

Epidemiology and Associated Risk Factors of Gastritis in Patients at District General Hospital, Amravati

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ABSTRACT

Background and objectives: Many studies are carried out on the prevalence of gastritis in relation to *H. pylori* infection. Therefore, this study was undertaken to assess the role of socio-demographic factors, dietary habits, economic status, stress level, family status, drug use and other medical conditions in the occurrence of gastritis. Moreover, no such epidemiological study has been conducted at Amravati District. Thus, it is essential to determine the prevalence of gastritis in this area in relation to above mentioned etiologic factors.

Methods: A descriptive, observational, non-interventional study was carried out on 150 patients diagnosed with gastritis at District General Hospital, Amravati. Primary data were collected by interviewing the patients according to the etiologic factors based questionnaire.

Results: Male population was found to be at greater risk for gastritis. Prevalence of gastritis is found to be more prominent in the age group of 14-25 and 36-45 years, respectively. The study found that physical work increases the risk for developing gastritis; subjects from urban locality are found to be more affected by the disease. Furthermore, daily consumption of irritant spicy food and tea may aggravate the gastritis symptoms. Frequent consumption of NSAIDs can be considered as a risk factor for developing gastritis. Moreover, there is a significant association between blood group A (Rh positive), psychological stress, menstrual history, sleeping time, education and risk for developing gastritis.

Conclusion: This study demonstrates a brief overview of various risk factors for gastritis, particularly in the population under study and points out the possible risk factors for the prevention of gastritis.

Keywords: Gastritis, Prevalence, Risk factors, epidemiology, India

INTRODUCTION

Gastritis represents a significant societal and public health concern, both in developed and developing countries. This condition serves as an underlying factor influencing individuals' health behaviors, socioeconomic status, lifestyles, living conditions, and habits. Gastritis primarily manifests as inflammation or irritation of the gastric mucosa. It can be categorized into three main forms: acute gastritis,

characterized by brief and sudden onset; chronic gastritis, a long-lasting condition; and occasionally, a rare and potentially severe or life-threatening variant due to persistent symptoms or internal bleeding.¹ One notable form of gastritis is linked to the presence of *Helicobacter pylori* (*H. pylori*) bacteria, which can result in excessive inflammation, mucous membrane irritation, and increased gastric secretion, ultimately leading to the rupture and inflammation of

the stomach mucosa. Various risk factors contribute to the development of gastritis, including smoking, alcohol consumption, tobacco use, consumption of spicy foods, medication usage, stress, accidental ingestion of foreign objects, and infections.² Globally, gastritis is a prevalent health issue, affecting 50.8% of the population in developing countries and causing health-related problems in 34.7% of individuals in developed countries.³ In the context of India, gastritis has an estimated incidence of approximately 3 cases per 869 individuals, which translates to approximately 12,25,614 people suffering from gastritis out of a total population of 1,06,50,70,607. Recent studies conducted in Bangalore among adults have shown a high prevalence of *Helicobacter pylori* (*H. pylori*) infection at 78%, while a similar study in Allahabad reported a prevalence of 77.2% among adults aged 19-26 years. In African countries, a systematic review revealed that 38% of women and 18% of men suffer from gastritis. Kenya reported a clinical diagnosis of gastritis in 73.3% of children and 54.8% of adults among patients visiting healthcare institutions.⁴ In Uganda, 44.3% of individuals under 12 years old were found to be suffering from gastritis. Additionally, in Nigeria, 40.7% of children aged 6 to 10 years were diagnosed with gastritis caused by *H. pylori* infection.³

Numerous previous research studies have emphasized the significant impact of various factors, including gender, age, socioeconomic status, biological aspects, environmental influences, and individual behaviours, on the development of gastritis. In addition to the extensive research conducted on gastritis prevalence in relation to *H. pylori* infection, our study aims to specifically investigate the role of socio-demographic factors, dietary habits, economic status, stress levels, family status, medication use, and other medical conditions in the occurrence of gastritis. Furthermore, given the absence of prior studies at General Hospital Amravati, it is imperative to determine the prevalence of

gastritis in this region concerning the aforementioned contributing factors. Our primary objective in conducting this dedicated analysis of gastritis is to provide valuable insights on the factors that significantly contribute to its occurrence, while also disseminating information about its prevalence

MATERIALS & METHODS

Study design: It is a descriptive, observational, non-interventional study.

