

Symptom Burden of Gastroesophageal Reflux Disease: Frequency, Severity, and Duration of Heartburn, Regurgitation, and Other Manifestations in a Tertiary Care Hospital in Chennai

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Abstract

Background: Gastroesophageal reflux disease (GERD) refers to a common chronic headache in the gastrointestinal tract which is marked by heartburn and regurgitation. Symptoms are prevalent, severe and chronic, and they depend on the frequency of symptoms, the severity, and the chronicity, which determine the diagnosis and treatment results.

Purpose: To evaluate the incidence, intensity, and duration of symptoms of heartburn, regurgitation and other symptoms of GERD in adult patients in a tertiary care hospital in Chennai.

Procedures: A survey was carried out on 737 adults with the use of validated GERD-Q questionnaire. Symptom burden was assessed in six domains, namely heartburn, regurgitation, sleep disturbance, nausea, epigastric pain, and use of OTC medication. OpenEpi 3.0 was used to analyze the data.

Findings: The GERD prevalence (GERD-Q 8) was 40.8% prevalent. Sixty one percent reported heartburn, 52 regurgitation and 12.3 sleep disturbance (≥ 4 days/week). Others such as nausea (21.4) and epigastric pain (14.5) were also common. It was 11 percent regarding OTC medication use.

Summary: GERD symptoms are common, tend to be severe, and have a negative effect on everyday life. Timely intervention can be enhanced through routine use of validated symptom questionnaires to detect the problem early.

Keywords: GERD, Heartburn, Regurgitation, Symptom Severity, GERD-Q, India

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Introduction

Gastroesophageal reflux disease (GERD) is a sustained and reiterating GI ailment that develops because of retrograde movement of gastric fluid into the esophagus and leads to a range of irritating symptoms and in certain

instances may cause mucous lesions¹. Heartburn, a pain behind the chest, has been described as the most typical and the most commonly reported symptom of GERD and regurgitation, which can be described as the feeling that there is a reflux of gastric contents into the throat or

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mouth. Other than these classical claims, GERD can also have an extensive array of additional and atypical symptoms including chronic cough, chest pain, sleep disturbances, nausea, abdominal pain, hoarseness of voice, and asthma-like symptoms². Due to this generalized clinical manifestation, GERD is gradually being perceived as not only a disease of the esophagus, but as an illness with systemic consequences impacting a great deal on the physical, psychological and social health of patients³.

GERD is one of the most common gastrointestinal disorders in the world and a significant healthcare consumption cause⁴. According to epidemiological research, it is estimated that in Western countries some 10-20 percent of adults complain of GERD symptoms at a minimum of once per week, and 5-7 percent complain of symptoms every day⁵. In the past, it was assumed that the incidence of GERD in the Asian nations was lower than those of the Western populations⁶. Nevertheless, GERD prevalence has been increasing significantly in the last 20 years in Asia, but also in India⁷. This epidemiological transformation has been ascribed to the rapid urbanization process, change in dietary habits, high intake of fatty foods and processed foods, high cases of obesity, low level of physical exercises and lifestyle changes that are linked to economic development⁸. Consequently, GERD has become a major health concern among the populace of third world nations threatening the previous notion that the condition is limited to western societies⁹.

GERD burden in India is becoming more pronounced both in a community and hospital-based research¹⁰. The city residents, especially, seem to be affected unequally because of inactive lifestyles, unpredictable food schedules, nighttime eating, stress, and obesity and metabolic diseases presence¹¹. Nevertheless, GERD is experiencing increased burden, yet it is underdiagnosed and undertreated, in part because of variations in perceived symptoms, symptom normalization and self-medication using over-the-counter (OTC) antacids and acid-suppressive medications¹². In addition, the symptom reporting and healthcare-seeking behavior is another cultural difference that also complicates the accurate estimation of disease burden among Indians¹³. A clinical issue that is critical in the management of GERD is the diversity of symptoms presentation¹⁴. It is widely varied in the frequency, severity and duration of GERD symptoms among individuals¹⁵. There are those who have intermittent mild symptoms which respond to lifestyle change and those who experience frequent, severe, and persistent symptoms that essentially affect the quality of life and daily functioning¹⁶. Symptoms of

GERD, whether frequent or severe, have been linked to a low work productivity, absenteeism, poor quality of sleep, psychological distress and poor health-related quality of life. Moreover, chronic and untreated GERD predisposes the patient to erosive esophagitis, peptic strictures, Barretts esophagus, and esophageal adenocarcinoma, which is why it is crucial to identify it as early as possible and manage it properly¹⁷.

