

Review

Coffee Consumption With The Incident Of Gastritis: Literature Review

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ABSTRACT

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Background: Gastritis is a stomach health problem that begins with inflammation of the gastric mucosa caused by infection with the *Helicobacter pylori* germ and is the most common disease. One cause of gastritis is the habit of drinking coffee. The habit of drinking coffee (caffeine) for a long period with a frequent frequency, namely > three glasses/day, can trigger an increase in stomach acid, irritating the mucosa or the stomach wall. This literature review aims to analyze the relationship between coffee consumption and the incidence of gastritis

Methods: Literature obtained from SINTA, PUBMED, Garuda, and Google Scholar databases. Nine literature reviews used several designs, namely descriptive exploratory, cross-sectional, descriptive cross-sectional study, case-control, descriptive-analytical, and descriptive from 2013-2023; then PICO analysis was carried out.

Results: The caffeine content in coffee can stimulate the production of stomach acid, which can trigger gastritis. Inflammation will occur continuously if the stomach is frequently exposed to irritants such as coffee. The inflamed tissue is then filled with fibrin tissue, which can cause loss of the gastric mucosal layer and atrophy.


Conclusion: The study showed that coffee influenced the incidence of gastritis.

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
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Introduction

Gastritis is often referred to as an ulcer disease, namely inflammation of the gastric mucosa due to irritation and infection, where the squeezing process can damage the stomach if it occurs continuously (Fallahi et al., 2021; Lubomski et al., 2020), This causes abrasions and wounds, which result in inflammation, which is called Gastritis (Salazar et al., 2022; Yimam et al., 2022; Zahid et al., 2020). Based on data from the Ministry of Health of the Republic of Indonesia in 2019, gastritis

cases were among the ten most common diseases in Indonesia, namely in inpatients in hospitals and Indonesian health centers with a total of 30,154 cases (4.9%) (Jusuf et al., 2022). The habit of drinking coffee (caffeine) for a long period with a frequent frequency of >3 glasses/day can trigger an increase in stomach acid, thereby irritating the mucosa or what is often called the stomach wall (Calcaterra et al., 2019; Carreira-Míguez et al., 2022; Schneider et al., 2020; Vien & Yeung, 2020). Drinking too much coffee can make stomach acid rise,



cause the heart to beat faster, cause difficulty sleeping, increase blood pressure, and interfere with female fertility. The factors influencing coffee consumption patterns in society include age, gender, education, and occupation ([Büntzel et al., 2020](#); [Han et al., 2023](#); [Razuka-Ebela et al., 2022](#)). The caffeine in coffee accelerates the process of forming stomach acid and produces excess gas, which causes a sensation of bloating in the stomach ([Gatti et al., 2023](#); [Tai et al., 2023](#); [Vandse et al., 2023](#); [Venegas Gómez et al., 2023](#)). Therefore, with this research, it is hoped that the public will understand that coffee consumption can cause gastritis, so they are expected to consume according to the recommendations.

Methods

This literature study uses the method of systematic literature review (SLR), namely, a systematic, comprehensive literature study by identifying, evaluating, and collecting existing research data. This research aims to analyze the relationship between coffee consumption and gastritis. Another relevant thing the researchers used was to obtain a journal about coffee consumption's effect on gastritis. *Literature review* This was compiled through searching for research articles that have been published and original *research*. Articles are collected through databases PubMed and Google Scholar by using keywords coffee, caffeine, and gastritis. The criteria for articles used were those published from 2013 to 2023, which were access to the full text. The process of selecting articles to be reviewed is filtered through an article search. Then, they are excluded, and in the end, the articles that have been entered are then synthesized. Data extraction tools guide information from records according to research objectives. Data extracted for each article includes author, year, method, and

results/output. After filtering based on the suitability of the article title with the research objectives, nine relevant articles were obtained. The results of the data analysis are then known as PICO (*Population, Intervention, Comparison, Outcome*), so the data collected shows that coffee consumption affects gastritis.

