Journal of Population Therapeutics & Clinical Pharmacology

RESEARCH ARTICLE
DOI: 10.53555/kp9kjn89

PSYCHIATRIC COMORBIDITIES IN GASTROESOPHAGEAL REFLUX DISEASE: A PROSPECTIVE OBSERVATIONAL STUDY USING STANDARDIZED PSYCHIATRIC SCALES

M Rangapriya [1], Mohammed Rimshad P[2] , R Manivannan[3]

[1] *M. Pharm., Ph. D., Professor and Head, Department of Pharmacy Practice, Excel college of Pharmacy, Komarapalayam, Namakkal. rangapriyaecop@excelcolleges.com
[2] M. Pharm, Department of Pharmacy Practice, Excel college of Pharmacy, Komarapalayam, Namakkal. rimshad237@gmail.com
[3] M. Pharm., Ph. D., Principal, Professor, Excel college of Pharmacy, Komarapalayam, Namakkal. manivannanbiotech@gmail.com

***Corresponding Author:** M RANGAPRIYA
*M. Pharm., Ph. D., Professor and Head, Department of Pharmacy Practice, Excel college of Pharmacy, Komarapalayam, Namakkal.

ABSTRACT

Background: Gastroesophageal reflux disease (GERD) is a chronic gastrointestinal illness that is more and more linked with mental disorders like depression and anxiety, and even sleep disturbances. These conditions that come together worsen the symptoms, decrease the quality of life (QoL), and remain a hurdle in treatment. The goal of this research was to measure the extent of the psychiatric comorbidities in the GERD patients and their severity, as well as to correlate the comorbidities with GERD severity and QoL.

Methods: A prospective observational study was performed that included 100 GERD patients that were clinically confirmed at Almas Tertiary Care Hospital, Kerala. The GERD severity of the patients was measured by means of the GERD-Q scale. The measures of depression, anxiety, sleep disturbances, and QoL were made with PHQ-9, GAD-7, PSQI, and the GERD-HRQL scales, respectively. The data were processed by using SPSS; correlations were established via Pearson's test.

Results: Depression, anxiety, and sleep disturbances were the psychological conditions that suffered from the highest prevalence among GERD patients. 57% of the patients suffered from depression, 71% from anxiety, and 48% from sleeping problems. The QoL of the patients was reported to be very poor in the case of 79%. The GERD severity had a strong positive correlation with depression ($r = 0.881$, $p < 0.001$), anxiety ($r = 0.876$, $p < 0.001$), and sleep disturbances ($r = 0.831$, $p < 0.001$). The age of the patients (41–60 years), alcohol use, hypertension, diabetes, longer GERD duration, and severe GERD were significant predictors..

Conclusion: Psychiatric comorbidities are highly prevalent in GERD and significantly worsen QoL. Routine psychiatric screening and integrated management may improve both psychological and gastrointestinal outcomes.

Keywords: GERD, Depression, Anxiety, Sleep disturbance, Quality of life, Gut–brain axis

INTRODUCTION

Gastroesophageal reflux disease (GERD) is a long-lasting gastrointestinal disorder that occurs when stomach contents flow back into the esophagus, leading to significant discomfort or damage to the mucosa. The main symptoms are heartburn, regurgitation, and sometimes cough or hoarseness as the extra-esophageal manifestations. GERD is regarded as one of the most common digestive disorders all around the globe, with an increasing burden in both the rich and poor nations. The global prevalence in Western populations is approximately 10-20%, whereas in Asia it is around 5-10%. The situation in India is quite similar, where the changing lifestyle, urbanization, and eating habits have led to an increased incidence making GERD a significant public health issue.[1,2,3]

The onset of GERD is due to various factors, among which are the dysfunction of the lower esophageal sphincter, the occurrence of spontaneous relaxations of the sphincter, hiatal hernia, slow gastric emptying, and the weakening of mucosal defenses. Overweight, smoking, and alcohol are considered the main lifestyle and host factors that can greatly contribute to the reflux and make it worse.[4,5] The continued exposure of the esophagus to acid causes injury to the mucosa, which ultimately leads to the development of conditions like esophagitis, strictures, and severe complications such as Barrett's esophagus and adenocarcinoma. GERD is a condition that has a major negative effect on the patients' quality of life, their daily activities, and the healthcare services they require, thus the need for effective diagnosis and management strategies. The physical symptoms are not the only major issue as there is a growing body of research which points to the existence of strong psychosomatic interactions that affect the disease both in terms of its presentation and progression.[6]

