



The relationship between stress and anxiety with the incidence of gastritis: A literature review

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Abstract

Gastritis is an inflammation of the gastric mucosa that is commonly found in the community and can be influenced by various factors, both physical and psychological. Stress and anxiety are known to play an important role in affecting digestive system function through neuroendocrine mechanisms. The purpose of this literature review is to examine the relationship between stress and anxiety and the incidence of gastritis based on findings from previous studies. The method used was a search for scientific articles in the PubMed, ScienceDirect, and SpringerLink databases conducted in January–February 2026 using the keywords stress, anxiety, and gastritis. Of the 1,678 articles identified, a screening process was carried out through title and abstract review, keyword evaluation, full-text assessment, and relevance appraisal, resulting in six articles that met the inclusion criteria. The review findings indicate that stress and anxiety are significantly associated with an increased incidence of gastritis, either through enhanced gastric acid secretion or decreased protective mechanisms of the gastric mucosa. In conclusion, this literature review demonstrates that stress and anxiety are important risk factors for gastritis, highlighting the need for stress and anxiety management approaches in the prevention and management of gastritis.

Keywords: Stress; Anxiety; Gastritis; Gastrointestinal

1. Introduction

Gastritis is a disorder of the digestive system that occurs due to inflammation of the stomach mucosal layer, which is generally accompanied by complaints in the form of epigastric pain, nausea, vomiting, and uncomfortable sensations in the abdominal area [1]. Gastritis can be triggered by *Helicobacter pylori* infection, stressful conditions, physical trauma, as well as irregular eating habits. This disease is characterized by inflammation of the stomach wall, especially in the lining of the stomach mucosa which undergoes an inflammatory process [2].

Based on recent data, chronic atrophic gastritis is estimated to affect about 25% of the global population [3]. In addition, the risk of developing chronic atrophic gastritis is about 2.4 times higher in patients infected with *Helicobacter pylori*. Chronic nonatrophic gastritis associated with *H. pylori* infection still has a high prevalence in developing countries. In Western populations, the prevalence of *H. pylori* infection in children is estimated to be around 10%, while in developing countries the figure is around 50%. The prevalence of *H. pylori* infection in developing countries also varies greatly depending on geographic region and socioeconomic conditions, with a prevalence of about 69% in Africa, 78% in South America, and 51% in Asia. According to Riskesdas in 2028, gastritis ranks sixth with 60.86% with a total of 33,580 inpatients. In seventh place is gastritis cases with 201,083 outpatients. The incidence rate of gastritis is quite high in several areas with a prevalence of 274,396 cases per 238,452,952 population, which is 40.8%. The percentage of gastritis cases in cities and cities in Indonesia is Jakarta 50%, Palembang 35.5%, Bandung 32%, Denpasar 46%, Surabaya 31.2%, Aceh 31.7%, Pontianak 31.2%, while the incidence of gastritis in Medan reaches 91.6%. According to the Indonesian Ministry of Health, gastritis is a disease with a very high incidence especially in Indonesia [4].

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Gastritis is often considered a mild disease, but it can cause serious complications and has a high recurrence rate. Gastritis is a painful condition caused by inflammation or changes in the gastric mucosa. In addition to being affected by structural and physiological changes in the stomach, gastritis is more often triggered by various risk factors such as psychological stress, unhealthy diet, alcohol consumption, use of nonsteroidal anti-inflammatory drugs, anxiety, and other factors. Psychological and emotional factors, particularly stress and anxiety, are known to affect the functioning of the gastrointestinal system, thus contributing to the onset and worsening of gastritis symptoms [5].

Stress is the body's response to emotional, cognitive, or environmental pressures that are perceived as threats or challenges. Stress can trigger the activation of the hypothalamic-pituitary-adrenal (HPA) axis which increases the secretion of stress hormones such as cortisol, which impacts the functioning of various body systems, including the digestive system. Chronic stress is known to affect stomach acid secretion, intestinal motility, and microbiota balance, thereby worsening symptoms in pre-existing digestive conditions [6].

Stress correlates with the incidence of gastritis and increases the intensity of gastric pain symptoms. Research by Saba et al., (2024) showed a significant relationship between stress levels and gastritis symptoms through the mechanism of increased gastric acid secretion induced by psychological stress and autonomic nerve responses [6]. Research conducted by Saputri & Zulfitrwati (2025) also explains that stress is a psychological risk factor that plays a role in the exacerbation of gastritis symptoms

Anxiety is an emotional disorder characterized by excessive worry, tension, and psychophysiological discomfort, often related to the perception of threats to oneself. Anxiety has been the focus of studies in the relationship between mental states and symptoms of the digestive system due to the presence of a bidirectional connection between the brain and the digestive tract through the brain-gut axis, which influences the gastrointestinal response to constant stress stimuli [8].

