

Knowledge and practice of family medicine and internal medicine residents toward the management of gastroesophageal reflux disease in Riyadh, Saudi Arabia

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ABSTRACT

Background: Accurate diagnosis and management of gastroesophageal reflux disease (GERD) remain a challenge in the primary care setting. The objective was to assess GERD management's knowledge and practice and its association with the family and internal medicine residents. **Methods:** A cross-sectional study between January 2019 and September 2020 among the family and internal medicine residents in Riyadh, Saudi Arabia. Residents answered a self-administrated questionnaire about knowledge and practices of GERD management. **Results:** A total of 596 residents were included in the current study. The average age was 26.8 ± 2.1 years, and 54.5% of the residents were males. The median knowledge score was 62.5%. The majority (89.8%) of the residents were using acid suppression drugs empirically, mainly proton-pump inhibitors (75.8%), for <8-week durations (69.7%) being taken before meals (84.7%). Frequent diagnostic testing for GERD included urea breath test (50.7%), 24-hour pH-metry/24-hour pH probe (47.3%), and upper endoscopy with biopsy (40.7%). Frequent causes for referral included gastrointestinal bleeding (82.6%), weight loss/appetite loss (82.2%), and failure of therapy (78.7%). Better knowledge was associated with older age, family medicine training, better referral practices, frequent reporting of atypical symptoms, and reading recent guidelines. **Conclusions:** We are reporting a moderate knowledge level among a group of family and internal medicine residents trained in Riyadh hospitals. Practices were generally good with some areas that need improvement, especially diagnostic testing. There is an urgent need for educational programs that target family and internal medicine residents, such as education courses that include lectures and clinical discussions with the senior staff. Also, we suggest health care organizations in Saudi Arabia establish well-structured Saudi National GERD Guidelines.

Keywords: Gastroesophageal reflux disease, knowledge, management, physician, practice, Saudi Arabia

Introduction

Gastroesophageal reflux disease (GERD) is a condition characterized by typical heartburn symptoms and regurgitation

due to reflux of gastric contents into the esophagus.^[1] It is one of the most common complaints encountered by primary care physicians and gastroenterologists.^[2] It affected approximately 9% of the world's population in 2017, with the highest burden in the US, Latin America, the Middle East, and Eastern Europe and the lowest burden in Eastern Asia and Australia.^[3] The global burden of GERD is increasing, probably due to population aging and increasing obesity.^[4] This is translated into an increasing number of related outpatient visits to primary care physicians and gastroenterologists.^[5]

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GERD's burden in Saudi Arabia is higher than in the western countries and has increased over the last two decades.^[3] GERD symptoms were reported in 30% of the general population^[6] and 17.4% in the patients attending primary care.^[7] Obesity, sedentary lifestyle, and eating habits are believed to explain such a high burden.^[6,7] GERD negatively affects quality of life at different levels; eating habits, sleep, physical activity, and work productivity.^[8,9]

Despite the availability of clear guidelines for GERD management,^[10,11] accurate diagnosis and GERD management in primary care settings remain a challenge.^[12,13] There are inherent limitations of both symptom-based and investigation-based approaches of diagnosis.^[13] Additionally, there is usually disagreement between a physician and patient regarding the disease severity, treatment outcome, and the impact on quality of life.^[14-16] Moreover, there is a knowledge gap and practice differences in GERD management patients between family physicians and gastroenterologists,^[17,18] and between residents and consultants.^[19,20] Despite these challenges, local data on the physician awareness of GERD management in Saudi Arabia are limited.^[19,20] Additionally, the association between related knowledge and practice has never been explored. The current study's objective was to assess GERD management's knowledge and practice and their association in the family and internal medicine residents in Riyadh, Saudi Arabia.

Subjects and Methods

Setting: Saudi Commission for Health Specialties (SCHS) sets, certifies, and supervises approximately 28 residency training programs at special large governmental hospitals.^[21] The residency training period ends with a specialty board exam to be certified as a specialist/senior registrar in the field of training. The current study examined residents in two programs: family and internal medicine. According to SCHS, approximately 30 hospitals across Saudi Arabia, including 10 hospitals in Riyadh, are recognized by the SCHS to offer residency training in family and internal medicine.^[21]

Study design: A cross-sectional study between January 2019 and September 2020. The study obtained all the required ethical approvals from the institutional review board at the Faculty of Medicine at King Saud University, Riyadh, Saudi Arabia (Ref. No. 19/0691/IRB).

