

CLINICAL CHARACTERISTICS AND ENDOSCOPIC FINDINGS OF SYMPTOMATIC DYSPEPSIA PATIENTS IN RURAL AND URBAN AREAS: A RETROSPECTIVE COMPARATIVE STUDY.

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Abstract

Background

Dyspepsia is a common gastrointestinal disorder affecting a substantial portion of the global population, characterized by various symptoms such as epigastric pain and early satiety. Understanding the differences in dyspeptic presentations among diverse populations can inform more effective diagnostic and treatment strategies. This study seeks to contrast the clinical characteristics and endoscopic findings of dyspeptic patients from rural and urban areas.

Methods

This retrospective comparative study was conducted at SCB Medical College & Hospital in Cuttack over one year, involving 100 patients diagnosed with dyspepsia. Participants were selected using non-probability consecutive sampling, with inclusion criteria focused on individuals aged 16 to 75 years presenting with relevant gastrointestinal symptoms. Endoscopic evaluations were performed to assess the underlying conditions.

Results

The study revealed that the majority of patients were aged 31-40 years (25%), with a slight female predominance (55%). The rapid urease test indicated a 60% positive rate for *Helicobacter pylori* infection among participants. Notable endoscopic findings included erosive antral gastritis observed in 30 rural patients and 35 urban patients, highlighting the differences in gastrointestinal conditions between populations.

Conclusion

The findings underscore the need for tailored healthcare interventions based on demographic factors, as urban patients exhibited a higher prevalence of certain dyspeptic symptoms. This study emphasizes the importance of understanding the clinical and endoscopic variations of dyspepsia to enhance patient care.

Recommendations

Initial endoscopy for new-onset dyspepsia is recommended in patients 50 years of age or older or those with alarm features.

Keywords: Dyspepsia, *Helicobacter Pylori*, Endoscopy, Rural and Urban Populations, Gastrointestinal Disorders.

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Introduction

Dyspepsia is a widespread gastrointestinal disorder that impacts roughly 23-45% of the global population [1]. It manifests through a variety of symptoms, such as burning sensations, early satiety, epigastric pain, and postprandial fullness, which can create notable clinical challenges [2]. This condition is frequently characterized by discomfort in the upper abdomen, specifically stemming from the upper gastrointestinal tract (GIT). Recent studies have broadened the understanding of dyspepsia symptoms to include bloating and nausea; however, it is crucial to recognize that heartburn is generally excluded from dyspepsia diagnostic criteria because it is primarily linked to esophageal disorders like gastroesophageal reflux disease (GERD) [3,4].

The causes of dyspepsia are multifaceted, with several risk factors identified that contribute to its occurrence. These include infections caused by *Helicobacter pylori*, behavioral traits, and various psychiatric disorders, all of which can intensify symptoms and complicate diagnosis [5,6]. Typically, the evaluation of dyspepsia involves multiple diagnostic methods, such as upper gastrointestinal endoscopy, gastric emptying studies, abdominal ultrasonography, and assessments of gastric accommodation. Among these methods, endoscopy is often considered essential, especially for patients showing alarming symptoms that might indicate serious underlying issues [7-9]. Detecting structural abnormalities through endoscopy is vital, as negative results can significantly reduce patient anxiety and improve overall satisfaction with their care.

There is a notable paucity of studies comparing the pattern and presentation of dyspepsia in rural and urban populations, highlighting a critical gap in the understanding of how environmental and lifestyle factors influence this condition. Given the substantial impact of dyspepsia on patients' quality of life, it is essential to examine potential demographic differences in its manifestation. *This study seeks to contrast the clinical characteristics and endoscopic findings of dyspeptic patients from rural and urban areas.*

Methods

Study Design, Location, and Period

This retrospective comparative analysis was carried out at SCB Medical College & Hospital in Cuttack for 1 year.

Participants

This study encompassed 100 patients to examine the clinical presentations and endoscopic findings of dyspepsia among rural and urban populations. A random sampling technique was employed to select the patients.