Study Subject: Total 150 subjects were included in the study.

Inclusion Criteria: All patients diagnosed with the gastritis between the age group 14-65 years of both sexes, admitted to the medicine ward of District General Hospital, Amravati.

Exclusion Criteria: Pediatric age group was excluded. Patients from OPD and other wards were excluded.

Study Method: Collection of data was done using a structured questionnaire form. With the written consent, the patient was interviewed according to the questionnaire. The data was categorized into socio-demographic details, dietary habits, economic status, family history, stress level, drug use, and medical history of the patient. The detail of each category is described below:

Demographic factors: In demographic factors age, gender, educational level, residence, occupation, blood pressure and blood group were investigated. Age was classified as 14-25 years, 26-35 years, 36-45 years 46-55 years and 56-65 years respectively. Gender was classified as male and female. Residential area of the subjects was classified as rural and urban. Educational level was classified as SSC, HSC, below SSC, graduate and illiterate. Occupation was classified as labour, farmer, driver, housewife, student and others. Blood pressure was classified as normal, hypertensive and hypotensive on the basis of mean arterial pressure calculation. Blood group was classified as A, B, AB, O and Rh factor positive and negative.

Social history: The daily habits include alcohol consumption, smoking and tobacco chewing. Alcohol consumption was classified as alcoholic and non –alcoholic. Smoking was classified as smokers and non-smokers. Tobacco chewing was classified as ‘yes’ or ‘no’. Marital status of the subjects was investigated and classified as married, unmarried, divorcee or widow.

Dietary status: Diet was classified as vegetarian and mixed diet. Do patients experience bloated feeling after eating was also investigated as ‘yes’ or ‘no’. Inclusion of fibres (i.e. green leafy vegetables) in your daily diet was also investigated as ‘yes’ or ‘no’.

Medical history: Parameters such as family history of gastritis, medical history of any known disease or disorder, previous hospitalizations, if any, then reason for hospitalization and known allergies were investigated.

Medication history: Past medication history, use of NSAIDS frequently and OTC medications was identified.

Stress history: stress history was investigated using the perceived stress scale. According to the perceived stress scale the level of stress was measured in the score of 0, 1, 2, 3, 4 where 0-never, 1-almost never, 2-sometimes, 3- fairly often, 4- very often.

Exercise: Whether the subjects performed exercise regularly was investigated.

Menstrual history: Menstrual history in female subjects was investigated as rate of blood flow during menses, pain while menstruating and regularity. The rate of blood flow was classified as high flow, moderate flow, low flow and menopause. Pain was investigated as ‘yes’ or ‘no’. Regularity was classified as regular and irregular.

Sleeping time: Sleeping time and irregularity in sleep were investigated. Sleeping time was classified as <6 hours, 6-8 hours and >8 hours. Irregularity in sleep was investigated as ‘yes’ or ‘no’.

Bowel movement: Bowel movement of the subjects was investigated as loose, normal and constipated.

Objectives

• We have determined the prevalence of the different etiological factors such as demographic, socio-economic, stress, dietary habits, and drug use in the occurrence of gastritis.

• Assessment of the association between blood group and the incidence of gastritis.

• Identified the commonest cause of gastritis in the locality.

Research setting

The study was conducted on the IPD patients in the District General Hospital, Amravati

Population

All patients diagnosed with the gastritis between the age group 14-65 years of both sexes, admitted to the medicine ward of District General Hospital, Amravati.

Sample size

Total 150 gastritis patients were selected for the study.

Ethical Approval

• Permission was taken from the Principal of Government college of pharmacy, Amravati.

• Permission was taken from the Administrator of the District General Hospital, Amravati.

• Written informed consent was taken from each study sample.

• Confidentiality of each sample was maintained throughout the study.

RESULT & DISCUSSION

In the present study, different parameters were taken in to consideration to analyze the pattern of distribution of the disease.

In our study, out of 150 cases 73% subjects were male and 27% were female. Thus this study reveals male predominance for gastritis. Refer figure 1 for the age wise distribution of the Gastritis study subjects.