Sleep disturbance is a common and yet clinically significant effect of GERD¹⁸. Symptoms of nocturnal reflux may interfere with the sleep architecture, which causes excessive sleepiness and fatigue, lack of concentration, and poor productivity. The two-way connection of GERD to sleep disorders serves to worsen the symptom severity as low sleep can increase the esophagus sensitivity and decrease pain levels¹⁹. Equally, some of its unusual symptoms like nausea and abdominal pains are often similar to other gastrointestinal conditions including functional dyspepsia and peptic ulcer disease, and therefore clinical diagnosis using description of symptoms alone is difficult²⁰. These complications hold significance in the necessity of standardized and tested tools to measure the burden of symptoms in a comprehensive and consistent method.

Historically, GERD diagnosis has been based on a set of clinical examinations, subjective response to acid-suppressive treatment, endoscopy, and esophageal pH testing²¹. Even though endoscopy and pH studies are useful, they are invasive, expensive and cannot be used on a large scale screening especially when resources are limited, as it is only practicable in limited resource settings. As a result, symptom-based questionnaires have become the center stage as useful instruments in the diagnosis of GERD in clinical settings and also in epidemiology. One of them, the GERD-Q questionnaire, has been extensively validated and demonstrated to have good sensitivity and specificity in the diagnosis of GERD. The GERD-Q is used to measure six main areas of heartburn, regurgitation, sleep disturbance, nausea, epigastric pain, and use of over-the-counter drugs, which makes a multidimensional analysis of the frequency and severity of the symptoms possible²².

Validated questionnaires including GERD-Q are especially useful in the Indian healthcare environment, where the patient volume is high, and there is limited access to well-developed diagnostic tools and the abundance of self-medication. GERD-Q allows the early identification of symptoms, stratification of risks, and effective clinical decision-making due to the systematization of symptoms evaluation²³. Moreover,

symptom burden quantification as opposed to the easy-going estimations of prevalence have greater understanding of how severe and chronic the disease is, as well as how it may affect the patient's everyday life, which are essential to develop effective management approaches and to allocate the healthcare resources²⁴.

Although the importance of GERD as a major health issue in India is becoming more widely acknowledged, there is still a lack of information that aims at the specific description of the symptom burden, including how often, how severe, and how long individual symptoms can last. Most of the available studies have mainly given prevalence rates without sufficiently discussing the frequency, intensity and the long-term persistence of symptoms among patients²⁵. This information is crucial because symptom burden and not prevalence in itself fulfills healthcare seeking behavior, adherence to treatment and long-term outcomes²⁶.

In this regard, the current research was conducted to determine the symptom burden of GERD in adult patients in a tertiary care hospital in Chennai in an all-encompassing manner²⁷. This research is expected to produce a systematic assessment of the frequency, severity and duration of heartburn, regurgitation, sleep disturbance, nausea, epigastric pain, and OTC use among a large hospital based population by including the use of the validated GERD-Q questionnaire. Chennai is a big metropolis city in South India, which implies that lifestyle shifts, city stress factors, and changes in diet all come together, which is why the city is especially relevant in terms of analyzing the modern trends of GERD symptomatology²⁸.

This research is likely to provide useful data on clinical profile of GERD in patients living in South India and to outline the scope to which the burden of symptoms influences the functioning on a daily basis²⁹. The study aims at highlighting the relevance of regular symptom-based screening in outpatient clinics to identify the issue of frequency and severity patterns of symptom, as well as to advocate the application of proven instruments such as GERD-Q in routine clinical practices. Finally, enhanced knowledge of GERD symptom burden will help clinicians, researchers, and policymakers to create specific interventions to diagnose the disorder early, manage it, and reduce the health and economic burden of the disorder in the long-term³⁰.