The presence of psychiatric comorbidities such as depression, anxiety, and sleep problems in patients with GERD is becoming more and more common. The studies show that about 40–60% of people suffering from GERD are likely to display depressive symptoms while 50–70% are diagnosed with anxiety disorders. Sleep-related issues are prevalent among 40–50% of patients, particularly those who have nocturnal reflux.[7,8] These mental health problems can make the patients more sensitive to their body's signals and thus perceive the symptoms as more serious, or they can even cause the treatment to be ineffective, leading to the problem of refractory GERD even with the best therapy. On the other hand, chronic reflux can negatively influence one's emotional state by causing persistent discomfort, less social interaction, and psychological distress. This interaction between the two aspects emphasizes the necessity of considering both the gastrointestinal and the psychiatric in the management of GERD.[9]

Though there is a lot of evidence that has been gathered, psychiatric comorbidities that accompany GERD are still underdiagnosed and untreated in many places, such as India where mental health screening is not a routine practice in gastroenterology. It is very important to know how many GERD patients have depression, anxiety, and sleep disturbances and what their conditions are like, as this is part of holistic care. Standardized instruments like PHQ-9, GAD-7, and PSQI allow for the easy identification of individuals at risk through reliable and simple methods. Therefore, the aim of this study was to assess the prevalence and pattern of psychiatric comorbidities among GERD patients, investigate their connection with disease severity and quality of life, and find out the main risk factors that affect these associations.[10]

Methodology

Study Design and Setting

A prospective observational study was conducted at Almas Tertiary Care Hospital, Kerala, over four months.

Participants

A total of 100 adult GERD patients diagnosed clinically or via endoscopy were included.

Inclusion Criteria:

- Confirmed GERD diagnosis

- Willingness to participate and provide consent

Exclusion Criteria:

- Other major gastrointestinal diseases
- Severe psychiatric illness requiring hospitalization
- Cognitive impairment

Assessment Tools

- **GERD Severity:** GERD-Q Questionnaire
- **Depression:** Patient Health Questionnaire (PHQ-9)
- **Anxiety:** Generalized Anxiety Disorder Scale (GAD-7)
- **Sleep Disturbance:** Pittsburgh Sleep Quality Index (PSQI)
- **Quality of Life:** GERD-HRQL Scale

Complete study process

All clinically confirmed GERD patients were screened and 100 participants were enrolled after informed consent. Demographic and clinical data were recorded, and disease severity was assessed using the GERD-Q questionnaire. Psychiatric comorbidities were evaluated using PHQ-9 for depression, GAD-7 for anxiety, and PSQI for sleep disturbances, while quality of life was measured with the GERD-HRQL scale. Scores for each tool were calculated as per standard guidelines, and prevalence of each comorbidity was determined. Statistical analyses were performed using SPSS (version 25) to identify correlations between GERD severity, psychiatric scores, and quality-of-life measures, with significance set at $p < 0.05$.

Statistical Analysis

Data were analyzed using SPSS v25. Categorical variables were analyzed via Chi-square test, and continuous correlations via Pearson's coefficient. Significance was set at $p < 0.05$.

Ethical Consideration

This study was conducted in accordance with the ethical principles of the Declaration of Helsinki. Ethical approval for the study was obtained from the **Institutional Ethics Committee (IEC)** of **Excel College of Pharmacy, Namakkal**, prior to commencement of data collection.

RESULTS

Table 1. Demographic Characteristics of GERD Patients (n = 100)

Parameter	Category	Frequency	Percentage (%)
Gender	Male	49	49
	Female	51	51
Age (years)	<30	15	15
	31–40	32	32
	41–50	32	32
	51–60	19	19
	>60	2	2
Residence	Urban	55	55
	Rural	45	45
Education	Literate	80	80
	Illiterate	20	20

The study population had nearly equal male-to-female distribution, with most patients (64%) aged between 31–50 years. A majority were literate (80%) and resided in urban areas (55%), indicating lifestyle and stress factors may play a role in GERD prevalence.