Individuals with physical health conditions have a higher prevalence of anxiety than the general population. The relationship between physical health conditions and anxiety is bidirectional, where physical illness can trigger the appearance of anxiety, while anxiety has the potential to worsen symptoms as well as the course of the disease [9]. However, the results of the study conducted by Sriwahyuni et al., (2025) showed that the association between anxiety and the incidence of gastritis was not significant, depending on the population of the study conducted [10].

Recent scientific studies of the gut-brain axis indicate the existence of a complex two-way communication system between the gastrointestinal tract and the brain, which plays a role in the increased incidence of anxiety and stress in patients with gastroenterological and hepatological disorders [9]. Studies have shown a strong link between mental health conditions and a number of digestive system disorders, such as *irritable bowel syndrome* (IBS), *inflammatory bowel disease* (IBD), and gastroesophageal reflux disease (GERD). Interactions through the brain-gut axis are known to have a key role in bridging these relationships [11].

Stress and anxiety have been shown to play a role in influencing the functioning of the digestive tract through neuroendocrine mechanisms and *the brain-gut axis*, which has the potential to worsen gastric mucosal inflammation and increase the severity of gastritis symptoms. However, research findings related to the relationship between stress, anxiety, and gastritis still show variations in results and are scattered in various scientific publications. Therefore, the researcher is interested in conducting a *literature review* on the relationship between stress, anxiety, and gastritis in order to comprehensively identify, analyze, and synthesize the latest scientific evidence, so that it is expected to provide a clearer picture of the role of psychological factors in the incidence of gastritis and become the basis for the development of promotive, preventive, and holistic intervention efforts in the health sector.

2. Methods

2.1. Design

This study uses a literature review design with a narrative approach. This literature review aims to identify, examine, and synthesize the results of previous research that discuss the relationship between stress and anxiety and the incidence of gastritis. The articles analyzed are primary research with observational and experimental designs that are relevant to the topic of the study.

2.2. Search Strategy

Literature search was carried out systematically through several international electronic databases, namely PubMed, ScienceDirect, and SpringerLink. Article searches were conducted using Medical Subject Headings (MeSH) and combined with Boolean operators "AND" and "OR" with the keywords "stress", "anxiety", "psychological stress", and "gastritis". The search is limited to articles published within the last 5 years, available in full-text, and written in English.

2.3. Study Selection

Article selection is carried out through several stages, namely identification, screening, and feasibility assessment. At the identification stage, all articles obtained from search results are collected and duplicates are removed. Furthermore, screening was carried out based on the title and abstract to assess the suitability of the research topic. The inclusion criteria in this literature review include primary research articles (Randomized Controlled Trials, cohort studies, case reports, cross sectional studies, and retrospective studies), discussing the relationship between stress and/or anxiety and the incidence of gastritis, full-text, articles in English, and published between 2022-2026. Exclusion criteria include review articles (systematic review, meta-analysis, and literature review), as well as articles that do not directly address the relationship between stress, anxiety, and gastritis. Articles that meet the inclusion criteria are then further analyzed.

2.4. Data Extraction

The literature search was conducted through several databases, namely PubMed, SpringerLink, and ScienceDirect, which yielded a total of 1678 articles. Furthermore, a total of 1678 articles were issued based on a review of titles, abstracts, and research topics. From the screening process, 27 full-text articles were obtained. Of these, 14 articles were removed due to duplication. Furthermore, 13 full-text articles were assessed for eligibility. At this stage, 8 articles were issued because they did not discuss stress and anxiety in the incidence of gastritis. Thus, 6 articles met the inclusion criteria and were included in the final analysis.

2.5. Study Quality Assessment

The quality assessment of the study was carried out using a critical appraisal instrument from the Joanna Briggs Institute (JBI) which was adjusted to the research design of each article. Each article was assessed using a JBI checklist to assess methodological validity and risk of bias with the overall study having a good score of 6-8 out of 8 points.