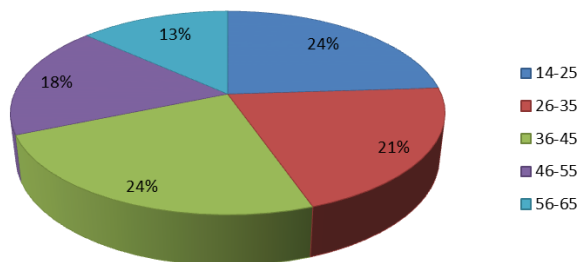


Figure 1: Age wise distribution of the Gastritis study subjects

75% of subject population was married, 21% were unmarried and 4% were widow. This means that majority of patients with gastritis were married. 25% of the total subjects had history of certain disease or disorder. Of which, hypertension constitute 10% and diabetes mellitus, acquired immunodeficiency syndrome, arthritis, burn, pulmonary tuberculosis and others constitute 4%, 3%, 2%, 1%, 1% and 4% respectively. In an observational study, a statistically significant relationship was found between H. pylori infection and hypertension. About 23% of the total population had past medication history, of which 9% was on antihypertensive therapy (Amlodipine) and 6%, 4%, 3% and 1% were on Non-steroidal anti-inflammatory drugs (NSAIDs), oral hypoglycemic, Antiretroviral therapy and Directly Observed Therapy respectively. 61% of subjects had history of frequent NSAIDs consumption.⁵In a review article it has been explained that long term administration of NSAIDs can lead to gastrointestinal complications including gastritis.⁶This

association has been supported by our study. 75% of study subjects were taking mixed diet and 25% subjects were vegetarian. This result complies with a cross-sectional study conducted to examine the association between lifestyle factors and development of gastritis.

To find out the impact of literacy on incidence of gastritis, we have collected literacy data of the population under study. It was found that the majority of the population i.e. 77% is below Secondary School Certificate (SSC), followed by 34%, 19%, 15%, 5% in SSC, Higher Secondary School Certificate (HSC), illiterate and graduate respectively. Moreover, the prevalence of gastritis in the study is associated with the lack of higher education in the study subjects. On contrary, illiterate subjects were found to be less affected by the disease as compared to less educated group i.e. below SSC level. (Refer figure 2 for the occupation wise distribution of the Gastritis in the study subjects and figure 3 for Occupation wise distribution of gastritis in Male and Female)

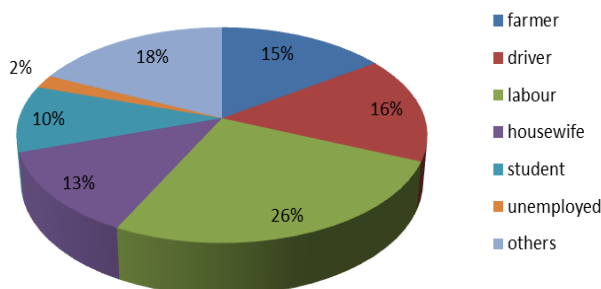


Figure 2: Occupation wise distribution of gastritis.