Population: The current study was conducted among the family and internal medicine residents. Those who were enrolled in the Riyadh residency programs during the study time were eligible to be included in the study. Residents who were rotated outside Riyadh during the study were excluded. There were no exclusions based on the year of the residency, age, or gender. Interns and fellows were not included.

Sample size: It was estimated that 384 residents are required to examine the knowledge and practice levels of 50% using 80%

power and 95% level of significance. Knowledge and practice levels were assumed at 50% to ensure the largest (safest) sample size. The sample was collected using a convenience sampling technique.

Recruitment: A list of all the hospitals offering residency training in family and internal medicine in Riyadh was obtained from the SCHS. The researcher physically visited all the hospitals to distribute the study questionnaire. Residents were encountered before the morning meeting at their hospitals when the researcher explained the study objectives and requested to join the study. Out of approximately 890 residents encountered, 614 gave consent to join the study (69% acceptance rate). Out of 614 residents who agreed to fill the questionnaire, 18 were further excluded because of lack or limited answers to the knowledge and/or practice questions.

Data collection tool: Self-administrated questionnaire was developed and included demographic characteristics, residency characteristics, knowledge questions, practices in GERD management, and assessment of competency. Three experts reviewed the questionnaire in family medicine and research to assess the face and content validity. The questionnaire was piloted on 10 residents who were asked to re-answer after a week. The feedback was positive, and the second answers were almost identical to the first ones.

Statistical Analysis: Data were presented as frequencies and percentages for categorical data and mean and standard deviation (SD) for continuous data. The answers to knowledge questions were categorized as agree, disagree, and do not know. Those who correctly answered a question were given "one point" while others were given "zero points." Knowledge score was created as the sum of points of the eight questions. The score was then transformed into 100 scales for straightforward interpretation. As there is no standard cut-off score for high/low knowledge, the residents were divided into two groups based on the median knowledge score ($>$ median and \leq median, respectively). Demographic, professional, practice, and competency variables were compared between the two groups. Chi-square test or Fisher exact test, as appropriate, was used to test the significant differences of categorical variables between the two groups. Student *t*-test or Mann-Whitney test, as appropriate, was used to test the significant differences of continuous variables between the two groups. All *P* values were two-tailed. *P* value < 0.05 was considered significant. SPSS (Version 25.0. Armonk, NY: IBM Corp) was used for all statistical analyses.

Results

A total of 596 residents were included in the current study. Table 1 shows residents' responses to eight knowledge questions regarding the new guidelines of GERD. The residents' awareness ranged between 18.0 and 85.4%, with correct answers above 70% in five out of the eight questions. For example, 85.4% of

Table 1: Residents' responses to knowledge questions

	Yes	No	Do not know
Treatment of GERD is long term. The goals are to control or reduce symptoms, heal an injured esophagus, and manage or prevent complications.	508 (85.4%)	48 (8.1%)	39 (6.6%)
A presumptive diagnosis of GERD can be established in the setting of typical symptoms of heartburn and regurgitation.	452 (75.8%)	65 (10.9%)	79 (13.3%)
Pregnancy is one of the risk factors for GERD	449 (75.5%)	58 (9.7%)	88 (14.8%)
GERD can be considered as a potential co-factor in patients with asthma, chronic cough, or laryngitis.	435 (74.6%)	61 (10.5%)	87 (14.9%)
Weight loss is recommended for GERD patients who are overweight or have had a recent weight gain.	436 (73.4%)	70 (11.8%)	88 (14.8%)
Tests may be done to confirm or exclude a GERD diagnosis.	342 (60.7%)	102 (18.1%)	119 (21.1%)
Routine global elimination of food and drink that can trigger reflux (including chocolate, caffeine, alcohol, acidic, and/or spicy foods) is not recommended in the treatment of GERD.	205 (34.6%)	340 (57.3%)	48 (8.1%)
The usage of current endoscopic therapy or transoral incisionless fundoplication cannot be recommended as an alternative to medical or traditional surgical therapy.	107 (18.0%)	221 (37.2%)	266 (44.8%)

GERD, gastroesophageal reflux disease

the residents were aware that GERD treatment is long-term, and the goals are to control or reduce symptoms, heal an injured esophagus, and manage or prevent complications. On the other hand, only 15% of the residents were aware that the usage of current endoscopic therapy or transoral incisional fundoplication could not be recommended as an alternative to medical or traditional surgical therapy. The median overall knowledge score was 62.5%. Approximately 268 (45.0%) residents had knowledge scores above the median, and 328 (55.0%) residents equal to or below the median.

