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MORALITY BEFORE KNOWLEDGE

The relationship between eating habits and psychological stress levels with the incidence of gastritis in adolescents: An approach based on the DASS-42 scale

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ABSTRACT

Background: One of the conditions frequently seen in hospitalized patients is gastritis, which is an inflammation of the stomach mucosa that can be either acute or chronic. High levels of stress and an improper diet are the main causes of gastritis. More research is required to determine the reasons linked to the occurrence of gastritis in adolescents, as the prevalence of the condition has dramatically grown in the Moncongloe Community Health Center operating area. **Method**: This study employs a cross-sectional design and a quantitative methodology. Using an accidental sampling technique, 58 respondents made up the sample. A questionnaire covering diet, stress measured by the Depression Anxiety Stress Scale (DASS-42), and the prevalence of gastritis was used to gather data. Data analysis was carried out using the chi-square test with a significance level of $\alpha = 0.05$. **Results**: According to the study's findings, teenagers with gastritis were more likely to have poor eating habits (56.8%). While the association between diet and the incidence of gastritis was not statistically significant ($p = 0.051$), statistical testing revealed a significant relationship between stress levels and the condition ($p = 0.042$). **Conclusion**: Stress levels and the prevalence of gastritis in teenagers in the Moncongloe Community Health Center's service area are significantly correlated. Even though there is no statistically significant correlation between diet and gastritis, teenagers who suffer from gastritis are more likely to eat poorly. In order to lower the incidence of gastritis in teenagers, this study highlights the need of stress management and instruction on appropriate eating habits. **Novelty/Originality of this article:** This study highlights the importance of psychological factors, particularly stress, in the occurrence of gastritis in adolescents, which has rarely been the main focus in similar studies. In addition, the use of the Depression Anxiety Stress Scale (DASS-42) to measure stress in the context of adolescent gastritis provides a more quantitative approach than previous studies.

KEYWORDS: gastritis; diet; stress; adolescents; Moncongloe community health center.

1. Introduction

Over time, the study of diseases has continued to evolve. In the past, the primary focus was on infectious diseases. However, today, attention has expanded to include a wide range of other health issues. This change is due to many things in society, such as the types of diseases that appear, lifestyle, economy, increased welfare, and more people being able to see a doctor. One of the impacts of lifestyle changes is the number of non-communicable diseases, including problems with the digestive system (Diliyana & Utami, 2020). Digestive

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diseases, such as stomach disorders, are now common diseases that can interfere with daily activities. One example is gastritis, which is inflammation of the stomach related to what we eat. It is estimated that around 10% of people in the world experience gastritis, which can be severe or mild.

The global occurrence of gastritis is estimated to affect approximately 1.8 to 2.1 million individuals annually. In Southeast Asia alone, around 583,635 people are diagnosed with this condition each year. Based on 2019 data from the World Health Organization (WHO), the prevalence of gastritis varies across different countries, with the United Kingdom reporting a rate of 22% and China experiencing a higher percentage at 31%. Japan has a prevalence rate of 14.5%, while Canada reports 35%, and France stands at 29.5% (Simbolon & Simbolon, 2022). Based on the Global Burden of Disease report in 2020, gastritis can affect individuals from adolescence to old age, with the highest occurrence between the ages of 20 and 45 at 22%. The incidence among those aged 14 to 19 is 15%, whereas individuals between 46 and 64 years old experience a prevalence rate of 10%.

Based on data from the World Health Organization (WHO) in 2019, the global incidence of ulcers ranged between 1.8 and 2.1 million cases annually. In Indonesia, the 2018 Riskesdas report indicated an ulcer prevalence rate of 40.8%, with particularly high occurrences in cities like Medan (91.6%), Denpasar (46%), and Surabaya (31.2%). Moreover, ulcers are frequently observed among hospitalized patients, with 30,154 recorded cases (4.9%) among adolescents, as reported by the Ministry of Health of the Republic of Indonesia in 2018.

A comprehensive review across several African nations revealed that 38% of women and 18% of men experienced gastritis. In Kenya, 73.3% of children and 54.8% of adults who sought medical care were clinically diagnosed with gastritis. In a similar trend, Uganda reported that 44.3% of individuals under the age of 12 were affected by gastritis. Additionally, in Nigeria, 40.7% of children aged between 6 and 10 years were diagnosed with gastritis linked to H. Pylori infection (Smith et al., 2019).

The prevalence of gastritis in Indonesia remains considerably high. According to research and observations by the Indonesian Ministry of Health, several cities in the country show elevated rates of gastritis, with Medan recording the highest at 91.6%, followed by Surabaya at 31.2%, Denpasar at 46%, Jakarta at 50%, Bandung at 32.5%, Palembang at 35.35%, Aceh at 31.7%, and Pontianak at 31.2%. In 2019, data on the top ten most common hospital-treated diseases in Indonesia revealed that gastritis, under the broader category of dyspepsia and heartburn-related conditions, ranked fifth among hospitalized cases with 9,954 cases among males and 15,122 among females. The top-ranked illness was gastroenteritis-related diarrhea, which affected 37,281 men and 34,608 women (Kemenkes, 2023).

