Original Article

Awareness, experience, and practice of physicians regarding adult gastroesophageal reflux disease (GERD) in Riyadh, Saudi Arabia

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Abstract

Background and Aims: Gastroesophageal reflux disease (GERD) was frequently managed by residents as they are the first physician who encounter the patient. This study was conducted to explore the knowledge and practice of physicians in the treatment of GERD and to compare between residents and consultants regarding their knowledge and practice. **Methodology:** A cross-sectional study, self-administered questionnaire. **Results:** Esophagogastroduodenoscopy (EGD) was the most commonly used method to screen for Barrett's esophagus for symptoms for 5 or more years. The most frequent guideline used was the American College of Gastroenterology (ACG) guideline. The most commonly used diagnostic tool for evaluating uncomplicated reflux disease was upper endoscopy with biopsy. Empiric trial with acid suppression was the most commonly used and proton pump inhibitors (PPIs) was the first-line treatment. The most common combination with PPI was prokinetic drugs, most often domperidone. The preferred maintenance strategy was the 'on demand' maintenance mode. Step-down strategy was commonly recommended. A total of 26% of residents and 37% of consultants could achieve a score of good knowledge. Overall patterns of knowledge and practice of GERD diagnosis and management were comparable between residents and consultants with only minor controversy in their knowledge and practice. **Conclusion:** The overall patterns of knowledge and practice of GERD diagnosis and management are comparable among residents and consultants but still there are areas of controversy and confusion. A good knowledge score was found among only a quarter of residents and 37% of consultants. **Recommendations:** The public health implications of deviations from evidence-based practice should be studied and implementing evidence-based practice should be emphasized.

Keywords: Gastroesophageal reflux disease, GERD, knowledge, physicians' practice, questionnaire, survey

Introduction

Gastroesophageal reflux disease (GERD) is one of the most common medical problems worldwide. It is defined as "symptoms or complications resulting from reflux of gastric contents into the esophagus".[1,2] GERD is classified into two types: erosive esophagitis and nonerosive reflux disease (NERD); defined as 'troublesome reflux symptoms without a break in the esophageal mucosa upon endoscopy'.[3-5] GERD is considered a major healthcare problem because of its high prevalence, effects on the quality of life, and significant cost.[6] It has been found that more than 40% of adults in the United States suffer from GERD each month. Epidemiological evidence indicates that the prevalence of GERD in the Western world is 10%–20%, with a lower prevalence in Asia.[7] GERD represents the fourth most

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common chronic condition—after hypertension, hyperlipidemia, and depression—seen in primary care practice.[8]

Currently available treatment of GERD is still challenging for general practitioners (GPs), primary healthcare physicians, Internal Medicine, and gastrointestinal (GIs) specialists, as around 40% of the patients have incomplete, or no response to PPI therapy.[9] Many recommendations, guidelines, and consensus-conference documents are released by a number of national professional organizations to help physicians achieve optimal and cost-effective management of GERD and to spread best-practice for this disease. These include the American Digestive Health Foundation (ADHF),[10] the Asian-Pacific consensus,[3] the Montreal definition,[4] and the American College of physicians (ACG) guidelines.[11] Despite the chronic nature of GERD, the public health impact of this disorder and the significant costs associated with its treatment, the clinical practice of physicians for the management of GERD including the likelihood of adopting the guidelines is largely unexplored. Since GERD patients can be interviewed and managed by a variety of specialties including family physicians, internal medicine, and gastroenterologists, therefore, it is crucial to study the awareness of physicians regarding this disease.

To address this issue, we conducted this survey aiming to estimate physicians' awareness regarding the epidemiology of GERD, to identify areas of confusion, knowledge gaps or misconception regarding the approach to patients with GERD, to assess the degree of implication of guidelines for the management of GERD among physicians, to compare the diagnostic and therapeutic strategies between residents and consultants and to identify the relation between good practice and factors related to continuous education, attending clinical training, age, and experience of physicians.