Inclusion and Exclusion Criteria

Participants in the study were aged 16 to 80 yrs of both genders and presented with epigastralgia or epigastric burning lasting for a minimum of 3 months, with symptoms occurring at least six months before the study. Inclusion criteria encompassed patients displaying dyspeptic symptoms, difficulties swallowing, hematemesis, cachexia, anorexia, and pain in the upper part of the abdomen. These individuals were either seen in the gastroenterology outpatient section or referred from other wards for evaluation by a gastroenterologist regarding upper gastrointestinal endoscopy.

Exclusion criteria included patients with gastroesophageal reflux disease (GERD), those who had taken non-steroidal anti-inflammatory drugs (NSAIDs) within the week before the study, individuals with cirrhosis, heart failure with reduced ejection fraction, those exhibiting predominant gastrointestinal dysmotility, individuals with major psychiatric disorders, and patients presenting clinical signs outside the epigastric region. All participants were required to fast for six hours before the procedure.

Endoscopic Procedure

Upper gastrointestinal endoscopy was performed using a standard electronic video endoscope under sedation, with a single intravenous dose of Midazolam (5 mg) administered five minutes before the procedure. The procedure commenced with the application of local anesthesia using lignocaine oral spray. The patient was positioned in a left lateral decubitus stance, with the neck flexed forward. Consideration was given to the patient's age, body mass index (BMI), and existing comorbid conditions, including chronic liver disease and chronic renal failure. Once the lumen was intubated, the mucosal surface was displayed on an LCD monitor for detailed examination. This assessment focused on identifying any signs of inflammation, gastroesophageal reflux, narrowing, strictures, furrowing, erosions, ulcers, polyps, and masses. Biopsies were taken from any abnormal lesions or masses and sent for histopathological analysis. After the procedure, all patients were monitored for 15 minutes before discharge.

Statistical Analysis

Data analysis was conducted using SPSS version 24, with descriptive statistics and normality tests for age and gender. Categorical variables were summarized with counts and percentages, and the Pearson Chi-square test compared organic dyspepsia frequencies by age and gender, considering $p \leq 0.05$ as statistically significant.

Ethical Consideration

Informed consent was obtained from all participants.

Results

The age distribution of the study participants indicates that the majority of patients fell within the 31-40-year age group, accounting for 25.0% of the total. The 16-20-year age group had 18 patients, representing 18.0%, while the 21-30-year group had the smallest representation with only 8 patients (8.0%). Notably, the >70 years age group comprised just 4 patients, which is 4.0% of the total cohort. This distribution highlights the predominance of middle-aged individuals in the study population, emphasizing the need for targeted interventions in this age group (Table 1).

Table 1: Distribution of patients as per age:

S.No	Age	Patient count
1	16-20	18
2	21-30	8
3	31-40	25
4	41-50	20
5	51-60	15
6	61-70	10
7	>70	4

The gender distribution among the study participants reveals a slight female predominance. Of the total 100 patients, 55 were female (55.0%), while 45 were male

(45.0%). This gender distribution may reflect broader trends in healthcare utilization, where females often seek medical care more frequently than males. Understanding

gender differences in patient populations is crucial for tailoring treatment approaches and improving healthcare delivery strategies (Table 2).

Table 2: Distribution of patients as per gender:

S.No	Gender	Patient count	Percentage
1	Male	45	45.0
2	Female	55	55.0

Results from the rapid urease test show that 60 patients (60.0%) tested positive for *Helicobacter pylori* infection, while 40 patients (40.0%) had negative results. The high percentage of positive tests indicates a significant presence of this pathogen among the study population, which is known to be associated with various

gastrointestinal disorders, including dyspepsia and peptic ulcers. These findings highlight the importance of screening for *Helicobacter pylori* in patients presenting with dyspeptic symptoms to guide appropriate management (Table 3).

Table 3: Rapid Urease Test

S.No	Rapid Urease Test	No. of Patients	Percentage
1	Positive	60	60.0
2	Negative	40	40.0

A comparative analysis of endoscopic findings between rural and urban patients reveals distinct differences in the prevalence of gastrointestinal conditions. Erosive antral gastritis was observed in 30 rural patients compared to 35

urban patients, indicating a higher incidence in urban settings. Additionally, urban patients exhibited a higher prevalence of erosive gastritis with erosive duodenitis (8 cases) compared to rural patients (3 cases) (Table 4).