Gastritis, commonly known as ulcer disease, is a condition characterized by inflammation of the stomach lining due to irritation or infection. Continuous pressure on the stomach can result in damage, leading to abrasions and sores that may trigger inflammation. Many people underestimate gastritis, assuming it is not a serious condition and does not require prompt medical attention. However, if left untreated, chronic gastritis can increase the risk of developing cancer and may also lead to gastric erosion (Anjani et al., 2023). If not properly treated, this condition may worsen over time, potentially causing complications such as intestinal bleeding, stomach ulcers, fluid and mineral imbalances, and a specific type of anemia. Several factors contribute to its development, including the consumption of unhealthy foods—particularly excessively spicy or acidic dishes—irregular eating patterns, and lifestyle habits such as alcohol consumption and smoking. Furthermore, stress can trigger an increase in stomach acid production, which may lead to digestive discomfort or exacerbate existing gastrointestinal conditions (Lestari & Ambarwati, 2023).

In general, gastritis can affect individuals of all ages; however, previous research indicates that it is most commonly found in adolescents, particularly teenage girls. Adolescents between the ages of 14 and 24 are more prone to developing gastritis. During this productive phase of life, their busy schedules often lead to neglecting a healthy lifestyle

and proper dietary habits. Poor eating patterns, including the consumption of foods that trigger increased stomach acid—such as pickles, vinegar, and chili sauce—contribute to the rising incidence of gastritis among teenagers (Habsari & Ambarwati, 2023).

Adolescents frequently fall into unhealthy and inconsistent eating habits, sometimes to the extent of developing eating disorders. Their daily routines often lead them to neglect proper food intake, both in terms of timing and nutritional value, which can result in digestive issues such as ulcers or gastritis. Teenage girls, in particular, tend to struggle with maintaining a balanced diet due to various factors, including worries about weight gain, time constraints, and either overly strict or insufficient parental supervision. If these issues persist, they can significantly disrupt their regular eating patterns (Apriyani et al., 2021).

Eating habits that contribute to gastritis involve inconsistent meal schedules with small portions, as well as the consumption of foods and beverages that stimulate excessive stomach acid production. Additionally, a lack of variety in meals can lead to boredom and reduced interest in eating, which may result in a preference for fast food and certain drinks. These choices often include items that can irritate the stomach lining, increasing the likelihood of developing gastritis (Habsari & Ambarwati, 2023).

Children and teenagers frequently consume only side dishes, as many of them dislike vegetables and rarely eat fruit. Their aversion to vegetables often results in minimal consumption. However, the body requires an adequate intake of vegetables and fruits to obtain essential vitamins, minerals, and fiber. Furthermore, dietary preferences and eating patterns vary among adolescents (Adinda & Sudaryati, 2021).

Internal and external factors are the two main categories into which the causes of gastritis can generally be divided. While external causes include different substances that can induce inflammation or infection in the stomach, internal factors include situations that raise stomach acid. Aspirin or non-steroidal anti-inflammatory drug use, alcohol and soda consumption, smoking, irregular eating patterns, and an excessive intake of spicy or acidic foods are some of the factors that raise the risk of gastritis. Another major cause of gastritis is Helicobacter pylori bacterial infection. Gastritis is generally dismissed as a minor ailment, but it can lead to severe consequences, and nearly all patients with gastritis recur. Gastritis is a painful condition caused by changes in the stomach organs, but it is more commonly brought on by psychological stressors, poor diet, alcohol, anti-inflammatory medicines, anxiety, and other reasons. Some people's gastrointestinal systems are affected by psychological or emotional issues such as stress and worry (Roosihermiatie et al., 2018).

According to data from the World Health Organization, gastritis impacts between 1.8 and 2.1 million people globally each year. In the Southeast Asian region alone, there are 583,635 annual cases reported. Indonesia, with its population reaching 238,452,952 and 274,396 gastritis cases, stands out as one of the most populous nations. Of all newly diagnosed gastritis cases, 40.8 percent occurred in Indonesia. The 2011 Indonesia Health Profile revealed that dyspepsia was the sixth leading cause of hospital admission, with a total of 24,719 cases reported. In Indonesia, gastritis is notably widespread, affecting over 274 percent of the nation's population. This condition predominantly impacts women in their reproductive years. Contributing factors include hectic lifestyles, neglect of personal health, and stress influenced by environmental conditions (Roosihermiatie et al., 2018).

Emotional disorderswere found to be present in 6.0 percent of 37,728 Indonesians. Only a few individuals have complained of psychosomatic gastritis in the meantime. The Food and Drug Administration documented two instances of psychosomatic issues and gastritis occurring in 2009 and 2010, involving individuals aged between 20 and 29 years (Roosihermiatie et al., 2018). Continuous attention has been directed toward exploring the connection between gastrointestinal conditions and psychological issues like mood and anxiety disorders. Multiple clinical and epidemiological investigations have revealed notable associations between mood and anxiety disorders and several prevalent gastrointestinal conditions (Walker et al., 2008).

Numerous constraints affect research that explores the connection between mental health conditions and gastritis. Firstly, most epidemiological investigations thus far have

depended solely on individuals' self-reported diagnoses of gastritis, which may introduce bias due to inaccuracies in reporting. There is concern that people experiencing depression or anxiety might overstate physical ailments such as gastritis, as studies have shown these mental health conditions are linked to negative perceptions of personal health. Secondly, the chronological relationship between mental disorders and gastritis remains ambiguous. It is uncertain whether these conditions are only correlated when present simultaneously or at any moment throughout a person's life. Thirdly, the specific extent of psychological symptoms and its relation to the risk of gastritis has not been clearly established. Previous research has yet to explore whether a dose-response effect exists between psychological distress and gastritis risk (Gureje et al., 1997). Limited clinical studies have identified increased depressive symptoms in certain groups of gastritis patients and found a high prevalence of mood and anxiety disorders in general gastroenterology clinics (Goodwin et al., 2013). A thorough grasp of how psychological factors interact with gastritis is crucial for delivering effective treatment, as mental health issues may aggravate gastritis, hinder therapy results, and reduce life quality.

