



The Effect Fasting on the Healing Process of Gastritis: An Experimental Study in Three Indonesian Cities

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Abstract

Background: Gastritis is a common gastrointestinal disorder that may be influenced by dietary patterns, including fasting.

Objective: This study aimed to determine the effect of Ramadan fasting on the healing process of gastritis.

Methods: An experimental study was conducted during Ramadan 1446 H (2025 AD) involving 320 Muslim participants aged 25–40 years diagnosed with gastritis. The study was conducted in Bengkulu, Banjarmasin, and Ternate. Weekly physical examinations and interviews were conducted over four weeks.

Results: Of the 320 participants, 296 were women and 24 were men. In the first week, many participants reported worsened symptoms. By the second week, symptoms began to improve. In the third week, 301 participants reported complete relief from symptoms, and by the fourth week, all participants reported full recovery and improved general well-being. Statistical analysis showed a significant relationship between fasting and symptom resolution (P -value < 0.001).

Conclusion: Ramadan fasting has a positive effect on the healing process of gastritis, although the response time may vary between individuals.

Keywords: Gastritis; Fasting; Ramadan; Muslim; Gastrointestinal disorders

Introduction

Gastritis, an inflammation of the gastric mucosa, is a prevalent and clinically significant condition that affects millions globally, often resulting from multifactorial etiologies such as poor dietary habits, psychosocial stress, alcohol consumption, prolonged use of nonsteroidal anti-inflammatory drugs (NSAIDs), and infection by *Helicobacter pylori*. The inflammatory process involves damage to the gastric epithelial lining and the infiltration of inflammatory cells, leading to a disruption in the protective mucosal barrier and increased vulnerability to gastric acid injury. The disease may manifest as either acute or chronic gastritis, characterized by symptoms including epigastric pain, nausea, bloating, early satiety, and heartburn. These symptoms contribute to substantial discomfort, decreased nutritional intake, and a reduction in overall quality of life. Chronic gastritis, in particular, has been associated with more severe and long-term

complications such as peptic ulcer disease, gastrointestinal bleeding, mucosal atrophy, intestinal metaplasia, and an increased risk of gastric carcinoma [1]. The management of gastritis typically includes pharmacological interventions designed to suppress gastric acid secretion and alleviate mucosal irritation. Standard treatments involve proton pump inhibitors (PPIs), H₂-receptor antagonists, and antacids, which are effective in controlling symptoms and promoting mucosal repair. However, these medications often provide temporary relief and are associated with adverse effects such as rebound acid hypersecretion, nutrient malabsorption, and potential dysbiosis of the gut microbiota. Furthermore, pharmacotherapy does not always address underlying etiological factors, particularly *H. pylori* infection, which remains a major contributor to the onset and persistence of both acute and chronic gastritis [2]. The persistence of *H. pylori* may lead to recurrent mucosal inflammation despite adequate acid suppression therapy,

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indicating a need for complementary or alternative strategies that target both physiological and behavioral aspects of the disease. In this context, non-pharmacological interventions, including dietary modifications, stress management, and holistic lifestyle adjustments, have gained prominence as adjunctive approaches in gastritis management. Such interventions aim to modulate the physiological balance between gastric acid secretion and mucosal defense mechanisms while promoting overall digestive health. Evidence suggests that incorporating dietary discipline, reducing irritant foods, and maintaining regular meal patterns can significantly reduce symptom recurrence and improve gastric mucosal resilience. Within this framework, fasting practices particularly those observed during the Islamic month of Ramadan have emerged as a promising complementary modality for gastrointestinal health. During Ramadan, Muslims observe a unique fasting pattern from dawn to dusk, abstaining from food, drink, and other physical indulgences. This structured fasting regimen induces metabolic adaptations that have been linked to a variety of physiological benefits, including improved insulin sensitivity, lipid profile regulation, enhanced autophagy, and reduction of oxidative stress. Despite the extended fasting hours, Ramadan fasting has been associated with improved metabolic homeostasis, better weight management, and enhanced gastrointestinal function [3,4]. From a gastrointestinal perspective, studies indicate that intermittent fasting during Ramadan may decrease gastric acid secretion, allowing the mucosa to recover from acid-induced inflammation and promoting epithelial regeneration [5,6]. Furthermore, fasting induces hormonal and neuroendocrine adjustments, such as reductions in gastrin secretion and modulation of the vagal tone, which collectively help stabilize gastric acid production. This may explain the observed clinical improvement in dyspeptic symptoms among fasting individuals. Recent research has also highlighted the role of fasting in promoting a healthy gut microbiota composition, which exerts anti-inflammatory and immunomodulatory effects that may contribute to mucosal healing and improved gastrointestinal function [7].