Table 4: Comparison of Endoscopic Findings Between Rural and Urban Patients:

S.No	Endoscopic Findings	Rural	Urban
1	Erosive gastric antrum inflammation	30	35
2	Gastric mucosal erosion	5	10
3	Gastric erosion accompanied by duodenal ulcers	1	2
4	Gastric erosion and duodenal mucosal erosion	3	8
5	Antral gastritis with nodular erosion	1	1
6	Neoplasm in the esophagus	1	1
7	Moderate hemorrhoids with normal colon	1	1
8	Mild inflammation of the gastric antrum	12	15
9	Mild gastric antrum inflammation with granularity	2	3
10	Mild gastric antrum inflammation with granularity + Granularity	0	1
11	Minor hemorrhoids, normal mucosal findings to the cecum	1	0
12	Minor hiatus hernia and erosive gastritis	4	0
13	Small hiatus hernia with submucosal blisters and circular rings	2	0

The comparison of clinical findings between rural and urban patients reveals notable differences in the prevalence of various gastrointestinal symptoms. In the study, chronic dyspepsia was reported in 25 rural patients and 28 urban patients, indicating a slightly higher incidence in urban settings. Notably, chronic dyspepsia with loss of appetite was observed in 4 rural patients compared to 5 in urban areas, while the occurrence of

dysphagia was similar in both groups, with 1 rural and 2 urban patients affected. Epigastric pain, particularly with postprandial vomiting, was more prevalent among urban patients, with 25 experiencing this symptom compared to 18 rural patients. Overall, the findings suggest that urban patients may experience a greater variety of gastrointestinal symptoms, warranting targeted healthcare interventions for both populations (Table 5).

Table 5: Comparison of Rural Versus Urban Patients concerning Their Clinical Findings

S.No	Clinical Findings	Rural	Urban
1	Chronic Dyspepsia	25	28
2	Chronic Dyspepsia with Loss of Appetite	4	5
3	Chronic Dyspepsia with Postprandial Vomiting	3	2
4	Dyspepsia	10	12
5	Dyspepsia with Loss of Appetite	3	5
6	Chronic Dyspepsia with Postprandial Vomiting	1	5
7	Diffuse Abdominal Pain	1	2
8	Dyspepsia	8	10
9	Dyspepsia with Loss of Appetite	0	1
10	Dysphagia	1	2
11	Epigastric Pain with Postprandial Vomiting	5	4
12	Epigastric Pain	18	25
13	Gastroesophageal Reflux Disease (GERD)	3	4
14	Abdominal Pain	0	4
15	Upper Abdominal Pain	4	5

Discussion

The findings of the present investigation provide significant knowledge of the clinical and endoscopic characteristics of dyspeptic patients in both rural and urban settings. The observed increased incidence rates of chronic dyspepsia in urban patients in contrast to their rural counterparts agree with the existing literature and suggest that lifestyle factors, dietary habits, and environmental influences may significantly contribute to the manifestation of dyspeptic symptoms [10,11]. Urban populations are often exposed to heightened stressors, more sedentary lifestyles, and dietary patterns characterized by an increased intake of processed foods, all of which may predispose individuals to gastrointestinal disturbances [12-14]. These emphasize the importance of incorporating targeted health education and dietary interventions that address the specific challenges faced by urban patients.

In addition to the differences in prevalence, the study identified variations in specific clinical symptoms between rural and urban patients. While dysphagia and abdominal pain were reported in both groups, urban patients exhibited a higher incidence of epigastric pain associated with postprandial vomiting. This trend may be attributed to dietary habits prevalent in urban areas, where fast food consumption is common and there is often less emphasis on balanced nutrition [15-17]. Addressing these dietary practices through public health campaigns may prove beneficial in reducing the burden of dyspepsia within urban populations and promoting healthier eating habits.