Table 2 shows the residents' demographic and occupational characteristics by groups of knowledge score (> median vs. ≤ median). The average age was 26.8 ± 2.1 years, and 54.5% of the residents were males. The majority of the residents were single (66.0%) and Saudi (98.0%). They were recruited from 10 large centers in Riyadh. The highest contributing center was King Fahad Medical City (21.0%), while the lowest was King Faisal Specialist Hospital and Research Centre (3.1%). Approximately 60.0% of the residents were trained in family medicine, while 40.0% were trained in internal medicine. Training levels ranged from the first to the fourth year, with more residents in the first year (34.9%) than the fourth and fifth years (14.6%). The majority (84.6%) of the residents were dealing with GERD patients in their clinical work. Typically, they deal with five patients or less per week (70.3%). Out of the demographic and occupational characteristics, age, and type of training were significantly associated with better knowledge level (above median knowledge score). For example, better knowledge was seen in 57.6% of the residents aged ≥30 years compared with 38.4% of the residents ≤25 years ($P = 0.042$). Similarly, better knowledge was seen in 51.1% of internal medicine residents than 41.5% of family medicine residents ($P = 0.022$).

Table 3 shows the practices of residents by knowledge level. The majority (89.8%) of residents used acid suppression drugs empirically before ordering diagnostic tests for GERD. The majority (75.8%) were specifically using proton-pump inhibitors (PPI), mainly for <8 weeks duration (69.7%) and to be taken before meals (84.7%). The majority (59.3%) of residents were prescribing PPIs for pregnant patients if clinically indicated.

Almost all (98.0%) residents were educating their GERD patients about lifestyle modification as adjuvant management. Almost two-thirds (63.3%) of the residents explained the side effects of acid suppression medications regularly (always and usually) to their GERD patients. None of the above practices were significantly associated with the knowledge level.

As shown in Table 3, the majority (86.2%) of residents were ordering some diagnostic testing for GERD in their routine practice. These included urea breath test (50.7%), 24-hour pH-metry/24-hour pH probe (47.3%), upper endoscopy with biopsy (40.7%), esophageal manometry (24.2%), upper gastrointestinal series/barium swallow (22.1%), and radionuclide gastric emptying study (3.2%). The most frequent causes for referring GERD patients to the gastroenterologists included gastrointestinal bleeding (82.6%), weight loss/appetite loss (82.2%), failure of therapy (78.7%), and family history of upper gastrointestinal malignancy (72.1%). On the other hand, less frequent causes for referral included the new onset of GERD symptoms (6.5%), abdominal pain/discomfort (11.9%), and vomiting (14.1%). Some referral causes were associated with significantly higher knowledge level; weight loss/appetite loss (47.1% vs. 34.9%, $P = 0.022$), and abdominal pain/discomfort (56.3% vs. 43.4%, $P = 0.040$).

As shown in Figure 1, the frequent GERD symptoms met in clinical practice included heartburn (89.6%), regurgitation (77.8%), epigastric pain (72.6%), nausea (58.0%), and respiratory symptoms such as cough and wheeze (56.3%). Higher knowledge level was significantly associated with frequent respiratory symptoms reporting (62.1% vs. 56.3%, $P = 0.013$).

As shown in Table 4, 74.8% of the residents did not read GERD's recent management guidelines during the last 12 months, while 49.6% perceived themselves as partially competent and 9.1% as non-competent. Those who read the recent guidelines had a significantly higher knowledge level (54.0% vs. 41.8%, $P = 0.009$).

Discussion

The current study shows a moderate knowledge level (62.5%) regarding GERD management's new guidelines among a group

Table 2: Demographic and occupational characteristics of the residents by knowledge level