Materials and Methods

This is a cross-sectional study, and a self- administered questionnaire was developed to assess the awareness, experience, practice, diagnostic plans, and treatment patterns of physicians who evaluate and treat patients with GERD. Also, to assess physicians' understanding of GERD symptoms and their association with different diseases and conditions and to assess the use of published national and international guidelines in the management of GERD. Knowledge score was calculated, and practice patterns were assessed and were compared between residents and consultants and they were correlated with different factors. This questionnaire was created by the authors based on reviewing available literature including similar articles[5,10,12-14], which dealt with this topic with some modifications.

The sample size was calculated using STATA 14 software. Based on our experience and literature review we assumed that 35–50% of physicians might have good knowledge and considering 0.8 for the power of the study and alpha level at 0.05; the calculated sample size was 85. We targeted 100 physicians to compensate for incomplete data.

The study included male and female physicians of any age. The questionnaire was distributed on residents and consultants in three governmental hospitals in Riyadh, Saudi Arabia including Riyadh Military Hospital, King Fahad Medical City, and Prince Mohammed Hospital.

The questionnaire was written in English and had a cover page explaining the purpose of the survey. Verbal consent was taken from participants receiving the self-administered questionnaire. The questionnaire was pilot tested by a sample of physicians to assess the readability and ease of use of the questionnaire, in addition to assessing the relevance of the questions. The questionnaire was revised based on their suggestions regarding its reproducibility, validity, and question value.

The first section of the questionnaire asks about the demographic information of the physicians including age, gender, highest medical qualification obtained, job title (resident or consultant), and years of experience. The second section of the questionnaire consists of questions designed to elicit information about awareness, knowledge, and experience of physicians regarding GERD in adults. It includes questions on the magnitude of the problem, estimates of the percentage of GERD patients compared to total patients, prevalence of NERD patients, the most common reasons for consulting/not consulting physicians, the degree of severity of GERD encountered in a gastroenterology practice, most common symptoms of GERD, effect of *H. pylori* treatment on GERD symptoms, the impact of GERD symptoms on patients' daily lives, the prevalence of and the most common extra-esophageal manifestations of GERD, severity factors of GERD, the proportion of GERD patients taking the combination of a proton pump inhibitor (PPI) and an H2-receptor antagonist (H2RA), the timing for GERD screening, and if screening endoscopy is recommended for GERD patients of more than 5 years' duration. Regarding Barrett's esophagus and the risk of esophageal adenocarcinoma, questions addressed information about their prevalence and whether PPI therapy and/or antireflux surgery would reduce the likelihood of the development of esophageal adenocarcinoma, sources of information from which the practitioner learned or acquired new knowledge about GERD and if they attended any training related to GERD. The third section of the questionnaire was designed to assess the practice patterns and strategies of physicians regarding the diagnosis and treatment of GERD. It includes questions addressing the guidelines used for the management of GERD patients. Participants were asked to choose from different options, which include the Asian-Pacific consensus,[3] the Montreal definition,[4] and the American College of physicians (ACG) guidelines[15] and others. Other questions focus on the approach to GERD management, choice of available diagnostic modalities for both GERD and NERD, possibility for testing of *Helicobacter pylori* (*H. pylori*)

infection for patients who only had typical GERD symptoms, starting empirical treatment with acid suppression, and the reason for use of empiric treatment, the use of lifestyle modifications, the first-line treatment for GERD, modality of treatment used when managing patients without prior testing, pharmacological classes often used in combination, the most frequently used prokinetic agents, how best to achieve acid suppression, the ability to prescribe a PPI without first using an H2RA, main reasons for selecting a specific PPI, time during the day a PPI should be given for optimal benefit, duration, mode (continuous, intermittent, on demand) and strategy of treatment with PPI (step-down strategy (tapering the dose down to the lowest dose that controls symptoms). Step-up strategy (beginning with antacids or H2RAs and progressing to PPIs), prescribing long-term PPI treatment (defined as three or more months continuously) without prior authorization from a gastroenterologist, indication for maintenance therapy, management of refractory symptoms.