Table 2. GERD Duration and Severity

Parameter	Category	Frequency	Percentage (%)
GERD Duration	<6 months	23	23
	6–12 months	17	17
	1–2 years	24	24
	2–3 years	17	17
	>3 years	19	19
GERD Severity (GERD-Q)	Mild	42	42
	Moderate	30	30
	Severe	28	28

Almost half the patients (41%) reported GERD symptoms lasting over 1 year, showing its chronic nature. Most had mild (42%) or moderate (30%) disease, while 28% suffered severe GERD, which strongly correlated with psychiatric comorbidities.

Table 3. Prevalence of Psychiatric Comorbidities in GERD Patients

Psychiatric Condition	Present	Absent	Prevalence (%)
Depression (PHQ-9)	57	43	57%
Anxiety (GAD-7)	71	29	71%
Sleep Disturbance (PSQI)	48	52	48%
Low Quality of Life (GERD-HRQL)	79	21	79%

Depression and anxiety were the most prevalent psychiatric comorbidities (57% and 71%, respectively). Nearly half of the patients experienced sleep disturbances, and a significant majority (79%) reported poor quality of life due to GERD symptoms.

Table 4. Severity Distribution of Psychiatric Comorbidities

Assessment Scale	None/Minimal	Mild	Moderate	Moderately Severe	Severe
PHQ-9 (Depression)	43%	9%	26%	15%	7%
GAD-7 (Anxiety)	29%	19%	36%	—	16%
PSQI (Sleep Quality)	52% (Good)	—	—	—	48% (Poor)

Moderate to severe depression (48%) and moderate to severe anxiety (52%) were commonly observed. Nearly half of the GERD patients experienced poor sleep quality, demonstrating a considerable psychological and somatic burden.

Table 5. Correlation Between GERD Severity and Psychiatric Scores

Parameter Correlated	Correlation Coefficient (r)	p-value	Interpretation
GERD-Q vs. PHQ-9 (Depression)	0.881	<0.001	Strong positive correlation
GERD-Q vs. GAD-7 (Anxiety)	0.876	<0.001	Strong positive correlation
GERD-Q vs. PSQI (Sleep Quality)	0.831	<0.001	Strong positive correlation

GERD severity showed strong, statistically significant positive correlations with depression, anxiety, and sleep disturbance scores. This indicates that worsening GERD symptoms are closely linked with increased psychological distress and poor sleep quality.

Table 6. Correlation Between Quality of Life (GERD-HRQL) and Psychiatric Scores

Parameter Correlated	Correlation Coefficient (r)	p-value	Interpretation
HRQL vs. PHQ-9 (Depression)	0.842	<0.001	Strong positive correlation
HRQL vs. GAD-7 (Anxiety)	0.836	<0.001	Strong positive correlation
HRQL vs. PSQI (Sleep Quality)	0.812	<0.001	Strong positive correlation

Quality of life (HRQL) had significant positive correlations with depression, anxiety, and poor sleep. As psychiatric scores increased, QoL worsened, highlighting the bidirectional relationship between mental health and GERD outcomes.

Table 7. Significant Risk Factors for Psychiatric Comorbidities in GERD

Risk Factor	Associated Condition	p-value	Significance
Age (41–60 years)	Depression, Anxiety	<0.05	Significant
Alcohol Use	Anxiety, Sleep Disturbance	<0.05	Significant
GERD Duration >1 year	Depression, Poor QoL	<0.05	Significant
Hypertension	Depression, Anxiety	<0.05	Significant
Severe GERD	All Comorbidities	<0.001	Highly significant

Older age, alcohol consumption, longer GERD duration, hypertension, and severe GERD were significant predictors of psychiatric comorbidities. These findings emphasize that chronic, severe GERD patients require integrated psychosomatic care.