	Overall	Knowledge score		P
		> median	≤ median	
Age (years)				
Mean±SD	26.8±2.1	27.2±2.2	27.0±2.1	0.016
≤25	138 (25.0%)	53 (38.4%)	85 (61.6%)	0.042
26-29	355 (64.3%)	163 (45.9%)	192 (54.1%)	
≥30	59 (10.7%)	34 (57.6%)	25 (42.4%)	
Gender				
Male	325 (54.5%)	156 (48.0%)	169 (52.0%)	0.103
Female	271 (45.5%)	112 (41.3%)	159 (58.7%)	
Marital status				
Single	391 (66.0%)	172 (44.0%)	219 (56.0%)	0.832
Married	199 (33.6%)	92 (46.2%)	107 (53.8%)	
Others	2 (0.3%)	1 (50.0%)	1 (50.0%)	
Nationality				
Saudi	582 (98.0%)	258 (44.3%)	324 (55.7%)	0.124
Non-Saudi	12 (2.0%)	8 (66.7%)	4 (33.3%)	
Residency center				
King Fahad Medical City	124 (21.0%)	51 (41.1%)	73 (58.9%)	0.483
King Saud University Medical City	112 (19.0%)	60 (53.6%)	52 (46.4%)	
King Saud Medical City	89 (15.1%)	41 (46.1%)	48 (53.9%)	
Prince Sultan Military Medical City	83 (14.1%)	33 (39.8%)	50 (60.2%)	
National Guard Hospital	65 (11.0%)	30 (46.2%)	35 (53.8%)	
Security Force Hospital	51 (8.6%)	18 (35.3%)	33 (64.7%)	
Prince Mohammed Bin Abdulaziz Hospital	43 (7.3%)	20 (46.5%)	23 (53.5%)	
King Faisal Specialist Hospital	18 (3.1%)	8 (44.4%)	10 (55.6%)	
Others	5 (0.8%)	3 (60.0%)	2 (40.0%)	
Training field of practice				
Family medicine	352 (60.0%)	146 (41.5%)	206 (58.5%)	0.022
Internal medicine	235 (40.0%)	120 (51.1%)	115 (48.9%)	
Training level				
R1	208 (34.9%)	79 (38.0%)	129 (62.0%)	0.062
R2	166 (27.9%)	76 (45.8%)	90 (54.2%)	
R3	135 (22.7%)	68 (50.4%)	67 (49.6%)	
R4 or above	87 (14.6%)	45 (51.7%)	42 (48.3%)	
GERD outpatient seen				
No	90 (15.4%)	36 (40.0%)	54 (60.0%)	0.321
Yes	495 (84.6%)	226 (45.7%)	269 (54.3%)	
Number GERD outpatient per week				
0-5	348 (70.3%)	154 (44.3%)	194 (55.7%)	0.573
5-10	110 (22.2%)	55 (50.0%)	55 (50.0%)	
>10	37 (7.5%)	17 (45.9%)	20 (54.1%)	

GERD, gastroesophageal reflux disease. Data were presented as frequency and percentage except those presented as mean±standard deviation*

of family and internal medicine residents trained in Riyadh hospitals. About 31.5% of the residents correctly answered no more than four (half) out of the eight questions, while only 13.6% correctly answered at least seven out of the eight questions. Comparing the current data to the previous local studies is challenging due to the lack of similar study designs, lack of standard knowledge tools, and small sample size of the previous studies.^[19,20] Nevertheless, the inadequate knowledge observed in the current study is not surprising. A local study that compared GERD management by residents and consultants in three governmental hospitals in Riyadh found that 41.3% of the residents and 27.8% of the consultants were not aware of any guidelines for GERD management patients.^[19] Internationally,

studies assessing GERD management knowledge in family physicians are limited and do not focus on the residents.^[18,22]

The current findings showed that internal medicine residents and older residents had a better knowledge level than young family medicine residents. It has been shown that age and specialty can predict awareness and prescribing behavior in GERD management.^[23] Age may reflect more exposure to knowledge sources and training.^[19] Specialists such as gastroenterologists and internists are more likely to be aware of and follow the GERD's standard management guidelines better.^[18,22,23] However, the fact that 75% of the current study residents were not aware of the GERD's recent management