Regarding the surgical management of GERD, participants were asked if they referred directly to a surgeon for antireflux surgery or if they first obtained a gastroenterological opinion and the reasons for surgical referral.

Assessing knowledge score

Fourteen questions were selected as parameters for assessing knowledge including questions asking about the magnitude of the problem, most common symptom do GERD patients complain of, a common extra-esophageal manifestation of GERD, top 5 severity factors, screening for Barrett's esophagus, screening of GERD using esophagogastroduodenoscopy (EGD), if PPI therapy and/or antireflux surgery reduce the risk of esophageal adenocarcinoma and if antireflux surgery should be used as a last resort in patients with GERD.

Those who scored 10 and above out of 14 (75%) was considered as good knowledge and those who scored below 10 were considered to have poor knowledge score. The knowledge score between residents and consultants was compared.

Assessing practice

Sixteen questions were chosen to assess the practice of the participants including duration of treatment for patients presenting for the first time, mode of treatment of erosive esophagitis, if they start with an empiric trial with acid suppression before ordering diagnostic tests for GERD, use of maintenance therapy for severe GERD, mode of treatment, which prokinetic drug most commonly used, which medication best achieves acid suppression, reasons for using empiric trial with acid suppression, combination of therapy, obtaining a gastroenterological opinion before the surgical management, choice of PPIs alone as modality of treatment, if managing patients without prior testing, treating without testing for mild symptoms of GERD, first-line of treatment used for both GERD and NERD and timing of PPI administration. Practice patterns between residents and consultants were compared.

Statistical design

Data were analyzed using Statistical Package for the Social Sciences (SPSS) IBM statistics 20. Descriptive statistics in terms of means, standard deviations, median, and interquartile ranges were used to describe the criteria of the studied sample. Analysis of quantitative data by *t*-test and association of qualitative variables by Chi-square test was conducted. Pearson correlation was used to assess the degree of relationship between quantitative variables as appropriate. Logistic regression analysis was used to identify predictors of good knowledge and practice. p value of less than 0.05 was considered as statistically significant.

Ethical considerations (Informed Consent)

Ethical permission for the study was obtained before collection of data by contacting and receiving approval from hospital directors. Verbal consent was taken from participants receiving the self-administered questionnaire. Furthermore, all subjects were informed that participation in the study is voluntary and that the data collected are anonymous, confidential, and restricted for this study only. Approval was taken from Princess Nourah bin Abdulrahman University Institutional Review Board (IRB) under number17-0195

Results

Demographics of participants

Out of 135 questionnaires distributed in different hospitals, from September 2017 until March 2018, 100 were completed and returned with a response rate of 74%.

Demographics of the respondents are shown in the Table 1.

Magnitude of the problem and disease occurrence

Overall, 90% of all physicians think that the problem of GERD is increasing. The majority of physicians (53%) estimated the approximate percentage of GERD patients between 10–25% among their patients while 51% of physicians reported that NERD was found in less than 25% of cases.

Presentation, severity, and effect on the quality of life

The most common reason of patients' for consulting a physician was the high frequency of GERD symptoms (37%) whereas in 22%, it was because of the impact of symptoms on daily life, 17% was due to symptom-related pain, 15% was because of fear of having a serious disease, 4% was due to occurrence of associated symptoms, 2% was due to advice from the pharmacist while 1% was due to advice from close relatives.

The most frequent reasons mentioned for not consulting physicians included self-medication (41% of physicians), 25%

of physicians mentioned that other causes for not seeking medical advice is that the symptoms are not considered serious, 20% received advice from the pharmacist, 25% were waiting for symptoms until it became unbearable, 8% think that there is no effective treatment while 4% think treating the symptoms is useless and only a minority of physicians (2%) reported that patients prefer to modify their way of life rather than to consult a physician. The impact of GERD on patient daily life as estimated by most of the physicians (66%) was 2 to 5 on a scale of 0–10.