Moreover, the study found a significant correlation between *Helicobacter pylori* infection rates and the clinical presentation of dyspepsia among participants. The results of the rapid urease test indicated a higher prevalence of *H. pylori* infection, emphasizing the necessity of screening for this pathogen in patients presenting with dyspeptic symptoms. Given the established association of *H. pylori* with the development of peptic ulcers and chronic gastritis, effective eradication strategies are crucial for improving patient outcomes [18].

The endoscopic findings further revealed important distinctions between rural and urban patients, particularly concerning the presence of erosive gastritis and other gastrointestinal abnormalities. Urban patients demonstrated a greater frequency of erosive antral gastritis, which may reflect disparities in healthcare access and utilization between these populations. It is plausible that urban patients may seek medical attention for gastrointestinal symptoms, resulting in higher rates of diagnosis. Conversely, rural patients may experience similar symptoms but could delay seeking care due to geographic and economic barriers [19]. This disparity highlights the urgent need for improving access to healthcare services in rural regions to ensure timely diagnosis and appropriate management of dyspeptic disorders.

Conclusion

This study highlights the significant differences in clinical and endoscopic presentations of dyspepsia between rural and urban patients, demonstrating how demographic and lifestyle factors influence gastrointestinal health. A higher prevalence of dyspepsia was observed among females, who made up 55.0% of the study participants, suggesting gender-related disparities in its occurrence. Among urban females, symptoms such as epigastric pain and erosive antral gastritis were more common compared to their rural counterparts, indicating a potential impact of urban lifestyles and environmental factors. Similarly, urban males showed a higher incidence of symptoms like postprandial vomiting and erosive duodenitis than rural males, further emphasizing the role of geographic and lifestyle differences. The association of dyspepsia with *Helicobacter pylori* infection across the study population reinforces the importance of consistent screening and tailored treatment approaches. These findings collectively point to the interplay between gender, geography, and lifestyle in shaping the patterns of dyspepsia. Addressing these disparities through targeted healthcare strategies can enhance dyspepsia management, improving outcomes and

quality of life for affected individuals across both rural and urban settings.

Limitations

The limitations of this study include a small sample population who were included in this study. Furthermore, the lack of a comparison group also poses a limitation for this study's findings.

Recommendation

Initial endoscopy for new-onset dyspepsia is recommended in patients 50 years of age or older or those with alarm features.

Acknowledgment

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Data Availability

Data is available upon request.

Author contributions

All authors contributed to the design of the research. ARD collected and analyzed the data. KRD wrote the manuscript. ARD and KRD edited the paper. All authors read and approved the paper.

List of abbreviations

GIT- gastrointestinal tract
GERD- gastroesophageal reflux disease
NSAIDs- non-steroidal anti-inflammatory drugs
BMI- body mass index

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No funding was received.

Conflict of interest

The authors have no conflicting interests to declare.