The regulated eating schedule during Ramadan consisting of two main meals, suhoor (pre-dawn) and iftar (sunset) creates a more consistent pattern of nutrient intake and rest periods for the gastrointestinal tract. This temporal restriction of feeding may optimize gastric emptying, reduce the occurrence of reflux, and normalize gastric acid secretion rhythms. Additionally, the emphasis on nutrient-dense meals during non-fasting hours, particularly the increased consumption of fruits, vegetables, whole grains, and adequate hydration, supports antioxidant activity, improves mucosal defense, and enhances gastrointestinal motility [8,9]. Collectively, these factors suggest that Ramadan fasting represents not only a spiritual practice but also a potential therapeutic approach for gastritis management by restoring

physiological balance within the gastrointestinal system. Therefore, this study investigates the effect of Ramadan fasting on the healing trajectory of gastritis, focusing on the improvement of clinical symptoms, reduction in gastric acid secretion, and promotion of mucosal repair. By exploring the physiological, biochemical, and behavioral dimensions of fasting, this research aims to provide empirical evidence regarding its efficacy as a non-pharmacological and culturally relevant intervention. Given the growing global interest in dietary and lifestyle-based approaches for managing gastrointestinal disorders, the findings of this study are expected to contribute significantly to the understanding of fasting as a safe, cost-effective, and holistic therapeutic strategy for gastritis.

Methods

This was an experimental study conducted in three Indonesian cities: Bengkulu, Banjarmasin, and Ternate, during the month of Ramadan in 2025. These cities were strategically selected to represent different geographical and cultural settings within Indonesia, ensuring that the findings could reflect the general fasting experience across various Muslim communities. The study aimed to assess the effect of Ramadan fasting on the healing trajectory of gastritis among Muslim adults, particularly focusing on the physiological and symptomatic improvements associated with prolonged fasting and changes in dietary and behavioral patterns. A total of 320 Muslim participants aged 25–40 years with a confirmed diagnosis of gastritis were recruited using purposive sampling. This age range was chosen because individuals in this group are generally in a stable metabolic and hormonal phase, minimizing potential confounding factors related to aging or adolescence that could influence gastric function. The study included 296 female participants and 24 male participants, reflecting the higher prevalence of gastritis among women in Indonesia due to hormonal and dietary variations. Participants were selected based on specific inclusion criteria, including a diagnosis of gastritis confirmed by medical examination and laboratory testing, as well as their willingness to participate in the study. Exclusion criteria included participants with peptic ulcer disease, gastrointestinal malignancy, or those taking medications that could interfere with gastric mucosal healing. Participants were evaluated weekly throughout the month of Ramadan to capture dynamic physiological changes that occur as fasting progresses. Data collection included a physical examination by a trained healthcare provider and semi-structured interviews that lasted approximately one hour. The physical examination focused on the evaluation of gastrointestinal symptoms such as epigastric pain, bloating, and nausea, which are the hallmark manifestations of gastritis. These symptoms were assessed using a standardized symptom severity scale [10] to ensure objective measurement and reproducibility. The semi-structured interviews gathered

information on participants' dietary habits, fasting practices, fluid intake, and overall health status. These interviews were conducted by trained interviewers to ensure consistency and reliability in data collection, minimizing interviewer bias and enhancing data validity.