Symptoms, Diagnoses, and Disease severity related to GERD

Most physicians (67%) reported that they are seeing a moderate disease spectrum of GERD. Consultants see a moderate degree of GERD more than residents (64% *versus* 58.7%). The most common symptom that GERD patients complain of is heartburn (73%). Forty-seven percent of respondents thought that cure of *H. pylori* infection would improve GERD symptoms. While a minority (23.5%) of physicians think it does not affect GERD symptoms. Even 13% of physicians believe it worsens GERD symptoms and 17% of physicians were not sure/did not know.

Extra-esophageal manifestations of GERD were rated as occasionally happening with GERD in 44% of physicians while 33% of physicians think it is often and 22% voted for commonly happening.

The most common extra-esophageal manifestations were chronic cough (63%), followed by chest pain (23%), laryngitis (8%), and hoarseness of voice (6%). More than half of respondents (55%) estimated that less than 10% of GERD patients were on the combination of a PPI and an H2RA.

Table 1. Demographics of the respondents

Demographic	Percentage
Gender	
Male	54%
Female	46%
Highest qualification obtained	
Bachelor of medicine	29%
Diploma	3%
Master	8%
MD	60%
Job title	
Resident	46%
Consultant	54%
The total years of experience since graduation	
<5	33%
5-10	19%
>10-15	24%
>15	24%

The commonest five severity factors possibly associated with GERD are dysphagia, GI hemorrhage, weight loss, age >50 and anemia in a descending order of frequency (66%, 56%, 52%, 50%, 44%).

Knowledge about complications

Most physicians (83%) recommended that patients with GERD symptoms for 5 or more years should have EGD to screen for Barrett's esophagus. Sixty-one percent of physicians indicated that the timing of the EGD should be several weeks after the initiation of medical treatment for GERD symptoms.

Epidemiology of GERD, NERD, Barrett's Esophagus, and Esophageal Cancer

When surveying the proportion of Barrettes' esophagus among patients with GERD, our results showed that 47% of physicians observed a rate of 1–5% of Barrettes' esophagus among patients with GERD. Regarding the types of Barrett's esophagus, most physicians (46%) indicated that long segmental Barrett's esophagus [defined as affecting (>3 cm) of the esophageal length was rare (<5% among Barrett's esophagus patients]. The mean number of esophageal squamous cell carcinoma cases encountered by residents is 3.1 cases per year compared to 2.44 for consultants while for Barret's esophagus (adenocarcinoma), the mean number of cases for the resident is 3.55 case per year compared to 3.23 for consultants.

Respondents' views as to the likelihood of PPI therapy or antireflux surgery preventing the progression of Barrett's esophagus to esophageal adenocarcinoma, 62% of physicians agreed. The majority of respondents (46%) strongly agreed that antireflux surgery should be used as a last resort for patients with GERD.

Use of Guidelines, diagnosis, and treatment practices

The guidelines used by physicians for the management of GERD patients are shown in the Table 2. Overall, the most frequent guideline used by physicians (42%) was ACG guideline while 34% of all physicians do not follow any published guidelines.

Overall, 66% of physicians preferred to treat without testing for patients with mild symptoms of GERD. Twenty-five percent elected to test before treating and only 9% treat without testing for all cases.