Materials and methods-

The research design used in this study was hospital-based cross-sectional study which aimed at assessing the symptom burden of gastroesophageal reflux disease (GERD) in adult patients in a tertiary care centre in

Chennai. To address the research question, it was deemed that a cross-sectional approach was needed since it will enable measure of the prevalence, severity, and duration of symptoms at a specific moment, which will give an ideal picture of the current clinical burden of GERD within an outpatient environment. The research was carried out in the Department of General Medicine, a teaching hospital of a tertiary care, which serves a very varied population of patients in both urban and peri-urban areas, thus providing a representative clinical sample.

The study included adult patients aged 18 years old and above who were seen in the general medicine outpatient department within the study period and had a written informed consent. To ensure that symptoms were clearly diagnosed, patients with other conditions that might confound the process of symptom assessment, e.g. in pregnancy, previous gastrointestinal surgery, or known gastrointestinal malignancy, were excluded. A structured and tested symptom-based questionnaire, GERD-Q was used to gather data, which is a systematic method of collecting important symptomatic signs associated with GERD and medication intake. The methodological framework served as a means to achieve a consistent data collection, reduce the influence of the observer, and permit the sound evaluation of the burden of symptoms of GERD that can be used in epidemiological and clinical interpretation.

Study Design: Hospital-based cross-sectional study

Study Population: 737 adults (≥ 18 years) attending the General Medicine OPD, Sree Balaji Medical College & Hospital, Chennai

Inclusion Criteria: Adults consenting to participate

Exclusion Criteria: Pregnant women, prior GI surgery, malignancy

Tool Used: GERD-Q Questionnaire assessing heartburn, regurgitation, sleep disturbance, nausea, epigastric pain, and OTC medication use

Results

The research enrolled 737 adult participants, who passed the inclusion criteria, in the final study analysis. The data received in the form of demographics and clinical indicators of the respondents were processed to identify the prevalence of the gastroesophageal reflux disease (GERD) and the frequency, severity, and duration of the individual GERD-related symptoms. The validated GERD-Q questionnaire was used to conduct symptom assessment, and it provides the possibility to conduct a standardized and systematic examination of heartburn, regurgitation, sleep disturbance, nausea, epigastric pain, and use of over-

the-counter (OTC) medicines. Frequencies and percentages are used to display the results to have a clear picture of the total symptom burden and the distribution of the severity of the symptoms among the study population.

Prevalence of GERD - GERD prevalence (GERD-Q ≥ 8): 40.8%

Table 1. Frequency of GERD Symptoms (n=737)

Symptom	≥ 4 days/week (%)	2-3 days/week (%)	1 day/week (%)	0 days (%)
Heartburn	14.9	24.2	30.7	30.3
Regurgitation	17.2	21.2	31.6	30.0

DISCUSSION

This paper shows that GERD is very common in South India where about 41 percent of the respondents met GERD-Q diagnostic features. The preponderance of heartburn and regurgitation is in line with the world literature but the increased prevalence is noted among this cohort which points to the growing burden of GERD in the Indian subcontinent.

Quite a considerable number of patients had mentioned experiencing symptoms 4 or more days per week, which is a clinical sign of severely disease. These patients become more susceptible to complications, such as, esophagitis that is erosive, Barretts esophagus, and esophageal adenocarcinoma. These results are relevant to emphasize the importance of early diagnosis and treatment to avoid the long-term morbidity.

The fact that sleep disturbance due to GERD is observed in 12.3% of patients demonstrates the effects of the disease outside of the gastrointestinal tract. Lack of sleep has been found to increase the fatigue during the day, decrease productivity and decrease the overall quality of life. This emphasizes the point that GERD is not a gastrointestinal disorder but a disorder with systemic implication because of its atypical symptoms, which are similar to other gastrointestinal disorders such as functional dyspepsia and peptic ulcer disease. The quantification of symptoms: Structured methods like GERD-Q questionnaire are applied in this study and provide a so-called standardized approach to symptom quantification and assist clinicians in distinguishing between GERD and mimicking conditions.