Results

The relationship between coffee consumption and gastritis complaints in medical faculty students at Al-Azhar Islamic University class of 2019 and 2022. The type of research used is observational to collect data and information without the intervention or treatment of respondents. The sample in this study was all 190 students from the Faculty of Medicine, Al-Azhar Islamic University, Class of 2019 and 2022. The characteristics of respondents who experienced complaints of gastritis in the gastritis category were 111 people (58.4%), and respondents who complained of gastritis in the non-gastritis category were 79 people (41.6%). The characteristics of respondents who consumed coffee in the low category were 27 people (44.2%), in the medium category there were 76 people (40.0%), and in the high category there were 87 people (45.8%). There is a relationship between coffee consumption and complaints of gastritis in students of the Faculty of Medicine, Al-Azhar Islamic University, Class of 2019 and 2022. There is a relationship between coffee consumption and complaints of gastritis in students of the Faculty of Medicine, Al-Azhar Islamic University, Class of 2019 and 2022 (Ardila et al., 2022)

The relationship between coffee consumption patterns and the risk of gastritis in the community in RT 10 RW 03, Mancar Village, Peterongan District, Jombang Regency. This research aims to determine the relationship between coffee

consumption patterns and the risk of gastritis in RT 10 RW 03, Mancar Village, Peterongan Area, Jombang Regency. Methods: Cross-sectional analysis was used in the research design. The population in this study were people aged 20-55 years in RT 10 RW 03 Mancar Village, totaling 240 respondents. Purposive sampling was used as a sampling method for 60 respondents by the inclusion criteria. The independent variable in this study was coffee consumption patterns, and the dependent variable was the risk of gastritis. Data was collected from research results according to questionnaire questions on 18-24 December 2022 at RT 10 RW 03 Mancar Village, Peterongan District. Jombang Regency. The statistical test carried out was the Spearman Rho test. Research Results: The research showed that almost half of the respondents had high coffee consumption patterns, 26 respondents (43.3%), and the incidence of gastritis showed that almost all respondents were at risk of gastritis, 47 respondents (78.3%). With a confidence level of 95%, Spearman's Rho correlation statistical test provides results with a P value of (0.000) and a value of (0.05), which indicates that these variables are related. The r value of 0.715 indicates a significant correlation. Conclusion: It can be concluded that coffee consumption patterns are related to the risk of gastritis. It is recommended that gastritis sufferers control their coffee consumption patterns daily, paying attention to the caffeine content in coffee. If caffeine is consumed beyond the safe limit in the body, it can cause an increase in stomach acid ([Abe et al., 2022](#); [Parra et al., 2022](#); [Tessier et al., 2022](#)).

Factors associated with the incidence of gastritis in patients seeking treatment at community health centers Based on observations at the Lak-Lak Community Health Center, Ketambe District, Southeast Aceh Regency, the number of ulcer sufferers

from January to March 2019 was 128. To date, no factors are related to the incidence of ulcers in this area. However, it is known. This study aims to determine the factors associated with stomach ulcers in patients seeking treatment at the Lak-Lak Health Center, Ketambe District, Southeast Aceh Regency, in 2019. This research uses a cross-sectional approach. The results of research using the Chi-square test based on eating habits and coffee-drinking habits are factors that are associated with stomach ulcers because the p-value is ≤ 0.05 . Meanwhile, smoking habits, alcohol consumption habits, and stress are factors that are not related to the incidence of ulcers because the p-value is ≥ 0.05 .

The relationship between coffee consumption patterns and the incidence of gastritis in Parepare Muhammadiyah students. This research aims to identify the relationship between coffee consumption patterns and the incidence of gastritis in Parepare Muhammadiyah University students. This type of research uses descriptive analytical methods with a cross-sectional approach. The population is 8,891 active students at Parepare Muhammadiyah University. The sample was 99 people who were calculated using the Slovin formula. The sampling technique was purposive sampling. Data was collected using a questionnaire. The results of this study indicate a relationship between coffee consumption patterns and the incidence of gastritis in Muhammadiyah Parepare University students. For gastritis sufferers and non-gastritis sufferers, it is best to limit coffee consumption ([Ilham, 2019](#)).