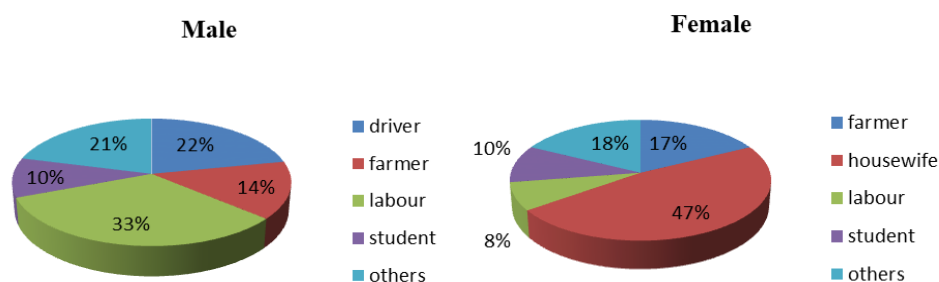


Figure 3: Occupation wise distribution of gastritis in Male and Female

In male subjects, predominant occupation is of labour (33%) and driver (22%). In females, predominance is of housewife (47%). Thus, this study implicates that labours and housewives are at greater risk of gastritis. This highlights the fact that physical hard work is one of the aggravating factors for gastritis. Additionally, we have found that 68% of total subject population lived in urban area whereas 32% lived in rural area. This finding is contradictory with the findings of an observational study that concluded 52% lived in rural area⁷. The predominance of subject population with gastritis in urban areas may be due to lifestyle differences and increased exposure to the pollutants. With respect to difference in blood group, 46% of the subjects belong to blood group A Rh+ve, followed by 21% of B Rh+ve, 6% of AB Rh+ve, 12% O Rh+ve, 5% A Rh-ve, 5% B Rh-ve, 3% AB Rh-ve and 1% O Rh-ve. This finding is contradictory to the findings of cross sectional longitudinal study which examined the relationship between *H. pylori* infection and blood group that underwent local health screening and concluded increased frequency of *H. pylori* infection in "O" blood group.⁸

As hypertension is related with the increase incidence of gastritis, measurement of blood pressure is an essential parameter in the study.⁵ We have found that 6% of the study population was hypertensive and rests were normotensive. Thus, present study does not support the higher incidence of gastritis in hypertensive patients.

Smoking was considered in the earlier studies as a risk factor in the pathogenesis of gastritis. With regard to the role of smoking as a risk factor for gastritis, our study concluded that 49% of the total participants were smoker whereas 51% were nonsmoker. Thus, there is no significant difference in smoker and non-smoker population as far as gastritis is concerned.

It has been evaluated previously that alcohol consumption leads to the gastric mucosal damage and is an important risk factor in the pathogenesis of gastritis.⁹ In our study, we have found that 54% were alcoholics and 46% were non-alcoholics. Out of the total population none of the female subject had history of alcohol consumption whereas on the other hand, 74% of total male subject were alcoholic. Hence, alcohol consumption plays an important role in initiation and progression of gastritis.

Annual income of 68% study population was below 1 lakh and of 32% subjects was 1-2 lakh. Majority of our study subjects had annual income less than one lakh. Thus, poverty may be a contributing factor in incidence of gastritis.

In this study, 47% of total population experienced emotional stress fairly often (level 3 of stress scale). This result is consistent with the result of a review article which reveals that emotional stress may play a contributing role in the production of gastric mucosal abnormalities.¹⁰

A recent study concluded that men who exercise may have a lower risk of developing a duodenal ulcer.¹¹ In the present study, 92% of total subject population does

not exercise and this result is consistent with the previous studies. Exercise help in reducing gastritis symptoms such as acid reflux and bloating because the physical activity stimulates the digestive system. Aerobic activities like walking or jogging keep digestive system moving regularly because the intestinal muscles are prompted to work more efficiently. Our study reveals a strong association between consumption of spicy food and tea in worsening the symptoms of gastritis. 73% of the study subjects consume spicy food whereas 27% do not. In case of tea consumption, 18% subjects consume more than 4 times a day followed by 31%, 43% who consume tea 4 times and 2 times a day respectively. This complies with an article which stated that consumption of spicy food and caffeine irritate the lining of stomach which is already inflamed due to gastritis.¹² (Refer Table 2 for Dietary pattern related distribution of sample characteristics in terms of frequency and percentage)

84% of the total study population felt bloated after eating. Many studies revealed that bloated feeling is associated with gastritis. Therefore, the best remedy i.e. regular exercise or physical work up in the

morning is beneficial to reduce the occurrence of gastritis.

72% of total study subjects sleep for 6-8 hours followed by 21% who sleep <6 hours and 7% sleep for >8 hours. In an article it was stated that loss of sleep lowers the power of the nerves to maintain normal digestive function.¹³ 51% of study population experienced irregularity in sleep while 49% not. Thus good night sleep for about 8 hours is essential as one of the preventive measure from gastritis.