In addition to physical examinations and interviews, participants were asked to complete a weekly symptom diary, which allowed for self-reporting of symptoms such as discomfort, pain intensity, and any changes in appetite or bowel movements. The use of a self-reported diary provided valuable insight into participants' daily symptom patterns, capturing fluctuations that might not be evident during weekly evaluations. This diary was reviewed weekly by the research team to track the progression of gastritis symptoms during the fasting period. Furthermore, participants' adherence to fasting was assessed, as it is known that fasting during Ramadan may vary in terms of duration, dietary practices, and compliance [11]. The assessment of fasting adherence was essential for establishing the relationship between the degree of compliance and the magnitude of symptomatic improvement. Ethical approval for this study was obtained from the Institutional Review Board (IRB) of each participating site, ensuring that the study adhered to ethical standards and protected participants' rights. The research was conducted in accordance with the Declaration of Helsinki principles for human experimentation. Informed consent was obtained from all participants prior to the study, with detailed explanations provided regarding the study's purpose, procedures, potential risks, and benefits. Participants were assured of their right to withdraw from the study at any time without any negative consequences, and confidentiality of personal data was strictly maintained throughout the research process. Data analysis was performed using both qualitative and quantitative methods to provide a comprehensive understanding of the impact of Ramadan fasting on gastritis symptoms. Descriptive statistics were used to summarize demographic information and symptom severity scores, allowing for the characterization of participant profiles and baseline symptom distributions. A repeated-measures analysis was conducted to evaluate changes in gastritis symptoms over the course of Ramadan, comparing pre-fasting and post-fasting assessments. This analytical approach was selected to account for within-subject variability and to accurately capture longitudinal changes over time. The significance level was set at $p < 0.05$ for all statistical tests to ensure rigorous interpretation of findings. The combination of quantitative symptom scoring, qualitative narrative interviews, and diary-based self-reporting strengthened the triangulation of data and enhanced the reliability of the results. Through this mixed-method approach, the study not only quantified symptomatic improvements but also captured the subjective experiences and behavioral adaptations of participants during Ramadan fasting. This comprehensive framework

provided valuable evidence on the potential therapeutic role of religious fasting in the modulation of gastric health among adults with gastritis.

Results

In the first week of fasting, most participants experienced a temporary worsening of gastritis symptoms. These included epigastric pain, a burning sensation in the upper abdomen, bloating, and in 27 participants (8.4%), vomiting episodes. This transient exacerbation of symptoms can be physiologically explained by abrupt changes in eating frequency and circadian rhythm during the early adaptation phase of Ramadan fasting [12]. During this phase, prolonged periods without food intake may initially increase gastric acid exposure to the mucosa, particularly in individuals with pre-existing hyperacidity. Moreover, irregular meal timing and reduced sleep during the initial nights of Ramadan could contribute to autonomic dysregulation, increasing vagal stimulation and transient gastric discomfort. However, these early reactions are typically self-limiting as the gastrointestinal system gradually adapts to new metabolic and hormonal cycles associated with fasting. By the second week, a marked improvement in symptoms was observed in 272 participants (85%). This improvement coincided with the body's physiological adaptation to the fasting pattern, characterized by a reduction in basal gastric acid secretion and enhanced mucosal protection through increased prostaglandin synthesis [13]. Additionally, participants reported a decrease in acid reflux, normalization of bowel movement patterns, and improved sleep quality. These findings are consistent with evidence that controlled fasting enhances metabolic homeostasis by optimizing insulin sensitivity, modulating inflammatory cytokines, and improving gastrointestinal motility. The adjustment to a stable pattern of meal timing—typically the predawn (suhoor) and post-sunset (iftar) meals—may also have contributed to better digestive rhythm and minimized postprandial gastric distention.

During the third week, 301 participants (94.1%) reported complete resolution of epigastric pain, with minimal bloating or other gastrointestinal complaints. The majority described a subjective feeling of “lightness,” improved digestion, and heightened concentration during daily activities. These outcomes reflect not only the recovery of gastric mucosal integrity but also systemic benefits of intermittent fasting, including reduced oxidative stress and promotion of cellular repair pathways via autophagy [14]. The extended rest periods for the gastrointestinal tract during fasting may have facilitated the regeneration of epithelial cells, reduced mucosal inflammation, and stabilized the gastric pH balance. Additionally, by this stage, most participants exhibited consistent dietary discipline, consuming nutrient-dense meals during non-fasting hours and avoiding irritants such as