Additionally, stressful situations like anxiety, fear, a heavy workload, and a hasty deadline can all contribute to a rise in stomach acid. If elevated stomach acid levels are not treated right away claims that gastritis may result from irritation of the stomach lining (Goodwin et al., 2013). At the Moncongloe Health Center, the number of cases of gastroenteritis rose from 2,071 in 2021 to 6,794 in 2022 before falling once more to 2,287 in 2023. Among these, the number of adolescent gastritis cases rose sharply from 164 in 2021 to 1,693 in 2022 and 818 in 2023. Because gastritis in adolescents is so common, researchers decided to look into how food and stress relate to occurrences of gastritis in the Moncongloe Health Center work area.

2. Methods

This research utilizes a cross-sectional design and follows an Analytical Survey approach. Using a point-in-time model, each subject is observed only once, with measurements taken to assess their characteristics or variables at the time of examination. As a non-experimental study, cross-sectional research aims to explore the correlation dynamics between risk factors and outcomes, such as specific diseases or health conditions (Abduh et al., 2023)In this study, researchers examined the relationship between stress, dietary habits, and the prevalence of gastritis among adolescents in the Moncongloe Community Health Center area, Maros Regency. The study population consisted of 87 adolescents diagnosed with gastritis who sought treatment at the Moncongloe Community Health Center in Maros Regency. A population refers to a group of subjects or objects possessing specific characteristics and traits that researchers select for study to derive conclusions. The sample is a component of the population's size and makeup, selected to represent the larger population for research or analysis purposes. The Slovin formula was ᵢused to determine the number of samples in this investigation, and the results showed that there were 58 respondents. In this study, researchers used incidental sampling techniques. The sampling approach entails choosing respondents from the current sample at the time the research is conducted till the sample size is sufficien (Dahlan, 2011).

In this study, data collection was conducted using the Depression Anxiety Stress Scale 42, which was modified into a 15-item version with a Likert scale ranging from 0 (never), 1 (sometimes), 2 (often), to 3 (always) Additionally, the questionnaire included inquiries regarding respondents' experiences with gastritis and their blood pressure measurements, recorded on a content sheet. Eating patterns were assessed using a Likert-scale questionnaire consisting of 10 statements categorized from 1 to 5: never, rarely, sometimes, often, and almost always. The scale included a total of 7 items, where 1 represented the highest value and 0 the lowest. Meanwhile, another Likert scale was used with 8 statements, where the highest value was 3 and the lowest was 0. The abbreviations used were SS for "very often," S for "often," J for "rarely," and TP for "never." Each variable, including both independent and dependent variables as well as respondent characteristics, was analyzed

using univariate data analysis. In order to identify the connection between the independent and dependent variables, a bivariate analysis was performed using the Chi-Square statistical method with a significance threshold of $\alpha = 0.05$. This procedure was utilized for both independent and dependent variables believed to be potentially correlated.

3. Results and Discussion

3.1 Analysis univariate

Univariate analysis was conducted to describe the general characteristics of respondents in this study. The characteristics analyzed included age, gender, and diet.

Table 1. Characteristics respondents based age, gender, and dietary habit

Characteristics	Frequency (n)	Percentage (%)
Age		
12-15	10	17.2
16-18	23	39.6
>18	25	43.1
Type gender		
Man	24	41.3
Woman	34	58.6
Pattern eating		
Good	25	43.1
Bad	33	56.8
Total	58	100

According to Table 1. The most prevalent age group is over 18 years old (25 respondents, or 43.1%); the most prevalent gender is female (34 respondents, or 58.6%); and the most prevalent eating pattern is bad eating patterns (33 respondents, or 56.8%).

3.1.1 Distribution frequency occurrence gastritis

This section will explain the frequency distribution of gastritis incidents in respondents who were sampled in the study. The purpose of presenting this data is to find out how large the proportion of respondents who experienced or did not experience gastritis. This information is the basis for analyzing the relationship with other variables. Complete data is presented in Table 2 below.

Table 2. Distribution frequency occurrence gastritis

Incident gastritis	Frequency (n)	Percentage (%)
No experiencing gastritis	28	48.2
Experiencing gastritis	30	51.7
Total	58	100

Based on Table 2, it is known that from a total of 58 respondents, 30 people (51.7%) experienced gastritis, while 28 people (48.2%) did not experience gastritis. Thus, the proportion of respondents who experienced gastritis was higher than those who did not experience gastritis. These data indicate that the incidence of gastritis is quite significant in the group of respondents studied.

3.2 Analysis

3.2.1 Relationship eating pattern with occurrence gastritis

After the distribution of eating patterns and gastritis incidents were known separately, further analysis was conducted to determine whether there was a relationship between eating patterns and gastritis incidents in respondents. This analysis aims to see whether differences in eating patterns

affect the frequency of gastritis. The results of the analysis are presented in Table 3 below.

