

# Knowledge, attitude and practice about gastroesophageal reflux disease among medical staff at two general hospitals in Baghdad, Iraq

Ruqaya Khaleel Muhammed,<sup>a</sup> Labeed Salman Hamid,<sup>b</sup> Yaseen Mustafa Kamil.<sup>c</sup>

### ABSTRACT

**Introduction:** Gastroesophageal reflux disease (GERD) is commonly called Heartburn. Symptoms are caused when there is reflux of gastric contents, particularly acid, into the oesophagus, which irritates the mucosal surface.

**Objective:** To assess knowledge, attitude, and practice regarding GERD among Al-Nu'man and Martyr Dhari Al-Fayad General Hospitals' medical staff.

**Methods:** A cross-sectional study was conducted on 137 medical staff at Al-Nu'man and Martyr Dhari Al-Fayad General Hospital from the 1st of February 2023 to the 1st of January 2024. The questionnaire was comprised of four sections: demographic features, knowledge, attitude, and practice of GERD. Data were analyzed using SPSS.

**Results:** Of 137 respondents, 62 (45.3%) and 75 (54.7%) were doctors and pharmacist respectively. The average age of participants was (31.3±8.2) years. 70 (51.1%) of respondents had a positive attitude level. 80 (58.4%) of respondents doctors had adequate practice.

**Conclusion:** The medical staff had good knowledge, positive attitude and good practice concerning GERD.

**Key words:** Gastroesophageal reflux disease, Knowledge, Attitude, Practice, Doctor, Pharmacist.

### INTRODUCTION

Gastroesophageal reflux disease (GERD) is a persistent reflux of gastric contents into the oesophagus.<sup>[1]</sup> The prevalence of GERD varies depending on the geographic region, but it appears to be the highest in Western countries and is on the rise.<sup>[2,3]</sup> Heartburn, pain arising in the upper abdomen passing retrosternal towards the throat, and regurgitation, feeling of food or liquid moving up and down the oesophagus or as a sour taste in the mouth, are the most common symptoms of gastroesophageal reflux disease (GERD).<sup>[4,5]</sup>

The presence of alarm symptoms like dysphagia (difficulty swallowing), odynophagia

(painful swallowing), upper gastrointestinal (GI) bleeding, and unexplained weight loss indicate more severe disease and/or complications.<sup>[6]</sup> Some patients may experience severe episodes of pain due to reflux-induced spasms mimicking cardiac pain.<sup>[7]</sup>

The pathophysiology of gastroesophageal reflux disease can be caused by many mechanisms, such as abnormalities of the lower oesophageal sphincter, hiatus hernia, delayed oesophageal clearance, increased intra-abdominal pressure and defective gastric emptying.<sup>[8]</sup> Certain foods and drinks like fatty meals, chocolate, coffee, cola and tea, alcohol, smoking, some drugs like anticholinergics,



**a:** B pharm, Practitioner pharmacist. Al-Nu'man General Hospital, Al-Russafa Health Directorate, Baghdad, Iraq. **b:** MBChB, FIBMS, General Surgeon, Al-Nu'man General Hospital, Al-Russafa Health Directorate, Baghdad, Iraq. **c:** Consultant general surgeon, Al-Nu'man General Hospital, Al-Rasafa Health Directorate, Baghdad, Iraq..

**Corresponding Author:** Ruqaya Khaleel Muhammed, E mail: Ruqayasadad136@gmail.com.

barbiturates, caffeine, dihydropyridine calcium channel blockers, Dopamine and Estrogen, obesity, pregnancy, and anatomical abnormality can predispose to reflux of gastric contents into the oesophagus.<sup>[9,10]</sup> Chronic GERD may lead to complications like oesophageal erosions or strictures, Barrett metaplasia, and adenocarcinoma of the oesophagus.<sup>[11]</sup>

Diagnosis of GERD and detection of complications can be made by endoscopy, ambulatory pH monitoring, combined impedance-pH monitoring, high-resolution oesophageal pressure topography (HREPT), and impedance manometry.<sup>[12,13]</sup>