A breakdown of the diagnostic tools used by physicians dealing with GERD is shown in Table 3. The most common diagnostic tool for evaluating uncomplicated reflux disease was EGD with biopsy (58%). About one-third of physicians

Table 2: Use of guideline for the management of GERD patient

Total		Asian-Pacific Consensus	Montreal Definition and Global Consensus	ACG guideline	None
Resident	46	3(6.5%)	7(15.2%)	17(37%)	19(41.3%)
Consultants	54	5(9.2%)	9(16.7%)	25(46.3%)	15(27.8%)
Total	100	8(8.0%)	16(16%)	42(42%)	34(34%)

Table 3: Diagnostic strategies used by physicians

Question	Residents	Consultants
Which of the tests listed do you order		
Upper gastrointestinal series/barium swallow	3 (6.5%)	12 (22.2%)
A 24-hour PH-metry/24-hours PH probe	10 (21.7%)	6 (11.1%)
Radionuclide gastric emptying study (milk scan)	1 (2.2%)	0 (0%)
Upper endoscopy with biopsy (if able to perform)	13 (28.2%)	25 (46.5%)
Esophageal manometry (If able to perform)	2 (4.3%)	1 (1.9%)
PPI test	17 (37.0%)	2 (3.8%)
How do you diagnose NERD? (frequently used tool)		
Negative EGD only	13 (28.2%)	18 (33.3%)
Negative EGD and PH study	6 (13.0%)	14 (25.9%)
Negative EGD with biopsy	10 (21.7%)	9 (16.7%)
Negative EGD and PPI test	10 (21.7%)	7 (12.9%)
pH-impedance	7 (15.2%)	6 (11.1%)
Do you test Patients who had typical GERD Symptoms for presence of Helicopter pylori infection?		
Never	8 (17.4%)	8 (14.8%)
Sometimes	17 (37.0%)	23 (42.6%)
Most of the times	11 (23.9%)	11 (20.4%)
Always	10 (21.7%)	12 (22.2%)
Before you order diagnostic tests for GERD, do you start with an empiric trial with acid suppression?		
Yes	34 (73.9%)	48 (88.9%)
No	12 (26.1%)	6 (11.1%)
If yes, what is the reason for using empiric trial with acid suppression?		
Convenience to patients	20 (43.5%)	26 (48.2%)
Accurate	15 (23.6%)	8 (14.4%)
Cost saving	11 (23.9%)	19 (35.2%)
Convenience to staff	1 (2.2%)	1 (1.9%)

diagnose NERD based on negative EGD only. The next most commonly used mode of diagnosis was negative EGD and pH (Potential of Hydrogen) study (20%) followed by negative EGD with biopsy (18%), negative EGD and PPI test (14%), and the least was PH impedance (11%). Forty percent of respondents claimed that they sometimes test patients who had typical GERD symptoms for the presence of *H. pylori* infection.

The majority of physicians (66%) prefer to treat without testing for mild GERD symptoms. Half of the physicians give PPIs alone when they manage the patient without prior testing. On demand, modality was the most common mode of treatment that physicians prefer for GERD patients (38%). Fifty-eight percent of physicians prefer 'Step-down' approach for treating their patients while only 42% recommended the 'step-up approach'. It was noted that most physicians (around 60%) do not recognize the importance of maintenance therapy for patients with severe GERD. Only 41% of participants recommended maintenance therapy for all GERD cases. Twenty-eight percent of physicians voted for continuing the same PPI once daily and adding an H2RA at bedtime for managing refractory erosive esophagitis on a once-daily dose PPI. Details of the responses regarding treatment strategies are given in the Table 4.

The majority of physicians (83%) start with an empiric trial with acid suppression before they order any diagnostic tests for GERD. The most common reason for using empiric PPI trials included convenience to patients (51%) followed by cost-saving (33%). Regarding lifestyle modifications, dietary advice was recommended by 78% of physicians.

PPIs were the most commonly chosen drug (77%) as the first-line treatment used for GERD among residents and consultants. The next most common choices following PPI was antacid (10%), H2RA (6%), prokinetic (4%), mucoprotective drugs (3%).

Due to the efficacy of PPI, it was chosen by a majority of physicians who prefer to treat without testing (55%). For patients perceived to have more severe disease, the most common pharmacological classes often prescribed in combination with PPIs to treat GERD comprised prokinetic drugs (44%). The most frequently used prokinetic agent in practice was domperidone (45%).