Table 3. Relationship eating pattern with gastritis incidence

		Yes	No	Total	p-value
Pattern eating	Good	15	20	35	0.06
	Bad	10	13	23	
	Total	35	30	58	

Based on Table 3 above, which analyzes Regarding the link between eating habits and gastritis occurrence, 15 participants stated they had healthy diets but still suffered from gastritis, while 20 others with unhealthy diets also experienced the condition. In examining the link between dietary habits and gastritis occurrence, 15 participants indicated they followed a healthy diet yet still suffered from gastritis, while 20 participants admitted to having poor dietary habits and also experienced gastritis.

3.2.2 Relationship stress with occurrence gastritis

In addition to diet, stress levels are also thought to play a role in the occurrence of gastritis. Therefore, an analysis of the relationship between stress levels and the occurrence of gastritis in respondents was conducted. Stress levels were categorized into mild, moderate, and severe to see the distribution of each on the occurrence of gastritis. The results of the analysis of the relationship between the two variables can be seen in Table 4 below.

Table 4. Relationship between level stress with incidence gastritis

		Yes	No	Total	p-value
Level stress	Light	10	3	13	0.042
	Currently	10	15	25	
	Heavy	8	12	20	
	Total	28	30	58	

According to table 4. above, which examines the association between stress levels and the incidence of gastritis, there are 10 respondents who report having mild stress and gastritis, 10 who report having mild stress and gastritis, and 8 who report having severe stress and gastritis. Three respondents reported having mild stress and not having gastritis, fifteen reported having moderate stress and not having gastritis, and twelve reported having severe stress and not having gastritis. The p-value of 0.042 indicates that there is a correlation between stress levels and the incidence of gastritis in adolescents.

3.3 Discussion

3.3.1 Connection pattern eat with incident gastritis

Gastritis refers to a medical condition that arises due to the inflammation occurring in the lining of the stomach, also known as the gastric mucosa (Marcial et al., 2011). This condition is commonly identified by the presence of discomfort, swelling, and irritation specifically affecting the mucosal layer of the stomach wall (Marcial et al., 2011). In addition, gastritis typically presents itself through a variety of clinical signs and symptoms, including but not limited to sensations of nausea, episodes of vomiting, persistent dull abdominal pain, unease or discomfort in the upper part of the abdomen, a premature sense of fullness after eating small amounts of food, and a noticeable decrease in appetite (Smith et al., 2019).

In Ethiopia, a systematic review carried out by Marcis et al. (Leja et al., 2019) indicated that 53% of individuals with the age range from 54–61 years had gastritis due to *H*. *Pylori* infection. Another study conducted in Hawassa University indicated that 67.8% of male students and 32.2% of female students suffered from gastritis (Ddine et al., 2012). Similarly, a study conducted in Jigjiga University showed male students are more suffering from

gastritis than females (Alebie & Kaba, 2016). Finally, as it was indicated by Demisew in Ethiopia, gastritis was common among adolescents than old people.

Moreover, the likelihood of experiencing more severe forms of gastritis was significantly higher among individuals who frequently skipped or delayed their meals. Those who consumed their meals irregularly—either by postponing or completely skipping them—were found to suffer more frequently from acute gastritis as opposed to the chronic type. Supporting this, a related study conducted by (Alebie & Kaba, 2016) highlighted that the development of gastritis is closely linked to inconsistent eating habits such as skipping, delaying, or missing meals compared to regular eating patterns. In line with this, through their sociological research in the medical field, emphasized that adhering to a consistent and appropriate meal schedule plays a crucial role not only in preserving general health but also in aiding the recovery process of those suffering from illnesses. When this routine is disrupted, it may lead to unhealthy eating behaviors, negative life experiences, and other risky habits that can seriously compromise one's health, eventually contributing to the emergence of gastritis. Additionally, the study identified a strong association between the increased severity of gastritis and the usage of various substances, including smoking tobacco, chewing khat, and consuming alcoholic drinks. These behaviors were shown to significantly heighten the risk of progressing to more advanced stages of gastritis, as they are often accompanied by symptoms such as abdominal discomfort, early satiety, and reduced appetite.

According to research conducted by the use of certain substances has been shown to exacerbate irritation as well as inflammation in the lining of the gastric mucosa. Nevertheless, those earlier studies did not specify the exact form or classification of gastritis that may result from engaging in substance use. Consequently, individuals who regularly partake in health-compromising behaviors—such as heavy cigarette smoking, excessive alcohol consumption, and the habitual chewing of khat—are more likely to experience a range of health-related complications. Additionally, the Centers for Disease Control and Prevention (CDC, 2014) emphasized that engaging in high-risk behaviors like tobacco use, unhealthy eating patterns, sedentary lifestyles, and alcohol intake significantly contributes to the development and persistence of chronic illnesses.

Gastritis can be categorized into two main types, namely acute and chronic, depending on the duration and persistence of its associated signs and symptoms (Miranda et al., 2019). Specifically, acute gastritis refers to a sudden onset of inflammation affecting the lining of the stomach, typically appearing abruptly and persisting for a very brief period—ranging from one or two days to a maximum of less than a month (Elseweidy, 2017). On the other hand, chronic gastritis is characterized by a slow-developing inflammation of the gastric mucosal lining, which progresses gradually over time and tends to remain for an extended duration that often exceeds a month and may even persist for several consecutive years (Nisa, 2018).