Symptoms Burden

Heartburn - 61% (14.9% ≥ 4 days/week)

Regurgitation - 52% (17.2% ≥ 4 days/week)

Sleep Disturbance - 12.3% (≥ 4 nights/week)

Nausea - 21.4% (≥ 4 days/week)

Epigastric pain - 14.5% (≥ 4 days/week)

OTC medication use - 11%

Sleep disturbance	12.3	25.1	27.5	35.0
Nausea	21.4	23.5	20.5	34.6
Epigastric pain	14.5	22.7	26.7	36.1
OTC medication use	11.0	24.3	32.7	32.0

When comparing it to studies in the West, the prevalence of the symptoms is greater in this cohort. It may be because of dietary causes (spicy, oily food), the predisposition to obesity is more common, and the urban Indian population involves a sedentary lifestyle. Also, the over-the-counter medication rate is astonishing (11%), which indicates the widespread self-medication and potential underreporting to healthcare providers, indicating the lack of access to healthcare and health awareness.

The strength of this study is that the research used a large sample size and the study did not focus on prevalence but the symptom burden. It offers a better overview of the effects of GERD by measuring frequency, severity and chronicity. The drawbacks are, however, cross-sectional design, use of self-reported symptoms, and absence of endoscopic correlation. Risk factors that need to be investigated in future are obesity, diet, Helicobacter pylori infection, and psychological stress that could affect the GERD symptomology in Indian patients.

Conclusion

The condition of GERD is highly common among South Indian adults where a significant percentage of patients report frequent and severe symptoms. The number of complaints associated with heartburn and regurgitation, however, is still the most frequent, yet the prevalence of sleep disturbance, nausea, and epigastric pain indicates the more extensive consequences of GERD on the daily life of patients. The results require more frequent screening of GERD in the outpatient and primary care environment with the help of the reliable symptom-based instruments such as the GERD-Q.

Such methods will help identify it early enough, which can be followed by timely lifestyle change (diet, exercise of weight, late-night meal, etc.) and medication (proton pump inhibitors, H2 blockers). In India, greater focus should be made on creating awareness about GERD, its risk factors as well as prevention strategies due to their importance in terms of public health. The sequential development of GERD symptoms and their relationship with complications, including Barrett esophagus, would only be assessable in future longitudinal studies since a substantial number of patients self-medicate and thus fail to contact the health care system promptly. In the end, timely diagnosis and extensive treatment of GERD will lead to better patient outcomes, quality of life increase, and decrease the health care burden in the long term.