The most popular management option which would best achieve acid suppression for GERD patients was PPI once per day (52%), while 26% of participants choose PPI twice per day.

Table 4: Treatment strategy of GERD among residents and consultants

	Residents	Consultants
Choose your usual approach to manage GERD.		
Treat without testing for mild symptoms	31 (67.4%)	35 (64.8%)
Treat without testing for all cases	2 (4.3%)	6 (1.1%)
Test before treating	13 (24.0%)	13 (24.1%)
Which of the following life-style modification do you recommend for GERD patients? (mark all that applies)		
Dietary advice	33 (71.7%)	45 (83.3%)
Losing weight	26 (56.5%)	39 (72.2%)
Avoidance of heavy meals/fatty foods.	28 (60.9%)	42 (77.7%)
Refraining from alcoholic drinks	23 (50%)	32 (59.3%)
Refraining from coffee	27 (58.7%)	31 (57.4%)
Cessation of smoking	31 (67.4%)	44 (81.4%)
Avoidance of precipitating factors	24 (52.1%)	34 (62.9%)
Bed head elevation	25 (21.7%)	41 (75.9%)
Which modality of treatment you use when you manage the patient without prior testing?		
Combination treatment	9 (19.5%)	9 (16.7%)
Proton pump inhibitors alone	20 (43.5%)	30 (55.6%)
H2 receptor antagonists alone	5 (10.9%)	2 (3.8%)
Antacids alone	3 (6.5%)	2 (3.8%)
Lifestyle modification	9 (19.5%)	11 (20.4%)
What is the most common mode of treatment do you prefer for GERD patients?		
Continuos	15 (32.6%)	16 (29.6%)
Intermittent (over 1 or several weeks)	18 (39.1%)	13 (24.1%)
On demand	13 (24.0%)	25 (46.3%)
Which treatment strategy do you use for GERD patients?		
'Step-up' strategy (beginning with antacids or H2-receptor antagonists and progressing to PPIs).	19 (41.3%)	23 (42.6%)
'Step-down' strategy (tapering the dose down to the lowest dose that controls symptoms).	27 (58.7%)	31 (57.4%)
When do you use maintenance therapy for GERD?		
For sever cases only	11 (23.9%)	12 (22.2%)
For all cases	20 (43.5%)	21 (38.9%)
No maintenance required	15 (32.6%)	21 (38.9%)
Mention your management plan for a once daily dose PPI-refractory erosive esophagitis?		
Increasing the PPI dose and continue giving it once daily	5 (10.9%)	2 (3.8%)
Switching to another PPI and giving it once daily.	7 (15.2%)	18 (33.3%)
Continuing the same PPI but increase frequency to twice daily.	7 (15.2%)	4 (7.4%)
Continuing the same PPI once daily and adding an H2RA at bedtime.	12 (26.1%)	16 (29.6%)
Referring to gastroenterologist.	3 (6.5%)	6 (11.1%)
Endo-luminal surgery	1 (2.2%)	0 (0%)
Laparoscopic anti-reflux surgery	10 (21.7%)	8 (14.8%)

Fifty-one percent of respondents indicated that they always prescribe a PPI without first using an H2RA.

Seventy-eight percent of respondents correctly answered that PPI should be given before meals to achieve optimal benefit.

The majority of physicians elected to administer PPI before meals (88.4% for consultants and 80% of the residents). Thirty-eight percent of physicians elected to treat the patient for 4 weeks. Forty-seven percent of physicians were "very comfortable" with prescribing long-term (more than 3 months) PPI therapy without prior authorization from gastroenterologists. Most physicians (68%) had observed infrequent persistence of symptoms after treatment. For which 30% of physicians advocated continuing the same PPI once daily and adding an H2RA at bedtime. Around half of the physicians (49%) refer GERD patients to a gastroenterologist before referring for anti-reflux surgery. The main reason for referring patients for surgical management was due to a lack of response to medical therapy.