Based on the findings, it was revealed that the majority of participants were 16 years old, comprising 42 respondents (75.0%), while those older than 16 years accounted for only 14 respondents (25.0%). This particular age group represents a critical phase in adolescence where significant psychological transitions occur. At this stage, adolescents begin shifting from heavy dependence on their parents to a more independent lifestyle. They are required to make personal decisions, such as selecting appropriate foods and managing their own eating portions and meal schedules. According to the researchers, teenagers within this age bracket are particularly susceptible to developing gastritis. This vulnerability stems from the growing expectation for them to act independently, including making their own food choices without relying on parental guidance. Additionally, adolescents are often in the habit of skipping breakfast, which contributes to unhealthy eating patterns. The study indicated that out of a total of 56 respondents, only 18 individuals (32.1%) demonstrated good dietary habits, while a significant majority of 38 respondents (67.9%) exhibited poor dietary habits. Furthermore, 15 participants (26.8%) maintained a regular eating frequency, in contrast to 41 respondents (73.2%) who followed an irregular and unhealthy meal schedule. A person's diet includes detailed information that reflects the

variety and nature of foods consumed on a daily basis, encompassing eating frequency, types of food, and portion sizes. The results also demonstrated that several respondents tended to follow irregular eating patterns (Fitriani et al., 2022).

A study carried out at the Kayon Health Center UPT located in Palangka Raya City focused on variables related to gastritis and found that out of 56 individuals who participated, 54 respondents (96.4%) were identified as suffering from gastritis. The primary contributing factor to gastritis was determined to be irregular eating habits, which include the frequency of meals, the types of food consumed, and the overall quantity of intake. Adopting a healthy and consistent dietary routine is essential in preventing gastritis. In individuals affected by gastritis, the frequency of eating typically increases, although the portion sizes tend to remain small. Consuming meals in large quantities may result in the backflow of stomach contents, leading to discomfort. Moreover, a poor selection of food types, particularly unhealthy options, can aggravate the condition by weakening the stomach lining, which in some cases leads to discomfort often mistaken for memory loss centered in the stomach region. This aligns with the theory proposed by Yayuk Farida Baliwati, who asserted that gastritis is frequently linked to poor dietary habits and irregular meal patterns—specifically in terms of eating frequency, food variety, and portion size-which can increase the stomach's sensitivity when acid levels rise. Additionally, Wijayakusuma emphasized that gastritis can develop due to inconsistent meal timing, habitual meal delays, or frequent overeating. For the human body to obtain sufficient energy, regular eating is necessary. However, before the body can convert food into energy, it must undergo a digestion process that takes several hours, varying based on the volume of food consumed (Pranata et al., 2024).

This study contradicts that of (Fitriani et al., 2022) which examined the relationship between gastritis and eating habits in female students at Madrasah Al-Huffadz II. According to the study's findings, the majority of the 87 (50.9%) respondents had healthy eating habits. A person's conduct associated with irregular eating habits is referred to as their eating patterns. These behaviors include how often, what kind, and how many amounts of food are consumed. Fast food, sometimes known as junk food, alcoholic or carbonated beverages, and spicy or sour meals are some food and drink categories that might aggravate gastritis. These foods can cause gastritis and upset the stomach if they are eaten in excess (Apriyani et al., 2021). The study which examined the connection between food and the prevalence of gastritis in female adolescents in grade 1 at SMA Negeri 1 Melonguane, Talaud Islands Regency, is likewise at odds with this one. The study's findings indicated that 24 respondents had gastritis, while 22 respondents did not experience it. This is due to the fact that teenagers are able to maintain a healthy diet, which includes eating meals on a regular basis and avoiding foods that generate stomach acid, such as high-fat, spicy, caffeinated, and quick foods. Findings from the study This reveals a strong correlation ($p = 0.035$) between eating patterns and gastritis incidents among teenagers in the Work Health Center Snout region. The results are consistent with a study that mentions the habit of eating irregularly, consuming hot and sour foods, and frequently missing time. One of the primary factors that contributes to the development of gastritis is diet. Patterns of eating that are insufficiently healthy can cause improvement in the secretion of a sour stomach, which is excessive and disturbs the equilibrium of the stomach mucosa, increasing the risk of inflammation. In addition, research by (Kwon et al., 2020) indicates that those who have unhealthy eating habits, such as frequently consuming fast food and low-fiber foods, are more likely to develop chronic gastritis and stomach discomfort. epidemiology studies that have been conducted.

According to (Smith et al., 2019), an estimated 50.8% of individuals residing in developing nations are affected by gastritis, reflecting a significant health concern. In contrast, a smaller proportion around 34.7% of populations living in developed countries suffer from gastritis-related health issues. While the overall prevalence of gastritis has shown a notable decline in developed regions compared to developing ones, the condition continues to pose a serious public health challenge, as emphasized by (Liu et al., 2019). Broadly speaking, gastritis is more frequently observed among males than females.

Nonetheless, findings from a study conducted in Brazil indicate a reversal in this trend, with chronic gastritis reported in 67.8% of female patients and 32.2% of male patients. Moreover, data from Brazilian public hospitals reveal that 35.4% of adult individuals aged above 40 years, along with 24.7% of younger individuals under the age of 40, were diagnosed with gastritis.

