IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)
e-ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 25, Issue 5 Ser. 1 (May. 2026), PP 49-53
www.iosrjournals.org

Correlation Between Gerd-Q Score And Endoscopic Findings In Gastroesophageal Reflux Disease: A Cross-Sectional Study Of 103 Patients At Tangier University Hospital

Y. Ait Ahmed, A. Faik, L. El Rharbaoui, A. Akjay, H. Ouaya, H. Meyiz, I. Mellouki

Department Of Hepato-Gastroenterology, Mohammed Vi University Hospital, Tangier, Morocco

Abstract
Gastroesophageal reflux disease (GERD) is a highly prevalent digestive disorder associated with a significant impairment in quality of life. The GERD-Q questionnaire is a simple and validated clinical tool used to assess the likelihood and severity of GERD based on symptom evaluation. This study aimed to investigate the correlation between GERD-Q scores and endoscopic findings in patients presenting with GERD-related symptoms.
A cross-sectional study was conducted over a 12-month period, including adult patients with symptoms suggestive of GERD. GERD-Q scores were calculated for all participants and categorized into high (≥8) and low (<8) groups. All patients underwent upper gastrointestinal endoscopy to assess esophagitis (Los Angeles classification), hiatal hernia, and Barrett's esophagus.
A total of 103 patients were included. Endoscopy revealed reflux esophagitis in 30% of cases, while 70% had normal findings. All patients with esophagitis had a GERD-Q score ≥8, with a trend toward higher scores in more severe grades. Hiatal hernia was identified in 25% of patients, with 91% presenting high GERD-Q scores. Barrett's esophagus was found in 17 patients, most of whom also had elevated scores. Notably, no patient with a GERD-Q score <8 had endoscopic abnormalities.
These findings demonstrate a significant correlation between GERD-Q score and endoscopic lesions, supporting its role as a useful clinical tool for guiding endoscopic evaluation, particularly in resource-limited settings.

Keywords: *GERD, GERD-Q, esophagitis, endoscopy, reflux disease*

Date of Submission: 26-04-2026 Date of Acceptance: 06-05-2026

I. Introduction

Gastroesophageal reflux disease (GERD) is among the most common gastrointestinal disorders worldwide, with an estimated prevalence approaching 14% globally[1]. It results from the retrograde movement of gastric contents into the esophagus, leading to typical symptoms such as heartburn and acid regurgitation, as well as complications including erosive esophagitis, strictures, and Barrett's esophagus.

Although the diagnosis is primarily clinical, upper gastrointestinal endoscopy and esophageal pH monitoring are often required in selected cases. However, access to endoscopy may be limited, and a substantial proportion of symptomatic patients present with normal endoscopic findings.

To facilitate clinical assessment, the GERD-Q questionnaire was developed as a validated, symptom-based diagnostic tool. It includes six items assessing the frequency and impact of reflux-related symptoms.

The present study aimed to evaluate the relationship between GERD-Q scores and endoscopic findings in patients with suspected GERD.

II. Materials And Methods

Study design

This was a cross-sectional observational study conducted over a 12-month period in the Department of Hepato-Gastroenterology at Mohammed VI University Hospital in Tangier, Morocco. The study aimed to evaluate the relationship between GERD-Q score and endoscopic findings in patients presenting with symptoms suggestive of gastroesophageal reflux disease.

Study population

Adult patients (≥18 years) presenting with typical symptoms of GERD, including heartburn and/or acid regurgitation, were consecutively recruited during the study period.

Inclusion criteria
- Age ≥18 years
- Presence of typical GERD symptoms (heartburn and/or regurgitation)

Exclusion criteria
- History of upper gastrointestinal surgery.
- Known esophageal pathology.
- Current use of proton pump inhibitors.
- Incomplete clinical data.

All participants provided informed consent prior to inclusion.

GERD-Q assessment

The GERD-Q questionnary was administered to all patients prior to endoscopy (table 1). It consists of six items assessing symptom frequency over the previous week:
- Four positive predictors:
  - Heartburn
  - Regurgitation
  - Sleep disturbance due to reflux
  - Use of over-the-counter medication
- Two negative predictors:
  - Epigastric pain
  - Nausea

Each item is scored from 0 to 3 according to symptom frequency. Four items are considered positive predictors and are scored directly, whereas two items (epigastric pain and nausea) are negative predictors and are reverse scored. The total score ranges from 0 to 18, with higher scores indicating a higher probability of gastroesophageal reflux disease. A cut-off value of ≥8 was used to define a high probability of GERD.