A good knowledge level was estimated at around 75% of correct answers. Twenty percent of residents could achieve the score of good knowledge whereas, among consultants, the percentage of physicians who could achieve a good knowledge score was 37%. There was no significant difference between residents and consultants regarding their knowledge about GERD ($p < 0.05$). The knowledge score of physicians was significantly correlated with both the age of the physician and the number of years in practice ($p < 0.05$).

Overall patterns of knowledge and practice of GERD diagnosis and management were comparable between residents and consultants. Similarities were found among them in many aspects of knowledge such as estimating the magnitude of the problem, The need for EGD for the screening of Barret's esophagus for long-term GERD, identifying the most common symptoms of GERD, the top severity factors, the most common extra-esophageal manifestations, the possible reduction of risk of esophageal carcinoma with antireflux

surgery and deferring surgery as the last resort in patients with GERD. ($p > 0.05$). However, our survey has identified a number of areas of controversy and confusion between residents and consultants with respect to perception of weight loss as a severity factor and in considering acid regurgitation as a common presenting symptom of GERD. Both are of prime importance in GERD diagnosis and management, especially for the early detection of severe GERD and Barrett's esophagus ($p <0.05$).

There were also similarities in practice concerning management strategies of GERD between residents and consultants in many aspects like the most commonly used regimen for treatment, the duration of treatment with PPI, the modality of treatment for refractory or recurrent GERD, empirical treatment indication, maintenance therapy, mode of therapy, the most commonly used prokinetic agent, reasons for using empiric trial with acid suppression, obtaining gastroenterological opinion before directly referring to surgery and first-line treatment for GERD. ($p > 0.05$).

Whereas there was a significant difference ($p = 0.04$) between residents and consultants regarding the timing of PPI administration being before meals. Also, there was a significant difference between residents and consultants ($p = 0.002$) regarding the use of prokinetic drugs as the pharmacological classes often prescribed in combination withPPI.

The top 6 sources of information on GERD, which respondents preferred are as followed in descending order: Textbooks (61%), medical journals (59%), internet (52%), conference (36%), newsletters (eight percent), pharmaceutical company–sponsored symposia (3%).

Regarding training attended related to GERD, 39% of physicians did not receive any training. It was clear from our study that attending training related to GERD had significantly improved the degree of knowledge. A total of 65.9% of physicians who attended workshops had good knowledge while 44.1% had poor knowledge. The difference was significantly different ($p < 0.05$). Also, 37.5% of physicians who attended continuous medical education had good knowledge while 29.2% had poor knowledge. The difference was significant ($p < 0.05$).

Discussion

This cross-sectional questionnaire-based survey compares the differences in knowledge and practice in the evaluation and management of patients with GERD between residents and consultants in Riyadh, Saudi Arabia. The findings in this survey are useful to understand the current epidemiology, diagnosis, and treatment of GERD.

In our study, when participants were asked about the appreciation of severity factors possibly associated with GERD among their patients, there was no difference regarding all symptoms between residents and consultants except for the perception of weight loss as a severity factor which was significantly higher among consultants. This might be explained by the element of experience in consultants.

Eighty-three percent of our physician respondents stated that EGD should be done for all patients with GERD for more than 5 years to screen for Barret's esophagus. There was no difference between residents and consultants. We could not find a study comparing residents to consultants but in another study,[16] 82% of gastroenterologists (GEs) recommended EGD for a patient with heartburn symptoms of greater than 5 years duration. This was less recommended among internists (55%) and primary healthcare physicians (PCPs, 45%). In another study,[17] which compared GEs with PCPs, upper endoscopy was found to be prescribed more by GEs compared to PCPs (64% versus 38%). This suggests that GEs elect to use a more intensive approach to GERD.