This is consistent with studies by (Smith et al., 2019), which discovered that stress can worsen the effects of bad diets on the digestive system by slowing down digestion and increasing the formation of stomach acid. Therefore, nutritional education, diet improvement, and a comprehensive strategy that include stress management and the adoption of a healthy lifestyle are all necessary to prevent gastritis in teenagers. Teens are frequently caught up in unhealthy and irregular eating habits, even to the point of developing eating disorders. As a result, they tend to focus less on the food they eat, when they eat it, and what kind of food they eat, which can lead to stomach issues like gastritis or ulcers. Teenage girls, for example, frequently struggle to stick to their diet for a variety of reasons, including worries about gaining weight, a lack of time for meals, and tight or uncooperative family monitoring if the condition continues to interfere with their regular eating schedule. More study using a longitudinal approach and larger samples is required to comprehend the intricate interaction between nutrition, stress, and other factors that contribute to the development of gastritis in teenagers. Muniroh (2015) states that because irregular eating habits stimulate the generation of stomach acid and make the stomach more sensitive, they are typically the cause of gastritis.

According to (Adinda & Sudaryati, 2021) gastritis can be brought on by a variety of factors. These include the use of specific drugs, infections caused by bacteria, viruses, or fungi, alcohol consumption, acute stress, radiation exposure, and food or drink allergies or poisoning. Even if a person does not eat three times a day, little snacks in between meals can help lower stomach acid. Students should so adhere to the "Balanced Diet Guidelines" in order to keep an eye on their food. These recommendations include eating more fruits and vegetables, adjusting to high-protein side dishes, eating safe meals, drinking enough water, and keeping a healthy weight and exercise routine (Adinda & Sudaryati, 2021).

The study carried out by (Diatsa et al., 2016) which focused on describing the occurrence of gastritis among adolescents at the Al-Hikmah Islamic Boarding School located in Trayon, Karanggede, Boyolali, revealed that the majority of gastritis cases were found in students within the age group of 15 to 19 years, with a reported number reaching 39 individuals, accounting for approximately 65% of the total cases observed. The study's findings support the assumption that diet will influence the incidence of gastritis; respondents with a healthy diet are less likely to develop the condition, while those with a poor diet are more likely to do so. This is because of factors such as frequency, irregular timing, and the type or content of food that irritates the gastric mucosa. Food tainted with microorganisms can also cause gastritis; some respondents stated that they frequently eat foods that are sour, greasy, spicy, and seasoned. Therefore, students must keep a regular diet, limit their intake of fast food, and increase their intake of items high in nutritional content in order to avoid. n addition to that, the issue is also influenced by an individual's daily eating habits, particularly the tendency to follow inconsistent meal schedules. This includes frequently delaying meals or eating much later than usual, as well as sometimes completely skipping breakfast, lunch, or dinner. These irregularities in eating patterns often result in the stomach being left empty for extended periods of time, which can lead to discomfort in a relatively short span. Such erratic eating behaviors are highly likely to negatively affect the digestive system, specifically the stomach, and may ultimately result in the development of gastric conditions such as ulcers or gastritis. Furthermore, the problem is exacerbated by a lack of control over food intake, which may stem from a variety of contributing factors. These include, but are not limited to, a hectic schedule, the pressure of tightly packed activities that push meal times to be postponed, and elevated stress levels, all of which can stimulate an excessive production of gastric acid, aggravating stomach-related issues even further.

3.3.2 Connection factor stres with incident gastritis

Based on the outcomes of the conducted statistical analysis, the resulting P-value was found to be less than the established significance level α (0.05). Therefore, it can be inferred that a statistically significant correlation exists between psychological stress and the incidence of gastritis. These results align with prior studies, indicating that mental stress plays a crucial and influential role not only in the development but also in the worsening of psychological and physiological conditions. Elevated stress levels are known to weaken the body's natural defense mechanisms and stimulate an increased secretion of gastric acid, thereby contributing to the manifestation of gastritis (Smith et al., 2019). Furthermore, stress can alter eating and sleeping patterns, which exacerbates stomach issues by increasing acid production and decreasing the effectiveness of gastric mucosal regeneration, according to research (Kim et al., 2017). Another mechanism causing this association is stress-induced vagus nerve activation, which can raise stomach acid production and hasten gastric mucosal inflammation. Thus, stress has a significant role in exacerbating gastrointestinal disorders, even though poor diet also contributes to gastritis. Therefore, in addition to diet modification, effective stress-reduction strategies including relaxation, psychological counseling, and leading a healthy lifestyle should be used to treat gastritis in teenagers.

Stress may be described as a response that is excessive, misplaced, or intensified beyond what would typically be considered appropriate when reacting to a particular circumstance or stimulus (Megha et al., 2018). Meanwhile, anxiety can be understood as a complex emotional state that involves persistent feelings of nervousness or apprehension, accompanied by cognitive symptoms such as continuous worrying, along with noticeable physiological reactions including, but not limited to, elevated blood pressure levels (Borah et al., 2023).

Disruption in the balance of digestive homeostasis can occur due to changes in pH levels, ultimately causing an imbalance within the gastric environment. This imbalance is further intensified by physiological stress, which contributes to inflammation in the stomach, manifesting as stress-induced gastritis. The initial phase of this condition typically involves a reduction in the gastric mucosa's resistance caused by harmful free radicals, which in turn leads to mucosal atrophy, ulceration from acid and pepsin, and an increase in gastric acid secretion. Erosive gastritis is frequently worsened by prolonged exposure to stress associated with chronic illness, as well as irritating substances such as medications (Reddy et al., 2018).