TABLE 1 *ENDOSCOPIC EVALUATION*

Item	Symptom	Type of predictor	Scoring (0–3 points)
1	Heartburn	Positive	0 = none, 1 = 1 day, 2 = 2–3 days, 3 = 4–7 days
2	Regurgitation	Positive	0 = none, 1 = 1 day, 2 = 2–3 days, 3 = 4–7 days
3	Sleep disturbance due to reflux	Positive	0 = none, 1 = 1 day, 2 = 2–3 days, 3 = 4–7 days
4	Use of additional medication for reflux	Positive	0 = none, 1 = 1 day, 2 = 2–3 days, 3 = 4–7 days
5	Epigastric pain	Negative	3 = none, 2 = 1 day, 1 = 2–3 days, 0 = 4–7 days
6	Nausea	Negative	3 = none, 2 = 1 day, 1 = 2–3 days, 0 = 4–7 days

All patients underwent upper gastrointestinal endoscopy performed by experienced endoscopists usingXXXXX.

The following findings were systematically recorded:
- **Reflux esophagitis**, classified according to the Los Angeles classification: Grade A, B, C, or D
- **Hiatal hernia**, defined as proximal displacement of the gastroesophageal junction above the diaphragmatic hiatus
- **Barrett's esophagus**, defined as the presence of salmon-colored mucosa extending above the gastroesophageal junction and confirmed when possible by biopsy

- Other findings : gastric or duodenal ulcers …

Endoscopic findings were documented immediately after the procedure.

Statistical analysis

Data were entered and analyzed using SPSS software version 21.

- Quantitative variables were expressed as mean ± standard deviation
- Qualitative variables were expressed as frequencies and percentages

Comparisons between groups (GERD-Q ≥8 vs <8) were performed using the chi-square (χ^2) test for categorical variables.

A p-value <0.05 was considered statistically significant.

III. Results

A total of 103 patients presenting with symptoms suggestive of gastroesophageal reflux disease were included during the one-year study period. The study population consisted of 49 males and 54 females, corresponding to a male-to-female ratio of 0.90. The mean age of the patients was 45 years, with a range from 20 to 75 years.

All participants completed the GERD-Q questionnary prior to undergoing upper gastrointestinal endoscopy. Based on their scores, patients were categorized into two groups: a high-score group (GERD-Q ≥8) and a low-score group (GERD-Q <8). All patients subsequently underwent upper gastrointestinal endoscopy to assess the presence of esophageal and gastroduodenal abnormalities.

Endoscopic evaluation revealed reflux esophagitis in 31 patients (30%), whereas 72 patients (70%) had normal findings with no visible mucosal abnormalities. The severity of esophagitis was graded according to the Los Angeles classification. Among patients with esophagitis, 11 (37%) were classified as grade A, 10 (32%) as grade B, and 5 patients each (16%) as grade C and grade D. Overall, most cases corresponded to mild to moderate esophagitis (grades A and B) (table 2).

Table 2: Distribution Of Esophagitis According To Los Angeles Classification

Los Angeles classification	Frequency	Percentage (%)
Grade A	11	37
Grade B	10	32
Grade C	5	16
Grade D	5	16

Analysis of the relationship between GERD-Q score and endoscopic findings showed that all patients with esophagitis had a GERD-Q score ≥8, indicating a strong association between higher scores and the presence of esophageal lesions. In addition, a progressive increase in GERD-Q score was observed with increasing severity of esophagitis.

Hiatal hernia was identified in 26 patients (25%). Among these, 91% had a GERD-Q score ≥8, suggesting that most patients with this anatomical abnormality also exhibited clinically significant reflux symptoms.

Barrett's esophagus was detected in 17 patients. Of these, 13 had a GERD-Q score ≥8, while 4 patients had a score <8 (table 3).

Table 3 Endoscopic Findings

Finding	Frequency	Percentage (%)
Normal endoscopy	72	70
Esophagitis	31	30
Hiatal hernia	26	25
Barrett's esophagus	17	16

Importantly, all patients with a GERD-Q score below 8 had normal endoscopic findings, with no macroscopic abnormalities observed. This suggests that a low GERD-Q score may be associated with a lower probability of endoscopic lesions (table 4).