DISCUSSION

The high prevalence of psychiatric comorbidities in our cohort of GERD patients echoes findings from earlier studies. In our study, anxiety affected 71 % and depression 57 % of participants. A meta-analysis of 36 studies reported pooled prevalences of 34.4 % for anxiety and 24.2 % for depression in GERD populations (OR for anxiety = 4.46; OR for depression = 2.56)[11]. Another large population-based US study of 3,068 GERD patients found 13 % had depression, 13 % had anxiety, and 10 % both; those with comorbid anxiety + depression demonstrated significantly worse health-related quality of life (HRQoL)[12]. Our higher prevalence likely reflects differences in setting (tertiary care), assessment tools and severity of disease.

Our analysis showing strong positive correlations between GERD-Q severity scores and psychiatric scales ($r \approx 0.83–0.88$, $p < 0.001$) aligns with mechanistic and clinical data linking reflux severity, visceral sensitivity and psychological distress. For instance, a cross-sectional study of 279 GERD patients found significantly higher anxiety and depression scores in non-erosive reflux disease (NERD) compared to erosive disease, and negative correlations between Zung anxiety/depression scales and SF-36 QoL subscores[13]. Further, a Taiwanese cohort reported HR for subsequent depressive disorder of 3.37 (95 % CI 2.49–4.57) and for anxiety disorder 2.99 (95 % CI 2.12–4.22) in GERD patients versus controls over time[14]. These data support a bidirectional "gut–brain" axis model, where worsening reflux may increase psychological burden and conversely psychological distress may amplify symptom perception and disease severity.

The impact of psychiatric comorbidity on quality of life (QoL) deserves emphasis: in our study, 79 % of patients reported poor HRQL and we observed strong correlations between GERD-HRQL and depression ($r = 0.842$), anxiety ($r = 0.836$), and sleep disturbance ($r = 0.812$). These findings mirror earlier population data: the US MEPS-based study reported that GERD patients with anxiety ($MCS = -10.819$, $p < 0.0001$) or depression ($MCS = -6.395$, $p < 0.0001$) or both ($MCS = -42.869$, $p < 0.0001$) had markedly reduced QoL scores[12]. A comprehensive meta-analysis confirms that psychosocial disorders significantly worsen GERD patients' QoL and underscore the need for psychosomatic screening in routine care[15].

Finally, our identification of significant risk factors such as age 41–60, alcohol use, longer disease duration, hypertension, and severe GERD as predictors of psychiatric comorbidity aligns partially with extant literature but also extends it. For instance, the Korean national sample cohort found GERD was independently associated with depressive disorder (adjusted HR 1.41, 95 % CI 1.04–1.91, $p = 0.027$)[16]. While many prior studies emphasise severity of GERD and presence of NERD over erosive disease, fewer have systematically examined lifestyle or comorbidity predictors in Indian settings. Our data therefore contribute clinically useful insight for early identification of high-risk GERD patients who may benefit from integrated mental-health assessments.

CONCLUSION

The present study demonstrated a high prevalence of psychiatric comorbidities among GERD patients, with anxiety (71 %), depression (57 %), and sleep disturbances (48 %) significantly associated with disease severity and poor quality of life. Strong correlations between GERD-Q and

psychiatric scores highlight the crucial role of the gut–brain axis in symptom perception and chronicity. Age between 41–60 years, alcohol consumption, hypertension, prolonged disease duration, and severe GERD emerged as major risk factors. These findings are consistent with international data linking GERD severity to psychological distress and impaired well-being. Routine psychiatric screening using validated tools such as PHQ-9, GAD-7, and PSQI should therefore be integrated into GERD management. A multidisciplinary approach combining gastroenterological and psychological interventions may improve symptom control, enhance quality of life, and reduce long-term disease burden in patients with gastroesophageal reflux disease.

ACKNOWLEDGMENT

This work is dedicated to Almighty God for granting the strength, peace of mind, and perseverance needed to complete this project. The authors express heartfelt gratitude to the Management of Excel College of Pharmacy for providing all facilities required for the successful completion of this work. Special thanks **to** Dr. R. Manivannan, M. Pharm, Ph.D., Principal**,** Excel College of Pharmacy, for his guidance and encouragement. The authors are deeply indebted to Dr. M. Rangapriya, M. Pharm, Ph.D., Professor & Head, Department of **Pharmacy** Practice**,** for her invaluable supervision, constant support, and insightful feedback throughout this study.