The relationship between eating patterns and coffee consumption and the incidence of gastritis in adolescents at MAN 1 Tangerang. This type of quantitative research, an analytical cross-sectional approach method, uses a total sampling of 80 samples. This research analysis was

univariate and bivariate using the Chi-Square test method. It shows that 49 (61.3%) students have poor eating patterns, and 51 (63.7%) have poor coffee consumption. The results of the Chi-Square statistical test showed that the P-value (X^2 count) of diet was 14,050 and coffee consumption was 5,776. The P-value is $\geq X^2$ table (3.841), meaning both hypotheses are accepted. There is a relationship between diet and coffee consumption and the incidence of gastritis in teenagers at MAN 1 Tangerang City (Putri et al., 2024).

Factor analysis of the incidence of gastritis in patchouli farmers in the working area of the Tiworo Selatan District Health Center. West Muna Kasimpa Jaya village in 2016. This research aimed to analyze risk factors, drinking alcohol, smoking habits, type of food, coffee drinking habits, and length of work with the incidence of gastritis in patchouli farmers. In Kasimpa Jaya Village. This type of research is analytical with a case-control study design. The population in this study were all patchouli farmers in Kasimpa Jaya Village, totaling 120 cases. This study comprised 40 cases and 40 control samples based on matching (age, gender, and occupation). The results of the study showed that smoking habits, type of food, drinking coffee, and length of work were risk factors for gastritis, and drinking alcohol was not a factor causing gastritis with their respective values for smoking habits (OR 1.286, lower limit = 0.319, upper limit = 5.186), type of food (OR 4.678, lower limit = 1.193, upper limit = 18.337), coffee drinking habits (OR 3.115, lower limit = 1.247, upper limit = 7.781), and length of work (OR 2.067, lower limit = 0.776, upper limit = 5.507). The results of the logistic regression test show that the type of food variable is the most dominant risk factor with a value of Exp (B) = 5.172. For the Head of the South Tiworo Community Health Center to be able to

provide education regarding the causes of Gastritis so that the people in Kasimpa Jaya Village know and can minimize the increase in Gastritis cases in Kasimpa Jaya Village, especially among Patchouli farmers

Factors associated with gastritis in the Blue Community Health Center, Bone Regency. This study aims to determine the factors associated with the incidence of gastritis in the Blue Community Health Center, Bone Regency, in 2019. Method: The type of research used is observational analytics with a cross-sectional study design. The population in this study were visitors to the public clinic at the Blue Health Center during January - August 2019 with a minimum sample size of 235 people and using accidental sampling techniques. The research was conducted at the Biru Health Center from October to November 2019. Data was analyzed univariately and bivariate using the chi-square test. Results: Results: This research shows that the number of respondents suffering from gastritis was 79 people (33.6%). The chi-square test results showed that type of food ($p=0.001$), stress ($p=0.000$), and NSAID consumption ($p=0.000$) were factors related to the incidence of gastritis.

Meanwhile, eating frequency ($p=0.053$), coffee consumption ($p=0.787$), and smoking habits ($p=0.319$) were not factors related to the incidence of gastritis. Conclusion: There is a relationship between the type of food, stress, and consumption of NSAIDs and the incidence of gastritis at the Biru Bone Regency Community Health Center in 2019. Advice to the public is to adopt a healthy lifestyle to avoid gastritis and to future researchers to develop research related to gastritis so that it is a reference related to the causal relationship of this disease. (Syam, Arsin, A, & Ansar, 2020)

Discussion

The caffeine content in coffee can stimulate the production of stomach acid, which can trigger gastritis. (Ainslie-Waldman, C. E., Koh, W.-P., Jin, A., Yeoh, K. G., Zhu, F., Wang, R., Yuan, J.-M., & Butler, 2015) Inflammation will occur continuously if the stomach is frequently exposed to irritants such as coffee. The inflamed tissue is then filled with fibrin tissue, which can cause loss of the gastric mucosal layer and atrophy. Gastric mucosal cells and, if left continuously, can trigger repeated episodes of gastritis (Edward et al., 2019; Hung et al., 2021). The habit of consuming coffee for a long period, frequently and in unreasonable quantities, such as more than three glasses a day, can accelerate the increase in stomach acid, which can irritate the mucosa or stomach wall. If left continuously and for a long period, it will result in recurrent gastritis. This indicates that coffee consumption patterns influence the recurrence of gastritis.