caffeine, spicy foods, and carbonated beverages—factors known to aggravate gastritis symptoms. By the fourth week, all participants (100%) reported complete resolution of gastritis symptoms. Beyond symptomatic recovery, participants also experienced improved appetite regulation, reduced reliance on pharmacological interventions such as proton pump inhibitors or antacids, and a general sense of increased energy and psychological well-being. These outcomes correspond with prior findings that prolonged fasting exerts anti-inflammatory effects by downregulating pro-inflammatory cytokines (e.g., IL-6 and TNF- α) and promoting mucosal healing through enhanced stem cell activity in the gastric lining [15,16]. The consistent improvement suggests that structured fasting, when conducted within physiological limits and accompanied by balanced nutrition, can function as an effective non-pharmacological adjunct therapy for gastritis. Statistical analysis using the Chi-square test revealed a significant association between Ramadan fasting and the resolution of gastritis symptoms ($P < 0.001$), confirming the therapeutic influence of fasting on symptom improvement. This statistically significant trend underscores the positive biological effects of fasting, such as improved gastric mucosal resilience, hormonal balance, and gastrointestinal rest. The systematic decline in symptom prevalence from universal discomfort in week one to complete resolution in week four demonstrates the progressive and cumulative healing potential of Ramadan fasting in chronic gastritis management.

Interpretation of Table 1: Weekly Symptom Changes During Ramadan Fasting

Table 1: Weekly Symptom Changes During Ramadan Fasting (N = 320).

Week	Symptom Status	Number of Participants	Percentage (%)
Week 1	Symptoms worsened	320	100.0
	Vomiting episodes reported	27	8.4
Week 2	Symptoms improved	272	85.0
Week 3	Complete pain relief	301	94.1
Week 4	No symptoms reported	320	100.0
	Reported increased energy and well-being	320	100.0

Week 1

All 320 participants (100%) reported worsening gastritis symptoms during the initial week. Common complaints included epigastric pain, burning sensations, and bloating, with 27

participants (8.4%) experiencing vomiting. This early discomfort can be attributed to physiological stress from fasting initiation, alterations in gastric motility, and psychosomatic adaptation to fasting-related lifestyle changes.

Week 2

By the second week, 272 participants (85%) experienced significant symptomatic relief, implying that the gastrointestinal system had adjusted to the metabolic rhythm of fasting. Gastric acid levels likely stabilized, mucosal defense improved, and meal regularity enhanced digestive comfort. Sleep quality and stress control during fasting hours may have further contributed to gastric stability and reduced acid reflux episodes.

Week 3

In the third week, 301 participants (94.1%) reported complete pain relief and improved digestive efficiency. The near-complete symptom resolution indicates substantial mucosal healing and normalization of gastric secretion. Enhanced parasympathetic balance and hormonal modulation during fasting could have promoted anti-inflammatory responses and tissue recovery.

Week 4

By the fourth week, all participants (100%) were symptom-free and reported improved vitality and psychological well-being. This final stage demonstrates both physiological recovery and psychospiritual adaptation, aligning with research suggesting that fasting induces relaxation responses, reduces stress-related gastric hyperactivity, and enhances mind-body awareness.

Overall

The sequential improvement pattern observed across the four weeks provides robust evidence that Ramadan fasting can serve as an effective behavioral and physiological intervention for gastritis management. The statistically significant results ($P < 0.001$) confirm that fasting facilitates not only symptom relief but also deeper biological recovery through anti-inflammatory and regenerative mechanisms.

Discussion

The findings of this study demonstrated that Ramadan fasting had a significant therapeutic impact on the healing process of gastritis, with a progressive reduction of symptoms observed from the first to the fourth week. The complete resolution of gastritis symptoms in all participants by the end of the fasting period supports the hypothesis that structured fasting can serve as an effective non-pharmacological intervention for gastric health. This outcome aligns with emerging evidence that intermittent fasting promotes gastrointestinal homeostasis through modulation of gastric acid secretion, reduction of oxidative stress, and enhancement of

mucosal repair mechanisms [17]. The initial exacerbation of symptoms observed during the first week is a well-recognized physiological response when transitioning to prolonged fasting. Changes in the timing of meals and reduced caloric intake can temporarily stimulate gastric acid production before the body achieves metabolic adaptation. Previous studies have reported that early fasting phases often trigger mild gastrointestinal disturbances due to fluctuations in cortisol and ghrelin levels, which influence gastric motility and acid secretion [18]. However, as shown in this study, these symptoms were transient and subsided rapidly as the body adjusted to the fasting pattern.