References

1. Mahadeva, S., & Goh, K. L. (2006). Epidemiology of functional dyspepsia: a global perspective. *World journal of gastroenterology: WJG*, 12(17), 2661. <https://doi.org/10.3748/wjg.v12.i17.2661>
2. Bytzer, P., & Talley, N. J. (2001). Dyspepsia. *Annals of Internal Medicine*, 134(9_Part_2), 815-822. https://doi.org/10.7326/0003-4819-134-9_Part_2-200105011-00004
3. De Bortoli, N., Tolone, S., Frazzoni, M., Martinucci, I., Sgherri, G., Albano, E., ... & Marchi, S. (2018). Gastroesophageal reflux disease, functional dyspepsia, and irritable bowel syndrome: common overlapping gastrointestinal disorders. *Annals of Gastroenterology*, 31(6), 639. <https://doi.org/10.20524/aog.2018.0314>
4. Quigley, E. M., & Lacy, B. E. (2013). Overlap of functional dyspepsia and GERD-diagnostic and treatment implications. *Nature Reviews Gastroenterology & hepatology*, 10(3), 175-186. <https://doi.org/10.1038/nrgastro.2012.253>
5. Wang, Z., Liu, T., Cao, D., Luo, H., Yang, Z., Kang, X., & Pan, Y. (2024). The associations between functional dyspepsia and potential risk factors: A comprehensive Mendelian randomization study. *Plos one*, 19(5), e0302809. <https://doi.org/10.1371/journal.pone.0302809>
6. Oustamanolakis, P., & Tack, J. (2012). Dyspepsia: organic versus functional. *Journal of Clinical Gastroenterology*, 46(3), 175-190. <https://doi.org/10.1097/MCG.0b013e318241b335>
7. Talley, N. J., Silverstein, M. D., Agreus, L., Nyren, O., Sonnenberg, A., & Holtmann, G. (1998). AGA technical review: evaluation of dyspepsia. *Gastroenterology*, 114(3), 582-595. [https://doi.org/10.1016/S0016-5085\(98\)70542-6](https://doi.org/10.1016/S0016-5085(98)70542-6)
8. Graham, D. Y., & Rugge, M. (2010). Clinical practice: diagnosis and evaluation of dyspepsia. *Journal of Clinical Gastroenterology*, 44(3), 167-172. <https://doi.org/10.1097/MCG.0b013e3181c64c69>
9. Health and Public Policy Committee. (1985). Endoscopy in the evaluation of dyspepsia. *Annals of Internal Medicine*, 102(2), 266-269. <https://doi.org/10.7326/0003-4819-102-2-266>
10. Li, M., Lu, B., Chu, L., Zhou, H., & Chen, M. Y. (2014). Prevalence and characteristics of dyspepsia among college students in Zhejiang Province. *World Journal of Gastroenterology: WJG*, 20(13), 3649. <https://doi.org/10.3748/wjg.v20.i13.3649>
11. Mahadeva, S., Yadav, H., Rampal, S., Everett, S. M., & GOH, K. L. (2010). Ethnic variation, epidemiological factors and quality of life impairment associated with dyspepsia in urban Malaysia. *Alimentary pharmacology & therapeutics*, 31(10), 1141-1151. <https://doi.org/10.1111/j.1365-2036.2010.04270.x>
12. Schmidhuber, J., & Shetty, P. (2005). The nutrition transition to 2030. Why developing countries are likely to bear the major burden? *Acta agriculturae scand section c*, 2(3-4), 150-166. <https://doi.org/10.1080/16507540500534812>
13. Papatheodoridis, G. V., & Karamanolis, D. G. (2005). Prevalence and impact of upper and lower gastrointestinal symptoms in the Greek urban general population. *Scandinavian journal of gastroenterology*, 40(4), 412-421. <https://doi.org/10.1080/00365520510012271>

14. Ghoshal, U. C., & Singh, R. (2017). Frequency and risk factors of functional gastro-intestinal disorders in a rural Indian population. *Journal of gastroenterology and hepatology*, 32(2), 378-387. <https://doi.org/10.1111/jgh.13465>
15. Popkin, B. M. (2006). Global nutrition dynamics: the world is shifting rapidly toward a diet linked with noncommunicable diseases. *The American journal of clinical nutrition*, 84(2), 289-298. <https://doi.org/10.1093/ajcn/84.2.289>
16. Fleischhacker, S. E., Evenson, K. R., Rodriguez, D. A., & Ammerman, A. S. (2011). A systematic review of fast food access studies. *Obesity reviews*, 12(5), e460-e471. <https://doi.org/10.1111/j.1467-789X.2010.00715.x>
17. Sallis, J. F., & Glanz, K. (2006). The role of built environments in physical activity, eating, and obesity in childhood. *The future of children*, 89-108. <https://doi.org/10.1353/foc.2006.0009>
18. Siddique, I., Al-Qabandi, A., Al-Ali, J., Alazmi, W., Memon, A., Mustafa, A. S., & Junaid, T. A. (2014). Association between *Helicobacter pylori* genotypes and severity of chronic gastritis, peptic ulcer disease and gastric mucosal interleukin-8 levels: Evidence from a study in the Middle East. *Gut pathogens*, 6, 1-10. <https://doi.org/10.1186/s13099-014-0041-1>
19. Koloski, N. A., Talley, N. J., & Boyce, P. M. (2002). Epidemiology and health care seeking in the functional GI disorders: a population-based study. *Official journal of the American College of Gastroenterology | ACG*, 97(9), 2290-2299. <https://doi.org/10.1111/j.1572-0241.2002.05783.x>

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