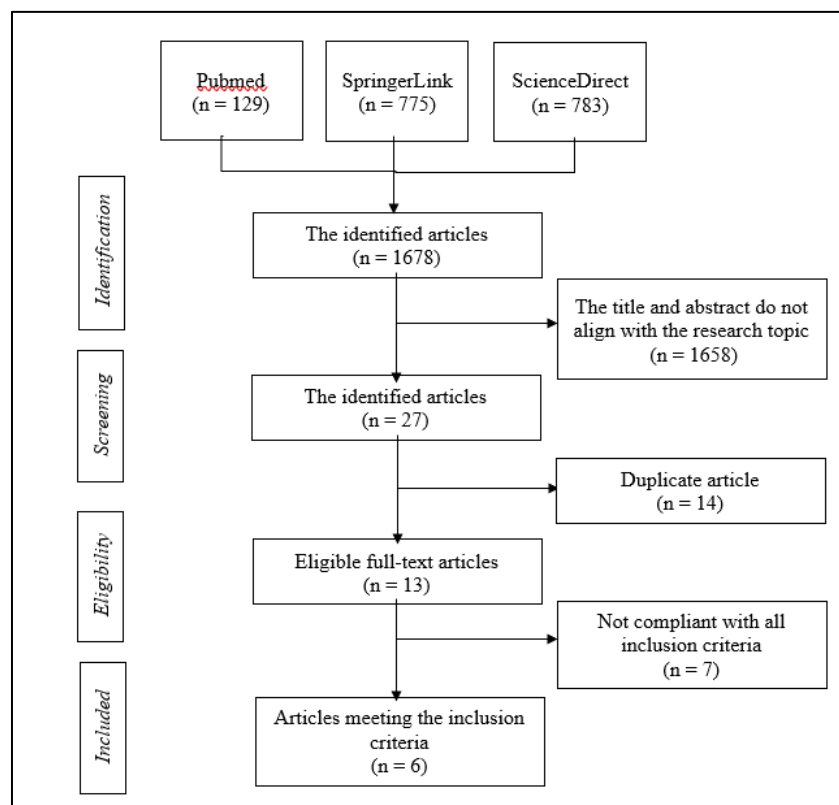


Figure 1 PRISMA Flow Chart

3. Results

Table 1 Article Review

Author, Year, and Country	Study Design	Sample Characteristics	Participant Details	Instrument	Main Finding	Study Quality Assessment JBI score
[12] Indonesia	Cross-sectional	Adults with gastrointestinal disorders	Outpatients with gastrointestinal complaints	Perceived Stress Scale (PSS), gastrointestinal symptom questionnaire	There is a significant association between stress levels and increased gastrointestinal complaints	7/8 (Good)
[13] Iran	Cross-sectional analytic	Functional dyspepsia patients	Adult patients based on Rome IV criteria	GAD-7 and GSRs Questionnaire	High anxiety is associated with increased severity of functional dyspepsia symptoms	7/8 (Good)
[14] Indonesia	Cross-sectional	Health sciences students	Active students	DASS-21 questionnaire and gastritis history questionnaire	Academic stress is significantly associated with the incidence of gastritis	6/8 (Moderate-Good)
[15] China	Cross-sectional mediation analysis	Chronic gastrointestinal patients	Outpatient adult patients	BAI, GSRs, and IPQ Questionnaires	Disease perception mediates the relationship between the severity of gastrointestinal symptoms and anxiety	8/8 (High Quality)
[11] China	Multicenter cross-sectional	Gastroenterology outpatient	Adult patients in some hospitals	HADS, clinical data	High prevalence of anxiety and depression; Risk factors including symptom severity and chronic disease	8/8 (High Quality)
[16] Indonesia	Cross-sectional	Medical students	Students of FK USU	DASS-21 and Rome IV Questionnaire	Stress and anxiety are significantly associated with the incidence of functional dyspepsia	7/8 (Good)

Based on the results of a review of six research articles on the relationship between stress, anxiety, and gastrointestinal disorders, it was found that a consistent pattern was found that psychological factors have a significant relationship with the incidence and severity of gastrointestinal disorders, especially gastritis and functional dyspepsia.

Research by Gurung et al., (2025) shows that increased stress levels are positively correlated with increased gastrointestinal complaints such as epigastric pain, nausea, bloating, and eating disorders [12]. The mechanism described involves the activation of **the brain-gut axis**, where stress activates the autonomic nervous system and increases the secretion of cortisol which then affects gastric motility and secretion. Similar results were found in a study Govindasamy et al., (2025) involving 300 patients with functional dyspepsia found a strong positive correlation between the severity of gastrointestinal symptoms and scores on the Generalized Anxiety Disorder 7-item scale (GAD-7) ($r = 0.703$; $p < 0.001$). This suggests that higher levels of anxiety are associated with more severe gastrointestinal symptoms, thus supporting the notion that psychological distress may worsen symptom perception in patients with functional dyspepsia [13]

Studies in health science students reported a significant association between the type of stress and the incidence of gastritis (Spearman's $r = 0.316$; $p < 0.05$), especially in social stressors. This proves that students with high levels of academic stress have a greater risk of developing gastritis than students with low stress levels. Chronic stress triggers an increase in stomach acid through stimulation of the vagus nerve and the release of stress hormones. [14] Research Wang et al., (2023) shows that an individual's perception of illness acts as a mediator between anxiety and the severity of gastrointestinal symptoms. This means that patients with a negative perception of the disease tend to experience more severe symptoms even though their clinical conditions are relatively stable [15].