By the second and third weeks, significant improvement in gastrointestinal comfort and complete relief from epigastric pain were reported by most participants. This improvement may be attributed to reduced exposure of the gastric mucosa to acid during fasting hours, along with enhanced cellular regeneration. Fasting induces a metabolic shift from glucose utilization to lipid oxidation, leading to the release of ketone bodies such as β -hydroxybutyrate, which have been shown to exert anti-inflammatory and cytoprotective effects on the gastrointestinal lining [19]. Additionally, fasting has been associated with increased levels of mucosal growth factors and antioxidant enzymes, which protect the stomach from oxidative injury and promote epithelial healing [20]. Another possible mechanism underlying these findings is the impact of fasting on the gut-brain axis. Intermittent fasting has been found to enhance vagal tone and reduce systemic inflammation, thereby improving gastrointestinal function and symptom perception [21]. This neurohumoral modulation could explain the concurrent improvement in sleep quality, mood stability, and concentration reported by participants in this study. Psychological well-being is known to influence gastrointestinal sensitivity, and fasting particularly when performed with mindfulness and spiritual engagement—has been shown to reduce stress-induced gastric acid secretion and dyspeptic symptoms [22]. The complete symptom resolution by the fourth week further supports the regenerative potential of fasting-induced gastric rest. The prolonged absence of food intake during daylight hours allows the stomach to recover from constant mechanical and chemical stimulation, enabling restoration of mucosal integrity and normalization of gastric pH. These findings corroborate earlier research indicating that fasting may facilitate mucosal cell turnover and upregulate autophagic processes, which are crucial for clearing damaged cells and promoting tissue renewal [23]. Moreover, the observed reduction in pharmacological dependence suggests that fasting could complement medical management by reducing the need for acid-suppressing drugs and minimizing their associated side effects [24].

From a clinical perspective, the consistent pattern of healing across participants underscores the potential role of fasting as an

adjunctive strategy in managing gastritis and related disorders. While pharmacological treatments such as proton pump inhibitors and H₂ receptor antagonists remain essential in acute management, lifestyle-based interventions like fasting can enhance long-term outcomes by addressing the physiological and behavioral determinants of gastric health [25]. The findings also have implications for nursing practice, particularly in promoting holistic approaches that integrate dietary, behavioral, and spiritual dimensions of patient care. Nurses can play a vital role in educating patients about safe fasting practices, meal planning during non-fasting hours, and monitoring symptom progression to ensure therapeutic benefits without adverse effects. However, it is important to acknowledge certain limitations. The study was conducted during Ramadan, where fasting was accompanied by spiritual and social factors that may have contributed to psychological well-being and perceived improvement. Future studies should incorporate biochemical and endoscopic assessments to confirm mucosal healing and evaluate long-term effects beyond the fasting month [26]. Despite these limitations, the present findings provide compelling evidence that structured fasting, when practiced under healthy conditions, can exert protective and restorative effects on gastric function, supporting its inclusion as part of holistic gastritis management programs [27].

Conclusion

Fasting during Ramadan has been shown to facilitate the healing of gastritis symptoms in adults aged 25–40 years. This study demonstrated a clear improvement in gastric symptoms, with most participants reporting complete resolution by the end of the fasting period. The symptom relief observed in this study aligns with previous research, which indicates that fasting can reduce gastric acid secretion, alleviate inflammation, and promote mucosal repair. The gradual reduction in symptoms over the four weeks of fasting suggests that the healing process is not only a result of gastric rest but may also involve hormonal and neurological adaptations that support mucosal healing and reduce inflammation. Additionally, the significant improvement in well-being and energy levels noted by participants at the end of the fasting period further supports the positive therapeutic potential of fasting. While the study provides valuable insights into the beneficial effects of fasting on gastritis, limitations such as the absence of objective measurements like endoscopy or biomarkers highlight the need for future research. Future studies could incorporate these methods to confirm the physiological changes occurring in the gastric mucosa during fasting and to further validate the findings. In conclusion, Ramadan fasting appears to be a promising non-pharmacological approach for managing gastritis, offering a safe and effective option for symptom relief in affected individuals. The results of this study open the door for

further exploration of fasting as an adjunctive treatment for gastrointestinal disorders, particularly in populations where pharmacological treatments are not preferred or where adjunctive therapies are sought.

Declarations

Ethics Approval and Consent to Participate

Approved by the Ethics Committees in Bengkulu with number EC/BE/3092/2025

Consent for Publication

Written informed consent was obtained from all participants.

Availability of Data and Materials

Data is available upon request.

Competing Interests

The authors declare no competing interests.

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Authors' Contributions

[Agussalim] designed the study, supervised data collection, analyzed the results, and wrote the manuscript.

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SUNTEXT REVIEWS

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