Table 3: Practices of residents in GERD management patients by knowledge level

	Overall	Knowledge score		P
		> median	≤ median	
Before you order diagnostic tests for GERD, do you start with an empiric trial with acid suppression?				
No	60 (10.2%)	29 (48.3%)	31 (51.7%)	0.555
Yes	530 (89.8%)	235 (44.3%)	295 (55.7%)	
What kind of acid suppression would you prescribe first?				
Antacid	90 (15.2%)	38 (42.2%)	52 (57.8%)	0.253
H ₂ receptor antagonist	54 (9.1%)	19 (35.2%)	35 (64.8%)	
Proton-pump inhibitor (PPI)	450 (75.8%)	209 (46.4%)	241 (53.6%)	
If you use a PPI for GERD for the first time, how long do you usually treat?				
<8 weeks	412 (69.7%)	182 (44.2%)	230 (55.8%)	0.749
8 weeks	130 (22.0%)	62 (47.7%)	68 (52.3%)	
>8 weeks	49 (8.3%)	21 (42.9%)	28 (57.1%)	
If prescribing a PPI once per day, when should it be given for optimal benefit?				
Before meal	503 (84.7%)	230 (45.7%)	273 (54.3%)	0.750
After meal	34 (5.7%)	12 (35.3%)	22 (64.7%)	
During meal	7 (1.2%)	4 (57.1%)	3 (42.9%)	
Bedtime	24 (4.0%)	10 (41.7%)	14 (58.3%)	
Time does not matter	26 (4.4%)	12 (46.2%)	14 (53.8%)	
Are you prescribing PPIs for pregnant patients if clinically indicated?				
No	235 (40.7%)	108 (46.0%)	127 (54.0%)	0.802
Yes	343 (59.3%)	154 (44.9%)	189 (55.1%)	
Are you educating your GERD patients about lifestyle modification as adjuvant management?				
No	12 (2.0%)	5 (41.7%)	7 (58.3%)	0.823
Yes	579 (98.0%)	260 (44.9%)	319 (55.1%)	
Do you explain to your patients the side effects of acid suppression medications?				
Always	175 (29.5%)	84 (48.0%)	91 (52.0%)	0.571
Usually	201 (33.8%)	91 (45.3%)	110 (54.7%)	
Not often or never	218 (36.7%)	93 (42.7%)	125 (57.3%)	
Do you order diagnostic testing for GERD in your routine practice?				
No	82 (13.8%)	34 (41.5%)	48 (58.5%)	0.515
Yes	512 (86.2%)	232 (45.3%)	280 (54.7%)	
Type of test you order				
Urea breath test	301 (50.7%)	139 (46.2%)	162 (53.8%)	0.487
24-hour pH-metry/24-hour pH probe	281 (47.3%)	123 (43.8%)	158 (56.2%)	0.639
Upper endoscopy with biopsy	242 (40.7%)	116 (47.9%)	126 (52.1%)	0.200
Esophageal manometry	144 (24.2%)	74 (51.4%)	70 (48.6%)	0.067
Upper GIT series/barium swallow	131 (22.1%)	67 (51.1%)	64 (48.9%)	0.097
Radionuclide gastric emptying study	19 (3.2%)	6 (31.6%)	13 (68.4%)	0.240
When do you refer a patient with GERD to a gastroenterologist?				
Gastrointestinal bleeding	492 (82.6%)	226 (45.9%)	266 (54.1%)	0.301
Weight loss/appetite loss	490 (82.2%)	231 (47.1%)	259 (52.9%)	0.022
Failure of therapy	469 (78.7%)	212 (45.2%)	257 (54.8%)	0.824
Family history of upper GIT malignancy	430 (72.1%)	195 (45.3%)	235 (54.7%)	0.763
Chronic GERD symptoms	241 (40.4%)	118 (49.0%)	123 (51.0%)	0.106
Age >45-50 years	218 (36.6%)	99 (45.4%)	119 (54.6%)	0.868
Vomiting	84 (14.1%)	42 (50.0%)	42 (50.0%)	0.317
Abdominal pain/discomfort	71 (11.9%)	40 (56.3%)	31 (43.7%)	0.040
New onset of GERD symptoms	39 (6.5%)	23 (59.0%)	16 (41.0%)	0.069

*GERD, gastroesophageal reflux disease; GIT, gastrointestinal

guidelines is actually alarming. The lack of awareness was even higher than the previous local studies.^[19,20] This finding points to the urgent need for educational programs that target family and internal medicine residents. The fact that almost 60% of these residents perceived themselves as partially- or non-competent in GERD management may indicate good acceptance of proposed educational programs. Multifaceted

continuing medical education courses that include lectures and clinical discussions with senior staff were found to significantly improve primary care physicians' knowledge and adherence in GERD management.^[24,25] While it was not always the case, better knowledge in the current study was associated with better referral practices and better identification of atypical presentations of GERD.