REFERENCES

1. Maret-Ouda J, Markar SR, Lagergren J. Gastroesophageal Reflux Disease: A Review. JAMA. 2020 Dec 22;324(24):2536-2547.
2. Durazzo M, Lupi G, Cicerchia F, Ferro A, Barutta F, Beccuti G, Gruden G, Pellicano R. Extra-Esophageal Presentation of Gastroesophageal Reflux Disease: 2020 Update. J Clin Med. 2020 Aug 7;9(8):2559
3. Shaqran TM, Ismaeel MM, Alnuaman AA, Al Ahmad FA, Albalawi GA, Almubarak JN, AlHarbi RS, Alaqidi RS, AlAli YA, Alfawaz KS, Daghriri AA. Epidemiology, Causes, and Management of Gastro-esophageal Reflux Disease: A Systematic Review. Cureus. 2023 Oct 21;15(10):e47420.
4. Zheng Z, Shang Y, Wang N, Liu X, Xin C, Yan X, Zhai Y, Yin J, Zhang J, Zhang Z. Current Advancement on the Dynamic Mechanism of Gastroesophageal Reflux Disease. Int J Biol Sci. 2021 Oct 3;17(15):4154-4164.
5. Tack J, Pandolfino JE. Pathophysiology of Gastroesophageal Reflux Disease. Gastroenterology. 2018 Jan;154(2):277-288
6. Deepalakshmi K, Vasanthi R, Venkatakrishnan L, Karthikeyan S. Clinical and manometric profile of patients with GERD in a tertiary care hospital. Int J Adv Med. 2017;4(6):1658-61.
7. Hartono JL, Mahadeva S, Goh KL. Anxiety and depression in various functional gastrointestinal disorders: do differences exist? J Dig Dis. 2012;13:252–7.
8. Kim JY, Kim N, Seo PJ, Lee JW, Kim MS, Kim SE, Jo SY, Lee DH, Jung HC. Association of sleep dysfunction and emotional status with gastroesophageal reflux disease in Korea. J Neurogastroenterol Motil. 2013;19:344–354
9. Jansson C, Nordenstedt H, Wallander MA, Johansson S, Johnsen R, Hveem K, Lagergren J. Severe gastro-oesophageal reflux symptoms in relation to anxiety, depression and coping in a population-based study. Aliment Pharmacol Ther. 2007;26:683–691.
10. Jang SH, Ryu HS, Choi SC, Lee SY. Psychological factors influence the gastroesophageal reflux disease (GERD) and their effect on quality of life among firefighters in South Korea. Int J Occup Environ Health. 2016 Oct;22(4):315-320. .
11. Zamani M, Alizadeh-Tabari S, Chan WW, Talley NJ. Association Between Anxiety/Depression and Gastroesophageal Reflux: A Systematic Review and Meta-Analysis. Am J Gastroenterol. 2023 Dec 1;118(12):2133-2143

12. Alwhaibi M. Anxiety and Depression and Health-Related Quality of Life in Adults with Gastroesophageal Reflux Disease: A Population-Based Study. Healthcare (Basel). 2023 Sep 27;11(19):2637.
13. Yang XJ, Jiang HM, Hou XH, Song J. Anxiety and depression in patients with gastroesophageal reflux disease and their effect on quality of life. World J Gastroenterol. 2015 Apr 14;21(14):4302-9.
14. You ZH, Perng CL, Hu LY, Lu T, Chen PM, Yang AC, Tsai SJ, Huang YS, Chen HJ. Risk of psychiatric disorders following gastroesophageal reflux disease: a nationwide population-based cohort study. Eur J Intern Med. 2015 Sep;26(7):534-9.
15. He M, Wang Q, Yao D, Li J, Bai G. Association Between Psychosocial Disorders and Gastroesophageal Reflux Disease: A Systematic Review and Meta-analysis. J Neurogastroenterol Motil. 2022 Apr 30;28(2):212-221
16. Lee YS, Jang BH, Ko SG, Chae Y. Comorbid risks of psychological disorders and gastroesophageal reflux disorder using the national health insurance service-National Sample Cohort: A STROBE-compliant article. Medicine (Baltimore). 2018 May;97(18):e0153.