University with a p=0.001 value. This is in line with research conducted by Nurrohmah (2022) with the aim of research to find out whether there is a relationship between diet and the incidence of gastritis in patients at the Bandari Health Center, Ponorogo Regency and the results are linked.

In line with the research conducted by Andreas *et al*., (2022) where the results of the study were obtained with a (*p value*) of 0.008 with a degree of significance of p< 0.05 which means that there is a significant relationship between diet and the incidence of gastritis. Thus, it is explained that gastritis is caused by an irregular diet such as most students only eat 1-2 meals a day, and there are even students who eat only 1 meal a day with large portions. In addition, the amount of carbohydrate, protein, vitamins and minerals in the food consumed is unbalanced (Andreas *et al*., 2022).

A person who has gastritis is a person who has an unhealthy diet. At the Balowerti Health Center in Kediri City, most of the adolescents affected by gastritis admitted that respondents often eat late, like to eat spicy food and like to eat ready-to-eat food, are lazy to eat staple foods and only eat side foods, and most of the respondents eat only once a day. From the things that the respondents do above, it can trigger gastritis (Diliyana & Utami, 2020).

Naturally, the stomach will continue to produce stomach acid at any time in small amounts after 4-6 hours after eating, usually the glucose in the blood has been absorbed and used a lot so that the body will feel hungry and at that time the amount of stomach acid is stimulated. If a person is late for eating for 2-3 hours, the excess stomach acid produced can irritate the gastric mucosa and cause pain around the epigastric (Sartika *et al*., 2020).

People who have an irregular diet or poor diet are susceptible to gastritis. When the stomach must be filled, but left empty, or the filling is delayed, stomach acid will digest the stomach mucosal layer, because when the stomach condition is empty, there will be an intensifying peristaltic movement which will stimulate an increase in stomach acid production so that pain can arise (Sinapoy *et al*., 2021)

The Relationship of Stress to the Incidence of Gastritis

In addition to diet, stress is one of the factors that cause gastritis. The results of the study showed that there was a relationship between stress and the incidence of gastritis. When the body experiences stress, it causes hormonal changes in the body. Hormonal changes in the body will increase the production of excess stomach acid. Acid levels that accumulate in the body over a long period of time result in the erosion of the stomach wall, causing soreness, pain, and bloating which are symptoms of gastritis (Husen & Tjandra, 2023).

Stress results in a decrease in the performance of all body organs, the organs of the body are regulated by brain receptors, so when the brain receptors experience a stressful condition will result in the body will get tired easily, it will interfere with performance, one of which is in the imperfect digestive system so that it can cause gastritis (Uwa *et al*., 2019). The nervous system of the brain is directly related to the stomach, when a person is stressed unknowingly triggering excessive stomach acid production. Stomach acid is what causes pain in the stomach so that gastritis arises (Mustika, 2021).

These results are in line with research conducted by Dzikri *et al*., (2021), which stated that stress has an effect on the incidence of gastritis. The results of the study are also in line with the research conducted by Purbaningsih (2020) where stress factors greatly affect the incidence of recurrent gastritis by 88.9%. This is in line with research conducted by Monica (2019) in her research found that there is a significant relationship between stress events and gastritis p=0.020. Not only that, according to research from Rizkiana (2021), it is known that there is a meaningful relationship between stress factors in patients and the incidence of gastritis at the North Larangan Health Center in Tangerang City (p=0.000). Then the results of this study are also supported by the research of Kusnadi & Yundari (2020), which in their research also stated that stress is one of the triggering factors for gastritis with a value of p=0.022.

The results of this study are supported by previous research by (Pratiwi & Aji, 2021) which showed a significant relationship between emotional stress and upper gastrointestinal disorders such as gastritis. Stress can activate the sympathetic nervous system and disrupt the function of the gastric mucosal barrier, thus making the stomach more susceptible to acid injury. In addition, stress factors are also known to affect eating behavior, sleep quality, and lifestyle which all contribute to the health of the digestive tract. Individuals with high stress tend to ignore a regular diet, consuming foods that are irritating (spicy, sour, high in fat).

This statement is different from research (Zainurridha & Azari, 2020) The incidence of gastritis can arise suddenly or become more chronic in general the incidence of gastritis does not cause permanent damage in the stomach but gastritis often leads to a recurrent recurrence resulting in heartburn. Another study (Feyisa & Woldeamanuel, 2021) states that depending on how long gastritis symptoms last, it can be acute or chronic. Patients with untreated chronic gastritis can result in peptic ulcers can bleed in the stomach, especially if the stomach wall deteriorates and the cells change. Gastritis can have an effect on nutritional status. The condition of nutritional status can be less, good, normal or more nutritious.

Based on the opinion of the *World Health Organization* , mind pressure is the body's response or reaction to mental stress or burden in life. Sustained mind pressure is one aspect of the factor that increases stomach acid. Symptoms of people who experience stress are feeling panicked and in a hurry, having difficulty

feeling calm, easily panicking and angry, not being able to calm down, feeling difficult, and unable to rest (Musrah & Hanifah, 2022).

Stress has negative consequences on the digestive tract through neuroendocrine mechanics making it dangerous to deal with gastritis. As a result of the pressure of the mind that affects the digestive tract, it causes a decrease in blood flow to gastric epithelial cells and affects the function of epithelial cells in protecting the gastric mucosa. The consequences of stress can also eliminate appetite in a person so that their diet is irregular. Therefore, stress is one of the triggers for gastritis (Kurdaningsih & Firmansyah, 2021).

CONCLUSION

Based on the results of data analysis and discussion that have been described previously, it can be concluded: There is a relationship between diet and the incidence of gastritis. And there is a link between stress and the incidence of gastritis

Suggestions

For Patients

Improve and implement healthy diets (such as avoiding spicy, acidic, or irregular foods) and manage stress (through relaxation techniques or psychological support) to reduce the risk of gastritis.

For Educational Institutions

Educational institutes can utilize the results of this research as teaching materials in the public health curriculum, where students are taught to increase knowledge about the relationship between diet and stress with gastritis so as to apply prevention and early intervention to the community.

For Researchers

Other researchers can use these findings as a reference for future research such as discussing other factors that may influence the incidence of gastritis

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