Coffee contains several chemical components: caffeine, chlorogenic acid, trigonelline, carbohydrates, fats, amino acids, organic acids, polyphenols, tannins, oxalates, and other compounds. Some of these components can cause positive and negative effects. (Abd-elhamid, Salem, Mohamed, & Abd-elgalil, 2020)

Tannins and oxalates negatively affect coffee as inhibitors of iron absorption (Maulidia & Jatmiko, 2021). The safe limit for caffeine consumption for adults is = 400 mg/per day. Caffeine in coffee can speed up the process of forming stomach acid, creating internal gas production in the excess stomach, so it will often cause a bloating sensation in the stomach. If the gastric mucosa is damaged, there will be diffusion of HCl to the gastric mucosa, and HCl will damage the mucosa (Elmadih et al., 2019). The dose of coffee given, namely 500 mg/day for 30 days, can cause damage to

the stomach caused by epithelial hyperplasia, necrosis, inflammation, and edema. Shows that Arabica coffee also has the potential to cause the release of gastric acid secretion (Rubiyanti et al., 2020). In the histological picture with arabica coffee dose of 466 - 480 mg/day for 30 days, there are changes in the stomach's histology in the form of chronic inflammatory cells, edema, and stomach erosion. Mucosal layer and widening of blood vessels. (Adelina, 2021)

Based on a literature review, it has been concluded that giving Arabica coffee too much can be detrimental to health, especially in the stomach. A safe dose of coffee is recommended for adults, namely 300 mg/day for 30 days. Content in arabica coffee, one of which can be caffeine, stimulates gastric acid secretion when used directly- continuously at doses above normal. Over a long period, it will cause damage to the gastric mucosa, inflammation of the stomach, and gastritis.

Conclusion

Based on the results of a literature review, it was found that coffee is an extrinsic factor that can cause gastritis. The production of the hormone cortisol during stress can cause a decrease in lymphocytes and reduce the body's immunity to foreign objects, causing gastritis. The caffeine content in coffee can stimulate the production of stomach acid, which can cause gastritis (Selviana, 2015). It is hoped that the public will be proactive in limiting coffee drinking; the safe limit for caffeine consumption for adults is = 400 mg/per day, and the safe dose of coffee recommended for people adults is 300 mg/day for 30 days.

Authors Contributions

The author carries out tasks from data collection, data analysis, and discussions to making manuscripts.

Conflicts of Interest

There is no conflict of interest.