In the study by Dong et al., (2026), it was found that there was a high prevalence of anxiety and depression in gastroenterology outpatients. Significant risk factors include chronic pain, long duration of illness, and psychosocial stress [11]. Recent research has shown a significant relationship between stress levels, anxiety, and the incidence of functional dyspepsia in medical students. College students with high stress are two to three times more likely to experience dyspepsia. Overall, all six studies show consistency that stress and anxiety are important risk factors for gastrointestinal disorders, particularly gastritis and functional dyspepsia [16]

4. Discussion

The relationship between stress and anxiety is the concept of a two-way interaction between the central nervous system and the gastrointestinal tract through the gut-brain axis mechanism. Acute and chronic stress is known to affect gastrointestinal physiology through activation of the autonomic nervous system and the hypothalamic-pituitary-adrenal (HPA) axis which impacts changes in motility, gastric acid secretion, mucosal permeability, and the composition of the gut microbiota [17]. Prolonged activation of the stress response can increase the production of cortisol and inflammatory mediators which ultimately weakens the defenses of the gastric mucosa thereby increasing susceptibility to irritation and inflammation, which is the basis of the pathophysiology of gastritis. Disruption of the microbiota balance due to stress also contributes to increased visceral sensitivity and inflammatory responses in the gastrointestinal tract.[18]

In the adolescent population, the link between psychological conditions and gastric disorders is increasingly apparent. Research on adolescents in Depok showed that psychological stress and unhealthy diets played a significant role in the incidence of gastritis, illustrating that mental factors and eating behavior have synergistic contributions in triggering gastric inflammation.[19]

In addition to stress, anxiety also plays an important role in worsening gastrointestinal symptoms. Studies in patients with gastrointestinal disorders show that higher levels of anxiety correlate with increased perception of symptom severity, reflecting the presence of visceral hypersensitivity due to dysregulation of the central nervous system [20]. Research by Farista, (2022) on irritable bowel syndrome (IBS) has also shown a high prevalence of anxiety and depression in patients with functional gastrointestinal disorders, which reinforces the suspicion that psychological disorders have a significant comorbid role in worsening the clinical manifestations of gastric and intestinal disorders. [21] Further meta-analysis showed that anxiety, depression, and poor sleep quality significantly increased the risk of developing gastrointestinal disorders such as IBS, which pathophysiologically have a mechanism similar to gastritis in terms of gut-brain axis dysregulation[22].

In populations with specific risk factors, such as inmates with a history of substance abuse, it was found that stress, anxiety, and depression were significantly associated with the recurrence of gastritis symptoms. These findings confirm

that unmanaged psychological conditions can worsen the course of the disease and increase the risk of gastritis recurrence, so a biopsychosocial approach is indispensable in management.[23]

The study by Cocean & Vodnar, (2024) explains that the evidence on the involvement of the gut–brain axis opens up the opportunity for psychobiotic-based interventions or microbiota modification as adjuvant therapy in reducing gastrointestinal symptoms triggered by stress[18]. This approach emphasizes that the balance of the gut microbiota can affect emotion regulation and stress responses, thus potentially improving gastric conditions indirectly. Conceptually, the relationship between stress, anxiety, and gastritis can be understood in a biopsychosocial framework, in which biological factors (inflammation and acid secretion), psychological factors (anxiety, depression, pain perception), as well as social factors (social support and health literacy) interact with each other influencing the course of the disease. Therefore, effective gastritis management strategies focus not only on the eradication of organic factors, but also on stress management and psychological interventions to prevent recurrence and improve the patient's quality of life. [17]

5. Conclusion

5.1. Implications for Health Practice / Services

Based on the results of the literature review, it can be concluded that stress and anxiety have a significant relationship with the incidence of gastritis. These two psychological factors play a role in increasing gastric acid secretion and lowering the protective mechanism of the gastric mucosa. Therefore, a comprehensive approach that includes stress and anxiety management needs to be considered in efforts to prevent and manage gastritis.

5.2. Implications for Research

This literature review shows that most of the available studies still use an observational design, so the causal relationship between stress, anxiety, and gastritis incidence cannot be comprehensively elucidated. Therefore, further research is recommended using experimental or longitudinal designs to evaluate the effect of stress and anxiety management interventions on the incidence and recurrence of gastritis.

In addition, research with a larger sample count as well as the use of standardized stress and anxiety measurement instruments is needed. Research across different populations and healthcare settings is also important to strengthen the generalization of findings and support the development of evidence-based interventions.

Compliance with ethical standards

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Disclosure of conflict of interest

This article is a literature review that uses secondary data from published research, so it does not involve human subjects directly. Therefore, ethical approval is not required. All sources used in this article have been listed in accordance with the rules of scientific writing to avoid plagiarism and uphold academic integrity.

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