Table 4: Competencies of residents by knowledge level

	Overall	Knowledge score		P
		> median	≤ median	
Did you read the recent guidelines in GERD management during the last 12 months?				
No	445 (74.8%)	186 (41.8%)	259 (58.2%)	0.009
Yes	150 (25.2%)	81 (54.0%)	69 (46.0%)	
How do you evaluate your competency in GERD management?				
Highly competent	31 (5.2%)	17 (54.8%)	14 (45.2%)	0.418
Competent	215 (36.1%)	100 (46.5%)	115 (53.5%)	
Competent to some extent	295 (49.6%)	131 (44.4%)	164 (55.6%)	
Not competent	54 (9.1%)	20 (37.0%)	34 (63.0%)	

*GERD, gastroesophageal reflux disease

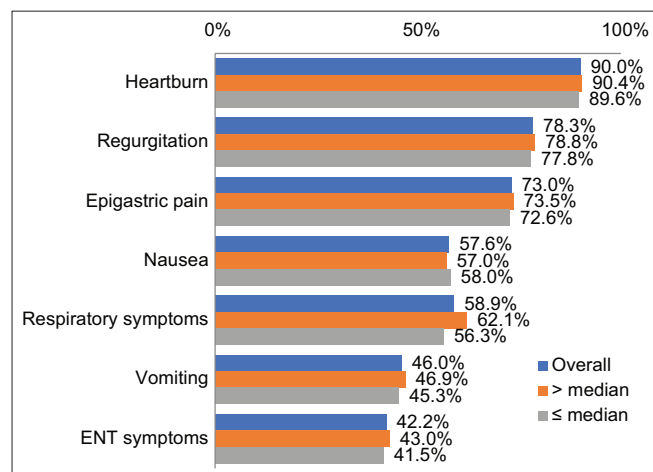


Figure 1: Frequency scores of GERD symptoms met in clinical practice
GERD, gastroesophageal reflux disease; ENT, ear, nose, and throat

As recommended,^[11] most of the current study residents were using empiric trial with PPIs before ordering diagnostic tests for GERD. This was consistent and even better than reported in the local studies among residents of different specialties^[19] and primary care physicians.^[20] However, this approach has been shown to have a high sensitivity but low specificity.^[26] As recommended,^[10,11] the majority of the current study residents were prescribing PPIs before the meal but for a shorter duration than recommended. Despite that almost all the residents in the current study were educating their GERD patients about lifestyle modification as adjuvant management. They were less likely to explain the side effect of acid suppression medications to their GERD patients. They may be explained by the fear of residents of limited patient adherence in our culture when side effects are discussed.^[27]

Unlike previous studies, most of the current study residents were ordering diagnostic testing for GERD in their routine practice, especially urea breath test, 24-hour pH-metry/24-hour pH probe, and upper endoscopy with biopsy. Previous local^[19,20] and international^[18,22] studies showed that a much lower use of testing, with endoscopy, barium studies, and pH probe are the most commonly requested tests in GERD patients. The majority of the current study residents refer GERD patients to a gastroenterologist in case of gastrointestinal bleeding, weight

loss, and therapy failure. This was generally consistent with the previous studies.^[18,28] For example, failure of therapy, chronic GERD symptoms, and weight loss/appetite loss were the main causes of referring GERD patients to a gastroenterologist in Israel.^[18] Additionally, the need for the endoscopic procedure, the persistence of gastroenterological symptoms, severe symptoms, and GERD therapy failure were the main causes of referring GERD patients to a gastroenterologist in the USA.^[28]

The current study is considered the largest and most comprehensive study to examine GERD management's knowledge and practices among the residents in Saudi Arabia. Additionally, it is the only study to examine the association between related knowledge and practices. Nevertheless, a number of limitations are acknowledged. As there is a lack of a standard tool to assess GERD management's knowledge and practices, the study had to develop its questionnaire. Although the study covers all the training hospitals in Riyadh, the results' generalization should be made cautiously due to convenience sampling. Finally, the cross-sectional design does not prove causation, and a self-answered questionnaire may introduce reporting bias. However, these are inherited limitations of all similar studies, and their impact on the findings (if any) should be minimal.

In conclusion, we report a moderate knowledge level regarding GERD management's new guidelines among a group of family and internal medicine residents trained in Riyadh hospitals. Practices were generally good with some areas that need improvements, such as the duration of empiric PPIs, communication with the patients, and the use and type of diagnostic testing. As the majority of residents were not aware of the recent management guidelines, there is an urgent need for educational programs that target family and internal medicine residents, such as education courses that include lectures and clinical discussions with senior staff.

Key Messages

1. GERD refers to the flow of stomach contents moving backward from the stomach into the esophagus.
2. The prevalence of GERD in Saudi Arabia has increased significantly through the last decade. Therefore, there was an increase in the challenges of diagnosing GERD due to several limitations.

- Primary care physicians play a key and crucial role in diagnosing GERD and identifying its symptoms, causes, and providing the appropriate educational interventions as well for the patients.
- Sufficient knowledge and practice levels of GERD management must be possessed by the primary care physicians in order to manage different cases with different clinical manifestations.

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Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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