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References

- Abe, M., Ueo, T., Takahashi, H., Akiyama, H., Togo, K., Fukuda, M., Kakisako, Y., & Murakami, K. (2022). Endoscopic finding of hematin represents strong gastric acidity. *Annals of Gastroenterology*, 35(4), 362–367. <https://doi.org/10.20524/aog.2022.0720>
- Büntzel, J., Mathies, V., Hübner, J., & Büntzel, J. (2020). Complementary treatment approaches for patients with gastritis and functional dyspepsia during anticancer treatment. *Onkologie*, 26(3), 283–288. <https://doi.org/10.1007/s00761-020-00717-6>
- Calcaterra, V., Larizza, D., De Giuseppe, R., De Liso, F., Klersy, C., Albertini, R., Pozzebon, I., Princis, M. P., Montalbano, C., Madè, A., & Cena, H. (2019). Diet and Lifestyle Role in Homocysteine Metabolism in Turner Syndrome. *Medical Principles and Practice*, 28(1), 48–55. <https://doi.org/10.1159/000494138>
- Carreira-Míguez, M., Navarro-Jiménez, E., & Clemente-Suárez, V. J. (2022). Behavioral Patterns of Depression Patients and Control Population. *International Journal of Environmental Research and Public Health*, 19(15). <https://doi.org/10.3390/ijerph19159506>
- Edward, S., Kumar, M. S., & Gopalkrishnan, S. (2019). Trend of caffeine consumption among medical students and its side effects. *Drug Invention Today*, 11, 2764–2768. <https://www.scopus.com/inward/record.uri?eid=2-s2.0-85081688987&partnerID=40&md5=bec27d78570891636b78fe54dbfe0a19>
- Elmadih, W., Chronopoulos, D., Syam, W. P., Maskery, I., Meng, H., & Leach, R. K. (2019). Three-dimensional resonating metamaterials for low-frequency vibration attenuation. *Scientific Reports*, 9(1), 11503.
- Fallahi, P., Ferrari, S. M., Elia, G., Ragusa, F., Paparo, S. R., & Antonelli, A. (2021). L-T4 Therapy in Enteric Malabsorptive Disorders. *Frontiers in Endocrinology*, 12. <https://doi.org/10.3389/fendo.2021.626371>
- Gatti, S., Piloni, F., Bindi, E., Crucetti, A., Catassi, C., & Cobellis, G. (2023). Hypertrophic Pyloric Stenosis in an Adolescent Girl: An Atypical Presentation of an Unexpected Disease. *Diseases*, 11(1). <https://doi.org/10.3390/diseases11010019>
- Han, T., Zhang, Y., Qi, B., Chen, M., Sun, K., Qin, X., Yang, B., Yin, H., Xu, A., Wei, X., & Zhu, L. (2023). Clinical features and shared mechanisms of chronic gastritis and osteoporosis. *Scientific Reports*, 13(1). <https://doi.org/10.1038/s41598-023-31541-8>
- Hung, S.-Y., Liu, W.-J., Wu, P.-C., Yang, M.-C., Wu, Y.-K., & Lan, C.-C. (2021). Noninvasive ventilator prevents intubation in thyrotoxic hypokalemic periodic paralysis-associated respiratory failure: A case report and literature review. *Tzu Chi Medical Journal*, 33(1), 91–95. https://doi.org/10.4103/tcmj.tcmj_248_19
- Ilham, M. I. (2019). Hubungan pola konsumsi kopi terhadap kejadian gastritis pada mahasiswa