The non-pharmacological treatment of GERD includes lifestyle changes like weight loss, smoking cessation, elevation of bed head, avoidance of tight clothes, and avoidance of foods containing caffeine and citrus.<sup>[14,15]</sup> Pharmacologic treatment includes using antacids and inhibitors of gastric acid secretion by histamine 2-receptor antagonists and proton pump inhibitors (PPIs).<sup>[16]</sup> Continuous long-term proton pump inhibitor therapy is effective in maintaining remission of GERD symptoms. Still, the dose should be decreased after 8–12 weeks to the lowest dose that achieves symptom relief.<sup>[17]</sup> Common side effects include abdominal pain, headache, and diarrhoea.<sup>[18]</sup> Bone demineralization, enteric infections, community-acquired pneumonia, and reduced circulating levels of vitamin B12 are also reported.<sup>[18]</sup>

Indications for surgical fundoplication include the need for continuous PPIs, noncompliance or intolerance to medical therapy in patients who are good surgical candidates, ongoing nonacid reflux despite adequate medical therapy, and patient preference for surgery.<sup>[19]</sup> The Food and Drug Administration (FDA) recently approved A minimally invasive magnetic artificial sphincter for treating GERD in patients with hiatal hernias less than 3 cm in size.<sup>[20]</sup>

In 2022, the American Journal of Gastroenterology and Hepatology published the American College of Gastroenterology (ACG) Clinical Guideline for evaluating and

managing GERD, including pharmacologic, lifestyle, surgical, and endoscopic management.

<sup>[21]</sup> GERD is a common clinical problem affecting millions of people worldwide.<sup>[22]</sup> A study from Saudi Arabia has shown that family and internal physicians trained in Al-Riyadh hospitals have moderate knowledge regarding GERD. Practices were generally good, but some areas need improvement, especially diagnostic testing.<sup>[23]</sup> We could not find studies addressing a similar topic in Iraq, so this study aimed to assess knowledge, attitude and practice about GERD among physicians and pharmacists working at Al-Nu'man and the Martyr Dhari Al-Fayad General Hospitals in Al-Russafa Health Directorate in Baghdad.

## METHODS

**Setting and study design:** A cross-sectional study was conducted from the 1st of February 2023 to the 1st of January 2024 at Al-Nu'man and Martyr Dhari Al-Fayad General Hospitals.

**Ethical consideration:** The research ethics committee in the Al-Russafa Health Directorate approved the protocol of this study. Al-Nu'man and the Martyr Dhari Al-Fayad General Hospitals' administrations permitted the authors to implement the study in the hospital's departments. The data of this study were kept confidential.

**Definition of the enrollment criteria:** Doctors and pharmacists working at Al-Nu'man and the Martyr Dhari Al-Fayad General Hospitals during data collection were the targets of this study. Those who were absent during data collection or refused to participate were excluded from the study.

**Sampling:** We conveniently selected our sample from the targeted population.

**Questionnaire design:** Data were collected from participants using a pre-structured self-administered questionnaire.

The researchers developed a validated questionnaire based on previous studies with some modifications made by gastroenterology and medical research experts.<sup>[24-28]</sup> The

questionnaire was pretested on a sample of 30 participants in a pilot study. We did not include the pilot study's results in this study's final analysis. Based on the results of the pilot, some modifications were made accordingly to ensure easy understanding and clarity of the questions. The Cronbach's alpha for internal consistency was 0.76, and consequently, the applicability of the questionnaire was affirmed.

The questionnaire has four parts. The first covered participants' data, including age, gender, profession, knowledge, attitude and practice items regarding GERD.

In the second part, we prepared 20 questions to measure the knowledge. Participants were asked to answer these questions with 'yes,' 'no' or 'I do not know'. The correct response for each question was given two points, 'I do not know' was given 1 point, and the wrong answer was given zero points. The final score would be ranged between zero and 40. Each participant's knowledge score was divided into three categories: poor (<50 percent: <20 points), fair (50 percent–75 percent:20–30 points), and good (>75 percent: > 30 points).

The third part included eight questions related to attitude. They are scored based on a five-point Likert scale where 5 points are allocated to 'Strongly agree', 4 to 'Agree', 3 to 'Neutral', 2 to 'Disagree' and 1 for 'Strongly disagree'. The final score would be ranged between 8-40 points. A respondent with a score of less than 50% (less than 20 points) of the maximum was considered to have a negative attitude, 50-75% (20-30 points) to have neutral, and more than 75% (> 30 points) to have positive attitude.

