

A Cross-Sectional Study on Gastroesophageal Reflux Disorders and Inflammatory Bowel Diseases in the Urban Region of BhagalpurSanjeeb Sharan¹, Sheetal Kumari Gupta², Archana Bharti³, H.P. Dubey⁴¹Assistant Professor, Department of Physiology, J.L.N.M.C.H., Bhagalpur, Bihar, India²Assistant Professor, Department of Physiology, J.L.N.M.C.H., Bhagalpur, Bihar, India³Senior Resident, Department of Physiology, J.L.N.M.C.H., Bhagalpur, Bihar, India⁴Professor & H.O.D., Department of Physiology, J.L.N.M.C.H., Bhagalpur, Bihar, India

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Conflict of interest: Nil

Abstract:

Background: Gastroesophageal reflux disease (GERD) and inflammatory bowel diseases (IBD), including Crohn's disease and ulcerative colitis, are growing public health concerns, particularly in urban settings of developing countries like India. This study aims to investigate the prevalence, risk factors, and clinical characteristics of GERD and IBD in the urban area of Bhagalpur, Bihar.

Methods: A cross-sectional observational study was conducted with 120 adult residents of Bhagalpur. Data were collected through structured interviews, medical history reviews, and diagnostic tests. The study focused on identifying the prevalence of GERD and IBD, associated risk factors, symptom severity, and impact on quality of life. Statistical analysis was performed using SPSS.

Results: The study found that 33.3% of participants were diagnosed with GERD and 16.7% with IBD (10% with Crohn's disease and 6.7% with ulcerative colitis). Smoking was significantly associated with GERD (62.5% of GERD patients), and a family history of IBD was linked to IBD diagnosis (50% of IBD patients). Both conditions had a moderate impact on symptom severity and quality of life.

Conclusion: The high prevalence of GERD and IBD in Bhagalpur, along with the significant associations with smoking and family history, highlights the need for targeted healthcare strategies. The study emphasizes the importance of lifestyle modifications and genetic counselling in managing these conditions in urban Indian settings. Comparative analysis with global and regional studies suggests similar trends in the epidemiology and impact of these diseases, reinforcing the need for comprehensive healthcare approaches in diverse geographical contexts.

Recommendations: Based on the findings, it is recommended to implement targeted public health initiatives in urban areas like Bhagalpur, focusing on smoking cessation programs, dietary modifications, and increased awareness about GERD and IBD. Healthcare providers should be trained to recognize early symptoms and risk factors of these conditions for timely intervention.

Keywords: Gastroesophageal Reflux Disease, Inflammatory Bowel Diseases, Urban Health, Epidemiology, India, Lifestyle Factors, Genetic Predisposition.

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Introduction

Gastroesophageal reflux disease (GERD) and inflammatory bowel diseases (IBD), including Crohn's disease and ulcerative colitis, are significant public health concerns globally. The prevalence and characteristics of these diseases can vary significantly based on geographic, environmental, and socioeconomic factors. In recent years, there has been an increasing interest in understanding the epidemiology of GERD and IBD in different regions, including urban areas in developing countries.

The city of Bhagalpur, an urban area in the state of Bihar, India, presents a unique environment for the study of these diseases. The region's distinct dietary

habits, lifestyle factors, and healthcare access provide a specific context for examining the prevalence and characteristics of GERD and IBD. Studies have shown that urbanization and changes in lifestyle and diet are associated with an increased prevalence of GERD and IBD in developing countries [1, 2].

GERD, characterized by symptoms such as heartburn and acid regurgitation, results from the reflux of stomach contents into the esophagus [3]. It has been linked to dietary habits, obesity, and lifestyle factors, which are rapidly changing in urban Indian settings [4]. On the other hand, IBD, which includes Crohn's disease and ulcerative

colitis, is a chronic inflammatory condition of the gastrointestinal tract. The etiology of IBD is multifactorial, involving genetic predisposition, environmental factors, and alterations in the gut microbiome [5].

In Bhagalpur, the impact of urbanization and lifestyle changes on the incidence and prevalence of these gastrointestinal disorders is a subject of growing research interest. Understanding the epidemiology and risk factors specific to this region is crucial for developing targeted prevention and management strategies.

The aim of this study is to investigate the prevalence, risk factors, and clinical characteristics of gastroesophageal reflux disease (GERD) and inflammatory bowel diseases (IBD) in the urban area of Bhagalpur.

Methodology

Study Design: This study was a cross-sectional observational study.

Study Setting: The research was conducted J.L.N.M.C.H., Bhagalpur, within the urban region of Bhagalpur, Bihar, India, spanning a time duration from November 2022 to December 2023.

Participants: A total of 120 patients participated in the study. Participants were adult residents (aged 18 and above) of Bhagalpur, who visited the selected healthcare facilities during the study period.

Inclusion Criteria:

- Adults aged 18 years and above.
- Residents of Bhagalpur.
- Willingness to participate and provide informed consent.

Exclusion Criteria:

- Individuals below 18 years.
- Non-residents of Bhagalpur.
- Patients with a history of gastrointestinal surgery.
- Individuals unable to provide informed consent.

Bias: To minimize selection bias, participants were randomly selected from the outpatient departments.

Information bias was reduced through standardized questionnaires and diagnostic criteria.

Variables: Independent variables included age, gender, dietary habits, lifestyle factors (smoking, alcohol consumption), family history of gastrointestinal diseases, and socioeconomic status.

Dependent variables were the presence of GERD or IBD, severity of symptoms, and impact on quality of life.

Data Collection: Data were collected through structured interviews using a standardized questionnaire, medical history review, and diagnostic tests as required (e.g., endoscopy for GERD, colonoscopy for IBD).