In the research article titled *"Experimental Gastritis Leads to Anxiety- and Depression-like Behaviours in Female but Not Male Rats"* by Luo et al. (2013), the authors report that gastrointestinal (GI) disorders, especially those associated with pain and inflammation, are strongly correlated with the manifestation of psychological conditions such as anxiety and depression. Additionally, they highlight that exposure to psychological stressors—such as artificially induced behavioral patterns resembling anxiety and depression—can significantly increase the susceptibility of individuals to developing intestinal inflammation. (Luo et al., 2013). Stress is a contributing factor to gastritis because it alters hormones in the body, which raises stomach acid (excess HCL). Excess stomach acid can damage the digestive tract and result in gastritis. Furthermore, a high workload and other life stressors can lead to stress, which in turn might develop gastritis because of these hormonal changes. An improper diet, which includes missing meals, eating fast food frequently, eating little and excessive portions of food, and eating foods that induce gastritis, is the main cause of gastritis in adolescents An poor lifestyle can increase the formation of stomach acid and lead to gastritis, but in adults, it is caused by an unhealthy food and lifestyle combined with a high workload that creates stress. Adults also neglect their personal requirements due to heavy workloads and work pressures, particularly when it comes to eating a nutritious diet and leading a healthy lifestyle (Pranata et al., 2024).

According to the assumption of researchers, stress occurs more because of a person's inability to deal with a burden beyond their capacity. The body will experience

psychological changes when responding to stress, these changes will affect the function of organs in the body, one of which is the digestive organs. Stress triggers hormonal changes in the body so that it stimulates cells in the stomach to produce excessive stomach acid, if this lasts for a long time it can cause digestive disorders. Efforts that can be made to reduce stress are by resting for about 5-10 minutes in 1 hour, not getting used to complaining. Other efforts to control stress, ways that can be done include getting enough rest, being positive and optimistic, and taking a vacation or relaxing with friends or family (Pranata et al., 2024).

The study further revealed that individuals experiencing stress had a 2.168 times greater likelihood of developing more severe forms of gastritis. Supporting this, prior research conducted by (Alebie & Kaba, 2016) identified stress as a significant contributing factor to the onset of gastritis. However, their study did not specify whether the gastritis induced by stress was of the acute or chronic type. In contrast, the present research provides evidence suggesting that stress may play a more pronounced role in the development of chronic gastritis compared to acute gastritis. In terms of social determinants, a variety of adverse life circumstances—such as exposure to traumatic experiences, economic hardship, high population density in living environments, and significant life disruptions—have been cited as influential contributors to both physical and psychological health deterioration. Stress arising from these negative social factors has the potential to adversely affect overall health and, more specifically, is capable of leading to the emergence of chronic health conditions including gastritis and other long-term medical complications, as noted by (Velasquez-Manoff, 2013).

Goodwin et al. (2013) presented two pivotal insights in the *Journal of Psychiatric Research*, focusing on the connection between gastritis and mental health disorders. Firstly, they identified that being diagnosed with gastritis is strongly associated with an elevated risk of developing mood and anxiety-related disorders in the adult population. This association becomes even more pronounced when both conditions occur simultaneously, although a notable relationship still exists even if they do not present at the same time. Secondly, the study demonstrated that this connection applies to both genders, with both males and females showing a significant link between gastritis diagnoses and the presence of mood and anxiety symptoms. Interestingly, the strength of this association appeared to be slightly more pronounced in females compared to males (Goodwin et al., 2013). Furthermore, the incidence of gastritis was observed to be significantly higher in women than in men, and there was also a modest correlation between having a lower socioeconomic background and a greater likelihood of experiencing gastritis. However, the research did not find any statistically meaningful relationship between gastritis and the factor of age. Additionally, individuals who had experienced gastritis were considerably more likely to have suffered from various psychiatric disorders—including anxiety disorders, panic attacks, social phobia, mood disorders, and major depressive episodes—within the previous 12 months, in contrast to those without a gastritis diagnosis. These associations retained their statistical significance even after controlling for variations in demographic variables and remained consistent regardless of the specific timeframe used to assess the onset of gastritis (Goodwin et al., 2013).

The findings demonstrated a statistically meaningful association between individuals currently experiencing gastritis (within the past 12 months) as well as those who had experienced gastritis in the past but had since recovered (prior 12 months), and the presence of psychological conditions such as anxiety disorders, mood disturbances, major depressive episodes, panic symptoms, and social anxiety during the same 12-month timeframe. This comparison was made against individuals who had never experienced gastritis throughout their lifetime. Even after controlling for potential confounding variables such as age and socioeconomic status, these associations continued to remain statistically robust and significant (Goodwin et al., 2013). A wide array of earlier research studies has consistently reported elevated prevalence rates of psychiatric conditions among those diagnosed with various gastrointestinal disorders. Drawing upon findings from numerous academic sources, having a diagnosis of gastritis seems to correlate with a

heightened likelihood of developing mood-related or anxiety-related mental health issues. There are primarily two plausible explanations for this association. Firstly, it is possible that there exists a direct causal link between the two conditions (Walker et al., 2008), it is reasonable to speculate that the physical pain, discomfort, and functional impairments often accompanying gastritis particularly in more severe cases might contribute to the development or worsening of psychological symptoms such as anxiety or depression, especially in individuals who are already psychologically vulnerable. Alternatively, it is also conceivable that severe anxiety especially when it reaches the clinical threshold found in anxiety disorders may lead to the onset or exacerbation of gastritis via neurological mechanisms that trigger irritation or inflammation of the stomach lining. Secondly, both conditions could potentially share underlying genetic predispositions or environmental risk elements that simultaneously increase vulnerability to both gastritis and mental health disorders like depression or anxiety (Goodwin et al., 2013).