The last section of the questionnaire had only six questions to measure the practice. We allocated 5 points for always, 4 for often, 3 for sometimes, 2 for seldom, and 1 for never. The level of practice was categorized as "non-adequate" <15 points, borderline if got 15-23 points, and "adequate" > 23 points).

**Data collection:** The questionnaire forms were distributed among the participants and asked to fill them out. Researchers explained

the aims of the study and assured participants that the data acquired will be confidential. The questionnaire forms were recollected from the medical staff by the researcher and were checked for completion. The respondents were encouraged to respond to any unanswered items. We distributed 168 questionnaire forms, 137 of which were valid for analysis, with a response rate of 81.55%.

**Outcomes:** The demographic characteristics of the participants, including age, education, practical experience, and gender, were assessed. Items related to knowledge, attitude, and practice concerning GERD were analyzed. The levels of knowledge, attitude, and practice were evaluated based on the professional type of the participants. All these variables were measured using descriptive statistics, with P values calculated to determine statistical significance.

**Statistical analysis:** The data were entered into IBM SPSS Statistics version 23 for analysis. A chi-squared test was used to examine the correlation between doctors and pharmacists. Descriptive analysis was conducted to explore the relationship between dependent variables (knowledge, attitude, and practice) and

Table 1   The Characteristics of the Participants.			
Features	Doctor (n, %)	Pharmacist (n, %)	Total (n, %)
<b>Age, Average± SD=(31.3±8.2)</b>			
≤ 25 years	7(11.3)	42(56.0)	49(35.8)
26–40 years	39(62.9)	32(42.7)	71(51.8)
>40 years	16(25.8)	1(1.3)	17(12.4)
<b>Education</b>			
Bachelor	31(50.0)	70(93.3)	101(73.7)
HD	2(3.2)	1(1.3)	3(2.2)
Master	7(11.3)	4(5.3)	11(8.0)
Ph.D.	22(35.5)	0(0.0)	22(16.1)
<b>Experience in practice</b>			
≤ 5 years	21(33.9)	61(81.3)	82(60)
6–10 years	11(17.7)	10(13.3)	21(15.3)
11–20 years	19(30.6)	2(2.7)	21(15.3)
>20 years	11(17.7)	2(2.7)	13(9.4)
<b>Gender</b>			
Male	29(46.8)	27(36.0)	56(40.9)
Female	33(53.2)	48(46.0)	81 (59.1)
<b>Overall</b>	<b>62(45.3)</b>	<b>75(54.7)</b>	<b>137(100)</b>

sociodemographic characteristics. A p-value of less than 0.05 was considered statistically significant.

## RESULTS

**Characteristics of respondents:** A total of 168 questionnaires were distributed, of which 137 were considered valid and suitable for analysis. **Table 1** shows that pharmacists were 75(54.7%) and doctors were 62(45.3%). Males were 56 (40.9%) and females were 81 (59.1%) were female. Of our sample, 82 (59.9%) of respondents had experience in practice less than five years. The majority, 101(73.7%), of respondents were bachelor's degree holders. The mean age of respondents was (31.3±8.2) years, with 71(51.8%) aged between 26-40 years.

**The respondents' knowledge regarding gastroesophageal reflux disease:** **Table 2** shows the frequency of correct responses for each knowledge item related to gastroesophageal reflux disease knowledge. The commonest question answered correctly was that a burning sensation in the middle of the chest is a symptom of GERD 123 (89.8), followed by being overweight, obese, and a cigarette smoker are risk factors for GERD 121(88.3%), and GERD is caused by the abnormal reflux of gastric contents into the oesophagus, 119(86.9 %). Differences in the rate of correct answers between pharmacists and doctors were statistically non-significant, except for the knowledge effect of GERD on swallowing, the effect of the size of meal on the reflux, and measuring the acidity of the stomach if in doubt of the diagnosis, with p values of 0.041, 0.011