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References

1. Katz PO, Dunbar KB, Schnoll-Sussman FH, et al. ACG Clinical Guideline for the diagnosis and management of gastroesophageal reflux disease. *Am J Gastroenterol*. 2022;117(1):27-56.
2. Nirwan JS, Hasan SS, Babar Z-U-D, Conway BR, Ghori MU. Global prevalence and risk factors of gastro-oesophageal reflux disease (GORD): systematic review with meta-analysis. *J Neurogastroenterol Motil*. 2020;26(4):509-522.
3. Eusebi LH, Ratnakumaran R, Yuan Y, Solaymani-Dodaran M, Bazzoli F, Ford AC. Global prevalence of, and risk factors for, gastro-oesophageal reflux symptoms: a meta-analysis. *Gut*. 2018;67(3):430-440.
4. El-Serag HB, Sweet S, Winchester CC, Dent J. Update on the epidemiology of gastro-oesophageal reflux disease: a systematic review. *Gut*. 2014;63(6):871-880. (Contextualized by later meta-analyses.)
5. Ness-Jensen E, et al. Lifestyle intervention in gastroesophageal reflux disease. *Clin Gastroenterol Hepatol*. 2016;14(2):175-182.
6. Jones R, Junghard O, Dent J, Vakil N, Halling K, Wernersson B. Development of the GerdQ, a tool for the diagnosis and management of GERD in primary care. *Aliment Pharmacol Ther*. 2009;30(10):1030-1038.
7. Jonasson C, Moum B, Bang C, et al. Validation of the GerdQ questionnaire for the management of gastro-oesophageal reflux disease. *Aliment Pharmacol Ther*. 2013;37(5):564-572.
8. Sharma PK, et al. Indian consensus on gastroesophageal reflux disease in adults: ISG Task Force recommendations. *Indian J Gastroenterol*. 2021;40(3):209-219.
9. Ghoshal UC, Singh R. Gastroesophageal reflux disease in India: epidemiology and pathophysiology. *Indian J Gastroenterol*. 2011;30(6):251-257.
10. Singh G, et al. Prevalence and risk factors for GERD in the Indian population: a systematic review and meta-analysis. *Indian J Gastroenterol*. 2021;40:350-364.
11. Chacko A, et al. Prevalence and factors associated with GERD in a community in southern India. *Indian J Gastroenterol*. 2019;38(1):1-7.
12. Kaltenbach T, Crockett S, Gerson LB. Are lifestyle measures effective in patients with GERD? *Arch Intern Med*. 2006;166(9):965-971.
13. Ness-Jensen E, et al. Weight loss is truly effective in reducing GERD symptoms and PPI use. *Clin Gastroenterol Hepatol*. 2016;14(2):173-180.
14. Jacobson BC, et al. Weight loss can lead to resolution of GERD symptoms: prospective data. *Obesity (Silver Spring)*. 2013;21(2):284-290.
15. Fujiwara Y, et al. Late-night dinner and GERD prevalence in type 2 diabetes. *J Am Coll Nutr*. 2017;36(5):330-335.
16. Ness-Jensen E, Hveem K, El-Serag H, Lagergren J. Lifestyle intervention in GERD (narrative/overview). *Clin Gastroenterol Hepatol*. 2016;14(2):175-182.
17. Lagergren J, Bergström R, Lindgren A, Nyrén O. Symptomatic gastroesophageal reflux as a risk factor for esophageal adenocarcinoma. *N Engl J Med*. 1999;340:825-831.
18. Hvid-Jensen F, Pedersen L, Drewes AM, Sørensen HT, Funch-Jensen P. Incidence of adenocarcinoma among patients with Barrett's esophagus. *N Engl J Med*. 2011;365:1375-1383.
19. Vaezi MF, et al. Nocturnal GERD and sleep: clinical review. *J Clin Gastroenterol*. 2020;54(9):757-765.
20. Shaker R, et al. Gastroesophageal reflux disease and sleep disorders: review. *Sleep Med Clin*. 2010;5(3):403-415.
21. Szentkiralyi A, et al. Gastroesophageal reflux and sleep disturbances: bidirectional association. *Sleep*. 2016;39(7):1421-1427.

22. JAMA Network Open. GERD symptoms and sleep quality among adults: cross-sectional analysis. *JAMA Netw Open*. 2023;6(7):e2324512.
23. Leiman DA, Riff BP, Morgan S, et al. Effectiveness of interventions for nocturnal reflux. *Neurogastroenterol Motil*. 2022;34(4):e14170.
24. Khan M, Santana J, Donnellan C, Preston C, Moayyedi P. PPI twice-daily vs once-daily for GERD: systematic review and meta-analysis. *Gastroenterol Res Pract*. 2017;2017:9865963.
25. Xie C, et al. PPI plus prokinetic therapy for GERD: systematic review and meta-analysis. *Gastroenterol Res Pract*. 2021;2021:6699836.
26. AGA Clinical Practice Update on diagnosis and management of GERD. *Clin Gastroenterol Hepatol*. 2023;21(10):2409-2422.
27. Eusebi LH, et al. Global burden and risk factors update (editorial/context). *Gut*. 2018;67(3):430-440.
28. Frontiers in Public Health Meta-analysis: shift work and possible GERD symptoms. *Front Public Health*. 2022;10:980603.
29. BMC Public Health. Burden of GERD in 204 countries and territories, 1990-2019. *BMC Public Health*. 2023;23:1051.
30. Dean AG, Sullivan KM, Soe MM. OpenEpi: Open Source Epidemiologic Statistics for Public Health, Version 3.0.1. (Accessed for analysis.)