Out of the total women subject, 47% of female had moderate blood flow during their menses. 35% of females were in their menopausal phase. As per the findings of recent article, females who are in their perimenopausal phase or menopausal phase experience gastritis like symptoms such as bloating.¹⁴ In our study we found that 60% of women were in perimenopausal and menopausal phase. Thus, experiencing more symptoms associated with gastritis. Moreover, in our study, bowel habits of 47% study subjects were normal followed by 34% and 19% which were constipated and loose respectively. (Refer Table 1 for the Distribution of sample characteristics in terms of frequency and percentage)

Table 1: Distribution of sample characteristics in terms of frequency and percentage

Sr. No	Characteristics	variable	Percentage	Frequency
1	Age	14-25 years	24	24
		26-35 years	21	21
		36-45 years	24	24
		46-55 years	18	18
		56-65 years	13	13
2	Gender	Male	73	73
		Female	27	27
3	Education	Below SSC	77	77
		SSC	34	34
		HSC	19	19
		Graduate	5	5
		Illiterate	15	15
4	Occupation	Labours	26	26
		Others	18	18
		Driver	16	16
		Farmer	15	15
		Housewife	13	13
		Student	10	10
		Unemployed	2	2
5	Locality	Urban	68	68
		Rural	32	32
6	Blood group	A Rh+ve	46	46
		B Rh+ve	21	21
		AB Rh+ve	6	6
		O Rh+ve	12	12
		A Rh-ve	5	5
		B Rh-ve	5	5

		AB Rh-ve	3	3
		O Rh-ve	1	1
7	Blood Pressure	Hypertensive	6	6
		Normotensive	94	94
8	Smoking	Smoker	49	49
		Non-smoker	51	51
9	Alcohol	Alcoholic	54	54
		Non-Alcoholic	46	46
10	Marital Status	Married	75	75
		Un-Married	21	21
		Divorcee	4	4
11	Economic Status	below 1 lakh	68	68
		1-2 lakh	32	32
12	Stress	Never	3	3
		Almost never	10	10
		Sometime	26	26
		Fairly Often	47	47
		Very Often	14	14
13	Exercise	yes	8	8
		No	92	92
14	Past Medication/ Medical History	Yes	25	25
		No	75	75
15	NSAIDs consumption	Yes	61	61
		No	39	39
16	Bloated Feeling	Yes	84	84
		No	16	16
17	Sleeping Time	6-8 hours	72	72
		<6 hours	21	21
		>8 hours	7	7
18	Menstrual history	Moderate blood flow	47	47
		menopausal phase	35	35
		perimenopausal phase	18	18
19	Bowel habits	normal	47	47
		constipated	34	34
		Loose	19	19

Table 2: Dietary pattern related distribution of sample characteristics in terms of frequency and percentage

Sr. No	Characteristics	Variable	Percentage	Frequency
1	Diet	Veg	25	25
		Mixed	75	75
2	Spicy food intake	Yes	73	73
		No	27	27
3	Tea consumption	more than 4 times a day	18	18
		4 times	31	31
		2 times	43	43

CONCLUSION

Globally, gastritis is a prevalent health issue. In conclusion, the findings of the present study highlight that the male population faces a heightened risk of gastritis, primarily attributed to lifestyle modifications, occupational factors, and social habits, notably alcohol consumption. Gastritis prevalence is notably prominent among individuals aged 14-25 years and 36-45 years, with physical labor increasing susceptibility. Urban residents exhibit a higher incidence of the disease. The aggravation of gastritis symptoms is associated with the consumption of irritating spicy food and tea, while frequent use of NSAIDs emerges as a notable risk factor.

Additionally, significant correlations are observed with blood group (predominantly A Rh+ve), psychological stress, menstrual history, sleeping patterns, and educational levels as potential risk factors for gastritis development. This study provides a comprehensive overview of various risk factors, offering insights crucial for preventing gastritis. The results underscore the need for targeted interventions to mitigate the impact of these identified risk factors and enhance public health outcomes. Future perspectives should focus on developing tailored preventive strategies and interventions to reduce the burden of gastritis within the studied population.

Declaration by Authors

Ethical Approval:

- Permission was taken from the Principal of Government College of pharmacy, Amravati.
- Permission was taken from the Administrator of the District General Hospital, Amravati.
- Written informed consent was taken from each study sample.
- Confidentiality of each sample was maintained throughout the study.

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Conflict of Interest: The authors declare no conflict of interest.

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