**Table 2 |** Frequency of correct responses about GERD knowledge in different medical groups

No	Questions	Correct A	Doctor (n, %)	Pharmacist (n, %)	Total (n, %)	P value
1	GERD is a rare disease.	No	51(82.3)	62(82.7)	113(82.5)	0.103
2	GERD is caused by an abnormal reflux of gastric contents into the esophagus.	Yes	54(87.1)	65(86.7)	119(86.9)	0.166
3	A burning sensation in the middle of the chest is a symptom of GERD.	Yes	55(88.7)	68(90.7)	123(89.8)	0.055
4	Regurgitation is a symptom of GERD .	Yes	50(80.6)	63(84.0)	113(82.5)	0.620
5	Difficulties with swallowing may occur in reflux disease.	Yes	42(67.7)	36(48.0)	78(56.9)	0.041
6	Cough may be a symptom of reflux disease.	Yes	38(61.3)	53(70.7)	91(66.4)	0.302
7	The sphincter muscle between the stomach and the oesophagus relaxes during an episode of reflux.	Yes	46(74.2)	53(70.7)	99(72.3)	0.295
8	Small meals will often increase reflux.	No	52(83.9)	48(64.0)	100(73.0)	0.011
9	Overweight, obesity, and smoking are risk factors for GERD.	Yes	58(93.5)	63(84.0)	121(88.3)	0.135
10	Fatty food will often increase reflux	Yes	49(79.0)	66(88.0)	115(83.9)	0.317
11	Excessive use of sedatives without a doctor's prescription may cause GERD.	Yes	32(51.6)	46(61.3)	78(56.9)	0.517
12	Gastrosocopy is an important investigation for GERD.	Yes	39(62.9)	41(54.7)	80(58.4)	0.221
13	If in doubt, one can measure the acidity in the oesophagus to clarify a diagnosis of reflux disease.	Yes	41(66.1)	31(41.3)	72(52.6)	0.002
14	Blood tests may be used to prove a diagnosis of a reflux.	No	42(67.7)	52(69.3)	94(68.6)	0.975
15	Sedatives are an important treatment for reflux disease.	No	37(59.7)	47(62.7)	84(61.3)	0.928
16	Wearing loose-fitting clothing will help control Heartburn .	Yes	28(45.1)	43(57.3)	71(51.8)	0.293
17	Alcohol consumption may increase symptoms of GERD.	Yes	55(88.7)	63(84.0)	118(86.1)	0.699
18	Using several pillows during sleep can help relieve GERD symptoms.	Yes	53(85.5)	55(73.3)	108(78.8)	0.192
19	Reflux may inflict (cause) ulcer in the stomach.	No	15(24.2)	13(17.3)	28(20.4)	0.583
20	Serious Heartburn can lead to cancer.	Yes	37(59.7)	45(60.0)	82(59.9)	0.998

**Table 3** | Rate of respondents who answered “strongly agree” and “agree” to the questions of attitude towards GERD

No	Questions answered as "Strongly agree or Agree"	Doctor (n, %)	Pharmacist (n, %)	Total (n, %)	P value
1	Do you think coffee will often aggravate reflux	48(77.4)	69(92.0)	117(85.4)	0.111
2	Do you think family history is a risk factor for GERD	38(61.3)	49(65.3)	87(63.5)	0.787
3	Do you think old age can increase the risk of GERD	43(69.4)	58(77.3)	101(73.7)	0.111
4	Do you think bending forwards may worsen reflux	41(66.1)	56(74.7)	97(70.8)	0.353
5	Do you think repeated episodes of sore throat may indicate GERD	30(48.4)	32(42.7)	62(45.3)	0.074
6	Do you think that regular exercise can help to prevent GERD	42(67.7)	57(76.0)	99(72.3)	0.454
7	Do you think that pregnancy is a risk of developing GERD	52(83.9)	63(84.0)	115(83.9)	0.958
8	Do you think increased intake of carbonated drinks and caffeine can cause GERD?	54(87.1)	63(84.0)	117(85.4)	0.012