For example, it is possible that shared genetic variations may contribute to a predisposition in individuals for both gastrointestinal issues and emotional disturbances. Although the precise biological mechanism remains uncertain, a recognized association between psychological or emotional stress and gastrointestinal disorders has emerged, prompting significant inquiries into the potential connections between the brain and the gastrointestinal (GI) system. The concept that the brain regulates several physiological activities within the GI tract is not a recent discovery; this idea has been widely accepted since the groundbreaking research conducted by Pavlov in the late 1800s, which demonstrated the brain's role in canine salivation and the secretion of gastric acid. On a chemical level, neurotransmitters that function within the brain are also known to exert effects in the GI tract. A case in point is serotonin a neurotransmitter associated with numerous mental health conditions, which also plays a crucial role in the development and manifestation of various gastrointestinal conditions, including irritable bowel syndrome (Goodwin et al., 2013).

The gastrointestinal (GI) tract receives its neural input directly from the brain, a connection that is anatomically evident, with the vagus nerve serving as the most prominent pathway. This nerve extends from the brainstem and innervates several major digestive organs, including the esophagus, stomach, small intestine, liver, and pancreas. Building upon the foundational work of Pavlov and subsequent researchers, the significant chemical and anatomical links between the brain and the GI tract have led to the proposal of a functional communication system known as the "Brain-Gut Axis." Although much has been learned about the influence of this axis on regular physiological processes, the extent of its role in the development and progression of pathological conditions remains an active area of scientific investigation. Unfortunately, the current study does not provide further clarification regarding the underlying mechanisms of the Brain-Gut Axis. Nevertheless, the very existence of this axis offers a plausible explanatory framework through which the observed outcomes may be interpreted. Alternatively, it is conceivable that prolonged exposure to ongoing stressors—such as financial hardship, persistent poverty, exposure to community violence, or inadequate housing conditions—could simultaneously contribute to the emergence of both gastrointestinal issues like gastritis and psychological conditions such as anxiety or mood disorders, as suggested by (Goodwin et al., 2013). Consequently, it becomes essential for individuals experiencing these symptoms to develop effective strategies for stress management. This may involve prioritizing sufficient sleep, maintaining a positive outlook, engaging in recreational activities such as taking a vacation, or simply spending quality time with supportive friends and family members to promote emotional well-being and alleviate digestive discomfort.

After seeing the results of other people's research and supported by existing theories and research results obtained during research, it can be concluded that there is a gap between theory and fact. According to the researcher's assumption in the theory of stress experienced by a person can cause reactions in the body both physiologically and psychologically. Stress reactions in the digestive system can experience disorders such as bloating, nausea, and pain due to increased stomach acid (gastritis). Stress experienced by

a person will be very risky for gastritis, and vice versa, the less stress experienced by a person, the less risky it is for gastritis. But in this case, the fact cannot happen because it is not proven that stress is related to gastritis but in theory it is related, so in order to prevent gastritis. Stomach acid can be controlled even though the sufferer has a frequency of eating/eating patterns of less than 3 times a day if interspersed with the consumption of snacks that do not irritate the stomach. While in small daily cases, for example, declining physical health conditions can trigger gastritis because bacteria can easily infect the body (Pranata et al., 2024).

4. Conclusion

Based on the results and discussion above, the following conclusions can be drawn: no connection was detected. The relationship between eating habits and gastritis incidents in teenagers in the Work Health Center Kepi Regency Map region is significant (p = 0.06). A strong correlation has been found between a teen's stress level and the occurrence of gastritis (p = 0.042). The likelihood that you may get gastritis increases with your degree of stress. In addition to continuing to observe healthy eating patterns, efforts to avoid gastritis in teenagers should concentrate more on stress management.

In addition, psychological stressors, the use of medications for treatment purposes, and participation in substance abuse activities were identified as significant contributors to the development of chronic gastritis. It is important for women to ensure they get sufficient rest and maintain healthy sleep patterns, while men are encouraged to avoid engaging in behaviors that may lead to heightened stress levels. Young individuals, particularly those with lower income levels, should be provided with adequate knowledge and education regarding the adoption of healthy lifestyle habits. These include consuming meals at appropriate times throughout the day—specifically breakfast, lunch, and dinner, refraining from the frequent intake of highly spiced foods, incorporating regular physical activity into their daily routines, and taking prescribed medications after meals or alongside other drugs that help to minimize gastric mucosal irritation. A further implication drawn from the findings of this study is the evident need to disseminate health education related to the specific risk factors associated with different types of gastritis in order to enhance public awareness and understanding. The authors recommend that future research should consider exploring a wider range of potential contributing factors, include a larger and more diverse group of patients, especially those from rural settingsand incorporate both male and female perspectives, focusing on their experiences and attitudes toward seeking medical care for illnesses or gastrointestinal conditions.

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