Measures: GERD and IBD were diagnosed based on established clinical criteria and confirmed through appropriate diagnostic procedures. Symptom severity and quality of life were assessed using validated scales.

Statistical Analysis: Data were analyzed using statistical software (SPSS). Descriptive statistics were used to summarize the data. Chi-square tests for categorical variables and t-tests for continuous variables were used to identify associations. Logistic regression was employed to identify risk factors.

Ethical Considerations: Ethical approval was obtained from a relevant institutional review board. Informed consent was obtained from all participants. Confidentiality and privacy of participants were maintained throughout the study.

Result

In this study, we evaluated 120 patients from the urban area of Bhagalpur. The demographic analysis revealed an average age of 45.3 years (SD = 15.2), with a slight male predominance (52%, n = 62) compared to females (48%, n = 58). All participants were urban residents.

Regarding the prevalence of GERD and IBD, we found that GERD was diagnosed in 33.3% (n = 40) of the patients. In contrast, IBD was present in 16.7% (n = 20) of the cohort, with Crohn's disease accounting for 10% (n = 12) and ulcerative colitis for 6.7% (n = 8).

Table 1: Prevalence of GERD and IBD

Condition	Number of Patients	Percentage
GERD	40	33.3%
IBD	20	16.7%
- Crohn's Disease	12	10%
- Ulcerative Colitis	8	6.7%

The association of risk factors with these conditions was also noteworthy. Smoking was significantly associated with GERD, present in 62.5% of GERD patients (p = 0.02). A family history of IBD showed a significant correlation with an IBD diagnosis, observed in 50% of IBD patients (p = 0.01).

Table 2: Association of risk factors with GERD and IBD

Risk Factor	GERD (n = 40)	IBD (n = 20)	p-value
Smoking	25 (62.5%)	5 (25%)	0.02
Family History of IBD	5 (12.5%)	10 (50%)	0.01

In terms of symptom severity and quality of life, the mean GERD symptom severity score was 6.2 on a scale of 0-10, indicating a moderate level of discomfort. Similarly, IBD patients reported a mean symptom severity score of 5.8, also reflecting a moderate impact. The quality of life for both patient groups was moderately affected.

Statistical analysis, including chi-square tests for categorical variables and t-tests for continuous variables, supported these findings. Logistic regression analysis further identified smoking and family history as significant risk factors for these gastrointestinal conditions.

Discussion

The study conducted in Bhagalpur's urban area revealed significant findings about the prevalence and characteristics of GERD and IBD. A notable 33.3% of the participants were diagnosed with GERD, while 16.7% had IBD, indicating these conditions are prevalent health concerns in this region. The strong association of smoking with GERD, found in 62.5% of GERD patients, and the link between a family history of IBD and its diagnosis in 50% of IBD patients, underscore the influence of lifestyle factors and genetic predisposition in the development of these diseases. Both conditions showed a moderate impact on symptom severity and quality of life, highlighting the need for effective management and awareness strategies. These findings emphasize the importance of healthcare vigilance, lifestyle modifications, and potentially genetic counselling in managing and preventing GERD and IBD in urban Indian settings, offering a significant contribution to the understanding and approach to these conditions in such contexts.

To place the Bhagalpur study in a broader context, several key studies offer comparative insights. El-Serag et al. [6] global review on GERD epidemiology provides a comprehensive global perspective, essential for understanding the prevalence in contrast to Bhagalpur's findings. Bhatia et al. [7] study on GERD in urban Indian settings, such as Mumbai and Delhi, offers a direct comparison within the same national context. The study by Ness-Jensen et al. [8] on lifestyle interventions in GERD emphasizes the impact of factors like smoking, paralleling the lifestyle associations found in Bhagalpur. Ng et al. [9] research on the global incidence of IBD, with a focus on genetic predisposition, provides a framework to understand the familial links observed in Bhagalpur's IBD patients. Lastly, Goh

et al. [10] work on the quality of life in GERD and IBD patients across Asia offers a comparative analysis of the impact of these conditions on daily life, resonating with the moderate quality of life impact reported in Bhagalpur. Together, these studies enable a comprehensive understanding of GERD and IBD's epidemiology, risk factors, and impacts across different geographical and cultural landscapes.

Conclusion

The study conducted in Bhagalpur, India, significantly contributes to understanding gastroesophageal reflux disease (GERD) and inflammatory bowel diseases (IBD) in urban settings, revealing a high prevalence of GERD (33.3%) and IBD (16.7%). Key findings include the strong association of smoking with GERD and a family history of IBD with its diagnosis, highlighting the roles of lifestyle factors and genetic predisposition. The moderate impact on symptom severity and quality of life underscores the need for effective management and awareness. This study enriches the global understanding of GERD and IBD, underscoring the importance of targeted healthcare strategies in urban Indian contexts and beyond.

Limitations: The limitations of this study include a small sample population who were included in this study. The findings of this study cannot be generalized for a larger sample population. Furthermore, the lack of comparison group also poses a limitation for this study's findings.

Recommendations: Based on the findings, it is recommended to implement targeted public health initiatives in urban areas like Bhagalpur, focusing on smoking cessation programs, dietary modifications, and increased awareness about GERD and IBD. Healthcare providers should be trained to recognize early symptoms and risk factors of these conditions for timely intervention. Additionally, genetic counselling and screening programs could be beneficial for individuals with a family history of IBD. Further research is also suggested to explore the long-term outcomes of these interventions and the evolving epidemiology of these conditions in similar urban settings.

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List of Abbreviations:

GERD: Gastroesophageal Reflux Disease

IBD: Inflammatory Bowel Diseases

SD: Standard Deviation

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