**Table 4** | Rate of respondents who answered “always” and “often” to the questions of practice towards GERD.

No	Questions (Always, Often)	Doctor (n, %)	Pharmacist (n, %)	Total (n, %)	P value
1	Prescribe/dispense acid production inhibitors when acid reflux.	49(79.0)	54(72.0)	103(75.2)	0.685
2	Prescribe/dispense prokinetic drugs (promote GIT motility) when acid reflux	33(53.2)	34(45.3)	67(48.9)	0.403
3	Advise the patient to avoid smoking.	52(83.9)	66(88.0)	118(86.1)	0.521
4	Advise to elevate head of the bed & avoid meals 2-3 hours before bedtime	55(88.7)	62(82.7)	117(85.4)	0.600
5	Advise the patient to avoid NSAIDS use	49(79.0)	63(84.0)	112(81.8)	0.896
6	Advise the patient to avoid high-fat diets and fried foods	58(93.5)	70(93.3)	128(93.4)	0.502

and 0.002 respectively.

**The attitude of respondents regarding Gastroesophageal reflux disease use:** Table 3 shows the frequency and percentage of positively stated statements related to GERD attitude. About 80% of the participants agree or strongly agree that coffee, carbonated drinks, caffeine and pregnancy can aggravate GERD. Differences in the answers of the doctors and pharmacists were statistically non-significant except for the relation of the increased intake

of carbonated drinks and caffeine with GERD, with a p-value of 0.012.

**The practice of respondents toward gastroesophageal reflux disease:** Table 4 shows the rate of respondents who answered “always” and “often” to the questions of practice towards GERD. More than 80% of the participants answered “often” or “always” for advising patients to avoid smoking, using NSAIDs, high-fat and fried food, elevation of the head of the bed during sleep and avoiding meals 2-3 hours

**Table 5** | The overall knowledge, attitude, and practice of medical staff regarding GERD.

Feature	Doctor (n, %)	Pharmacist (n, %)	Total (n, %)	P value
<b>Knowledge</b>				
Good	39 (62.9)	39(52.0)	78(56.9)	0.350
Fair	19 (30.6)	32 (42.7)	51(37.3)	
Poor	4 (6.5)	4(5.3)	8(5.8)	
<b>Attitude</b>				
Positive	13(21.0)	57(76.0)	70(51.1)	0.000
Neutral	48(77.4)	16(21.3)	64(46.7)	
Negative	1(1.6)	2(2.7)	3(2.2)	
<b>Practice</b>				
Adequate	20(32.3)	60(80.0)	80(58.4)	0.000
Bourderline	42(67.7)	14(18.7)	56(40.9)	
Indequate	0(0.0)	1(1.3)	1(0.7)	
<b>Total</b>	<b>62(45.3)</b>	<b>75(54.7)</b>	<b>137(100.0)</b>	



before bedtime. Differences in the answers of the doctors and pharmacists were statistically non-significant.

**The overall knowledge, attitude and practice of participants:** Table 5 shows that 78(56.9) participants have a good knowledge about GERD and 51(37.2) have a fair knowledge. The attitude was positive in 70 (51.1) participants, and in 64(46.7) it was neutral. The overall practice was adequate in 80(58.4) participants, and in 56(40.9), it was borderline less than 1 % was inadequate. The overall attitude and practice differences between pharmacists and doctors were statistically significant, with a p-value of 0.000.

## DISCUSSION

**Discussion of overall knowledge, attitude and practice:** The current study showed that medical staff had good knowledge, positive attitude and adequate practice levels regarding GERD. Further reinforcement of this knowledge through practical experience and continuous education is essential to consolidate these strengths. Additional opportunities for practice and case discussions can help deepen their understanding. Effective work stimulation of the medical staff may be particularly important for improving the overall healthcare performance.<sup>[29]</sup> Evidence from behavioural and social research supposes that job satisfaction and performance at work are positively associated. Effective teamwork is necessary for patient safety as it reduces adverse events caused by miscommunication with persons who care for the patient, as well as misunderstandings of roles and responsibilities.<sup>[30]</sup>

**Comparison with national and international studies:** In contrast to our study, a survey in the United States to measure the KAP of the American Academy of Pediatrics members has shown poor knowledge and a neutral attitude but adequate practices toward GERD management.<sup>[31]</sup> A study from Saudi Arabia indicated that the knowledge of physicians working in Riyadh hospitals about managing