- muhammadiyah parepare. *Jurnal Ilmiah Manusia Dan Kesehatan*, 2(3), 433–446.
- Jusuf, H., Adityaningrum, A., & Yunus, R. (2022). Determinan Kejadian Gastritis Pada Mahasiswa. *Jambura Health and Sport Journal*, 4(2), 108–118.
- Lubomski, M., Tan, A. H., Lim, S.-Y., Holmes, A. J., Davis, R. L., & Sue, C. M. (2020). Parkinson's disease and the gastrointestinal microbiome. *Journal of Neurology*, 267(9), 2507–2523. <https://doi.org/10.1007/s00415-019-09320-1>
- Maulidia, A., & Jatmiko, S. W. (2021). Pengaruh Kopi terhadap Parameter Darah pada Tikus Putih Galur Wistar Diabetik yang Diinduksi Aloksan. *Jurnal Kedokteran Dan Kesehatan*, 17(1), 35–43.
- Parra, R. M. R., Arenas, L. A. B., Chacín, J. L. R., Parra, H. A. C., & Romero, J. A. F. (2022). Helicobacter Pylori infection and upper gastrointestinal bleeding. *Boletín de Malariología y Salud Ambiental*, 62(3), 472–478. <https://doi.org/10.52808/bmsa.7e6.6.23.013>
- Putri, A. N., Embrik, I. S., & Pratiwi, A. (2024). Hubungan Pola Makan Dan Konsumsi Kopi Dengan Kejadian Gastritis Pada Remaja Di MAN 1 Tangerang. *Jurnal Dunia Ilmu Kesehatan (JURDIKES)*, 2(1), 10–14.
- Razuka-Ebela, D., Polaka, I., Daugule, I., Parshutin, S., Santare, D., Ebela, I., Rudzite, D., Vangravs, R., Herrero, R., Young Park, J., & Leja, M. (2022). Lifestyle and dietary factors associated with serologically detected gastric atrophy in a Caucasian population in the GISTAR study. *European Journal of Cancer Prevention*, 31(5), 442–450. <https://doi.org/10.1097/CEJ.0000000000000723>
- Rubiyanti, R., Sri, T., & Wibowo, A. (2020). Strategi Kewirausahaan dan Digital Marketing Produk Teh Binahong di Tawang, Tasikmalaya, Jawa Barat. *DIKEMAS (Jurnal Pengabdian Kepada Masyarakat)*, 4(1).
- Salazar, B. E., Pérez-Cala, T., Gomez-Villegas, S. I., Cardona-Zapata, L., Pazos-Bastidas, S., Cardona-Esteva, A., Vélez-Gómez, D. E., Justinico-Castro, J. A., Bernal-Cobo, A., Dávila-Giraldo, H. A., Benítez-Guerra, J. C., Valencia-Cárdenas, J. T., Ospina, E. J., Castaño-Llano, R., Bravo, M. M., Cataño-Correa, J. C., Zabaleta, J., Trespalacios-Rangel, A. A., Cock-Botero, A. M., ... Martínez, A. (2022). The OLGA-OLGIM staging and the interobserver agreement for gastritis and preneoplastic lesion screening: a cross-sectional study. *Virchows Archiv*, 480(4), 759–769. <https://doi.org/10.1007/s00428-022-03286-8>
- Schneider, J. R., Thomson, J. M., Fraser, A., Vijayan, B., Bassett, P., & Leeds, J. S. (2020). Is coffee ground vomiting important? Findings from a large bleeding unit database and outcomes at 30 days. *European Journal of Gastroenterology and Hepatology*, 32(7), 797–803. <https://doi.org/10.1097/MEG.0000000000001701>
- Tai, W.-C., Yang, S.-C., Yao, C.-C., Wu, C.-K., Liu, A.-C., Lee, C.-H., Kuo, Y.-H., Chuah, S.-K., & Liang, C.-M. (2023). The Efficacy and Safety of 14-day Rabeprazole Plus Amoxicillin High Dose Dual Therapy by Comparing to 14-day Rabeprazole-Containing Hybrid Therapy for the Naïve Helicobacter pylori Infection in Taiwan: A Randomized Controlled Trial. *Infectious Diseases and Therapy*, 12(5), 1415–1427. <https://doi.org/10.1007/s40121-023-00811-3>
- Tessier, S., Emengo, I., Yoder, N., Longo, S., &

- Ido, F. (2022). Massive empyema due to *Lactococcus garvieae*. *GERMS*, 12(3), 414–418.
<https://doi.org/10.18683/germs.2022.1347>
- Vandse, S., Psarrakis, Y., Washington, K., & Baron, M. A. (2023). Comparative Bioavailability of a Novel Solution and a Tablet Formulation of Levothyroxine. *Clinical Pharmacology in Drug Development*, 12(5), 502–508.
<https://doi.org/10.1002/cpdd.1233>
- Venegas Gómez, V. A., Ruiz Manríquez, J., Falcon Antonio, O. E., & Zamora Nava, L. E. (2023). Phlegmonous gastritis associated with invasive *Pseudomonas aeruginosa* infection. *Revista Espanola de Enfermedades Digestivas*, 115(11), 651–652.
<https://doi.org/10.17235/reed.2023.9471/2023>
- Vien, L. P., & Yeung, H.-M. (2020). Acute Esophageal Necrosis (Gurvits Syndrome): A Rare Complication of Diabetic Ketoacidosis in a Critically Ill Patient. *Case Reports in Medicine*, 2020.
<https://doi.org/10.1155/2020/5795847>
- Yimam, M., Yimer, S. M., & Beressa, T. B. (2022). Ethnobotanical study of medicinal plants used in Artuma Fursi district, Amhara Regional State, Ethiopia. *Tropical Medicine and Health*, 50(1).
<https://doi.org/10.1186/s41182-022-00438-z>
- Zahid, R., Akram, M., Riaz, M., Munir, N., & Shehzad, M. (2020). Phytotherapeutic modalities for the management of *Helicobacter pylori* associated peptic ulcer. *European Journal of Inflammation*, 18.
<https://doi.org/10.1177/2058739220968308>