Table 4 : GERD-Q Score and Endoscopic Correlation

Condition	GERD-Q ≥8	GERD-Q <8	P-value
Esophagitis	100%	0%	<0.001
Hiatal hernia	91%	9%	
Barrett's esophagus	76%	24%	
Normal endoscopy	0%	100%	

IV. Discussion

The findings of our study demonstrate a significant association between GERD-Q score and the presence of endoscopic lesions in patients presenting with symptoms suggestive of gastroesophageal reflux disease. Notably, all patients diagnosed with reflux esophagitis had a GERD-Q score ≥8, suggesting that this threshold may serve as a useful indicator for identifying patients at increased risk of esophageal mucosal injury.

These results are consistent with previous validation studies of the GERD-Q questionnaire, which have established its reliability as a clinical tool for the diagnosis of GERD in routine practice[2]. Several studies have shown that a cut-off value of GERD-Q ≥8 provides an optimal balance between sensitivity and specificity, with reported sensitivity of approximately 65% and specificity close to 70% in certain populations [3].

In our study, the observed association between higher GERD-Q scores and the presence of esophagitis is also in agreement with previous findings indicating that increasing GERD-Q scores correlate with the severity of esophageal mucosal damage. A study evaluating the relationship between GERD-Q scores and esophagitis severity according to the Los Angeles classification demonstrated a progressive increase in mean GERD-Q score with increasing severity of esophagitis, with a statistically significant correlation between these parameters[4].

This relationship can be explained by the underlying pathophysiology of GERD. Symptoms assessed by the GERD-Q, such as heartburn and acid regurgitation, directly reflect the degree of acid exposure to the esophageal mucosa. Increased acid exposure not only leads to more pronounced symptoms but also increases the likelihood of inflammatory mucosal injury.

Furthermore, our results indicate an association between elevated GERD-Q scores and the presence of hiatal hernia. Hiatal hernia is a well-recognized anatomical factor that promotes acid reflux by impairing the function of the lower esophageal sphincter and increasing esophageal acid exposure time. This association has been reported in previous studies, where patients with higher GERD-Q scores were more likely to present with endoscopic abnormalities such as esophagitis or hiatal hernia [5].

In our study, the majority of patients with Barrett's esophagus also had GERD-Q scores ≥8. Although Barrett's esophagus represents a chronic complication of GERD, persistent and severe symptoms may reflect prolonged acid exposure, which contributes to the development of intestinal metaplasia in the esophageal epithelium [6].

Despite these findings, it is important to highlight certain limitations of the GERD-Q questionnaire. Several studies have demonstrated that its diagnostic performance remains moderate, meaning that it cannot replace gold-standard investigations such as upper gastrointestinal endoscopy or esophageal pH monitoring [7].

In validation studies, the sensitivity of GERD-Q for diagnosing GERD has been reported to range between 60% and 70%, indicating that a proportion of patients with GERD may still present with low scores [8], [9].

Moreover, a substantial proportion of patients with GERD have non-erosive reflux disease (NERD), characterized by typical symptoms in the absence of endoscopic lesions. In such cases, GERD-Q scores may be elevated despite a normal endoscopy, highlighting the importance of a comprehensive diagnostic approach integrating clinical assessment, endoscopy, and, when necessary, esophageal pH monitoring.

Despite these limitations, GERD-Q remains a valuable clinical tool, particularly in primary care settings and in environments with limited access to endoscopic resources. Its use allows for the identification of patients with a high probability of GERD and supports a more rational selection of patients for further diagnostic evaluation. Some studies have suggested that incorporating GERD-Q into clinical practice may reduce unnecessary endoscopic procedures and improve the utilization of healthcare resources [9].

Overall, the findings of our study support the role of GERD-Q as an effective tool for clinical stratification in patients with suspected GERD. Its use may help identify patients at higher risk of endoscopic lesions and optimize the indication for upper gastrointestinal endoscopy, particularly in resource-limited settings.

V. Conclusion

This study demonstrates a significant correlation between GERD-Q score and endoscopic findings in patients with GERD symptoms. A score ≥8 was consistently associated with the presence of esophagitis and other abnormalities, whereas lower scores were linked to normal endoscopic findings.

The GERD-Q questionnaire may therefore serve as a useful, non-invasive tool for guiding the indication of endoscopy, especially in resource-constrained environments. However, it should be used in conjunction with standard diagnostic modalities.

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