GERD was fair, and the practice was borderline.<sup>[32]</sup> While another study from the Qassim Region in Saudi Arabia stated that primary healthcare physicians' knowledge, attitude, and practice about GERD were good.<sup>[33]</sup> In line with our findings, a study conducted on pharmacy students in Chennai, India, found that those students have good knowledge, positive attitudes, and adequate practice about GERD.<sup>[34]</sup>

**Important results discussion:** Unfortunately, only 28 (37.3%) respondents think reflux may cause stomach ulcers. One of the complications of GERD is esophagitis manifested by ulcers in the oesophagus epithelium.<sup>[35]</sup> The endoscopic finding of erosive esophagitis is seen in fewer than 50% of patients with Heartburn.<sup>[36]</sup> On the other hand, 62(45.3) respondents believed that repeated episodes of sore throat may indicate GERD. The acid can cause throat irritation, postnasal drip, hoarseness, and recurrent cough.<sup>[37]</sup>

Also, 67(48.9) respondents prescribe/dispense prokinetic medications when acid reflux. Prokinetics are agents that increase lower oesophageal sphincter pressure (LESP), enhance oesophageal peristalsis, and augment gastric emptying.<sup>[38]</sup> A combination of prokinetics with PPI treatment is more effective than PPI alone in GERD patients.<sup>[39]</sup>

Concerning practice in our study, 79% of doctors always/often prescribe proton pump inhibitors (PPIs) for gastroesophageal reflux disease (GERD) compared to 90% of general practitioners (GPs) and 94% of gastroenterologists (GIs) who chose PPIs as the first line of drug treatment for GERD according to an internet survey to assess practice styles, knowledge and attitudes of general practitioners and gastroenterology specialists who treat gastroesophageal reflux disease.<sup>[40]</sup>

In our study, 49(79.0) doctors and 54(72.0) pharmacists prescribe/dispense acid production inhibitors when acid reflux. On the contrary, a study to explore awareness, attitude and behaviour of health care professionals in Riyadh, Saudi Arabia, found that 8 (4.4%) Pharmacists and 8 (6.2%) doctors prescribe/

dispense PPI when Acid reflux.<sup>[41]</sup>

A published survey by the Iraqi Postgraduate Medical Journal in 2011 showed that symptomatic GERD is common in our population.<sup>[42]</sup> Chronic duration of the illness was recognized in one-third of them, predisposing them to the risk of Barrett's oesophagus. Early referral is indicated for better diagnosis and prevention of serious complications.<sup>[42]</sup> A study conducted in the Department of Gastroesophageal Reflux Disease at Rizgary Teaching Hospital in Erbil, Kurdistan region of Iraq, between February and June 2022 concluded that a higher BMI and smoking are associated with a higher likelihood of GERD symptoms.<sup>[43]</sup> A cross-sectional descriptive study was conducted on a sample of 300 medical college/Baghdad University undergraduate students from January to June 2020 and found a small prevalence of GERD among the participants.<sup>[44]</sup>

**Limitations:** This study was limited to two hospitals in Al-Rasafa, making the results non-generalizable. More extensive studies are required to define national results. Future research could incorporate objective measures, such as direct observations or tests, to mitigate the potential bias introduced by self-reported data, which may be shaped by respondents' perceptions of what is expected. Additionally, we sought to maximize the relevance and effectiveness of the questionnaire by reviewing prior studies and consulting with experts to refine the questions. However, the small sample size remains a limitation, largely due to the voluntary nature of participation. To enhance future studies, efforts should focus on increasing participation by engaging more hospitals or highlighting the study's significance to potential participants.

## CONCLUSION

More than half of the doctors and pharmacists in our study have good knowledge about GERD, positive attitudes towards it, and adequate practice in treating it. We found a significant association between doctors and

pharmacists regarding their overall attitude and practice towards GERD.

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**Abbreviations list:** American College of Gastroenterology (ACG), Food and Drug Administration (FDA), Gastroenterologists (GIs), Gastroesophageal reflux disease (GERD), General practitioners (GPs), High-resolution oesophageal pressure topography (HREPT), Knowledge, Attitude, & Practice (KAP), Lower oesophageal sphincter pressure (LESP), proton pump inhibitors (PPIs), Statistical Package for the Social Sciences (SPSS), Upper gastrointestinal (GI).

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