The noted trend toward more EGD among GEs reflects their usual use, or overuse, of a diagnostic approach which they are familiar with and have easy access to, hoping to reassure their patients. These differences are important because efforts aimed at educating both family physicians and gastroenterologists about the proper use of EGDs may result in more cost-effective approaches to the treatment of patients with GERD.[16]

The majority of participants in our study (66%) correctly stated that they prefer to treat patients with mild GERD symptoms without prior testing. These results were comparable to a recent study in which 77.8% of participants think that no diagnostic testing is needed for the management of simple uncomplicated acid reflux disease.[16]

Another important result in our survey is the intention to prescribe PPIs as the first-line treatment for GERD. This was noted among 77% of physicians with no significant difference between residents and consultants. These results were different from the results obtained from another study[16], which showed that senior physicians are more likely to prescribe PPIs, which is considered as a newer class of medication compared to H2 blockers. This may be explained by better reviewing of the literature, better marketing, or better results with more satisfaction with these medications in the treatment of their patients while in more junior physicians, they may have greater exposure to educational sessions directed at practicing medicine in a cost-effective manner. This may not be the case in our study as PPIs are quite available in the hospitals and easily dispensed as an outpatient with no cost restrictions.

After initial control of the reflux symptoms, the concept of step-up and step-down, therapy for the treatment of GERD is now becoming more widely recognized.

In this study, 58% of the physicians surveyed preferred to use 'step-down' strategy while 'step-up' strategy was used by 42% of physicians. These results are similar to the results obtained by multiple recent studies.[14,16-18] This may be explained by the superior efficacy of PPIs in symptom control and healing of GERD related symptoms as compared to H2RAs. Also, the proven tolerability of step-down therapy for GERD without the recurrence of symptoms.

In contrast, earlier studies[12] showed that physicians prefer the step-up strategy. Most probably because of the novelty of PPIs with still high coast and less experience in its usage.

Although lots of national and international guidelines have been published, their effect on physicians' approaches in diagnosis and management has been limited.[19]

In our study, it was noted that only 66% of physicians are aware of the presence of guidelines for the evaluation and treatment of acid reflux disease. These results are comparable to similar recent study results[16] (61%) and should highlight the importance of directing the educational efforts towards increasing the awareness of the newly published guidelines in diagnosing and managing acid reflux disease in a cost-effective way.

The most frequent guideline used by physicians in our study (42%) was ACG guidelines. This is possibly explained by the easiness to access to this guideline, easy applicability compared to other guidelines, or because most of the Saudi physicians receive their clinical training in the US and Canada.

Overall patterns of knowledge and practice of GERD diagnosis and management were comparable between residents and consultants.

Similarities were found among them in many aspects of knowledge. However, our survey has identified several areas of controversy and confusion between residents and consultants with respect to perception of weight loss as a severity factor and in considering acid regurgitation as a common presenting symptom of GERD. Both are of prime importance in GERD diagnosis and management, especially for the early detection of severe GERD and Barrett's esophagus, underlining the need to clarify definitions.

Another remarkable result in our study is that most physicians (around 60%) do not recognize the importance of maintenance therapy for patients with severe GERD. Again, despite the large body of evidence to support the use of on-demand therapy for GERD maintenance, still, most of the physicians prefer the traditional daily maintenance approach. This disagreement may be due to the lack of knowledge of the national and international guidelines of GERD. These findings enforce the belief that educational support should be directed toward all physicians to improve their awareness of the management plan of GERD.

There were also similarities in practice concerning management strategies of GERD between residents and consultants, which can be an assuring element that GERD patients receive a relatively appropriate initial medical practice by residents.

Still, there was a significant difference between residents and consultants regarding the timing of PPI administration being before meals. Also, there was a significant difference between residents and consultants regarding the use of prokinetic drugs as the pharmacological classes often prescribed in combination with PPI. This variation in response might be explained by differences in training, access to medications, or unawareness of published guidelines. Understanding the spectrum of management styles of GERD is crucial to achieve better health outcomes and reduce healthcare costs. We hope that our findings can assist in the development of educational materials on GERD for physicians.

Summary and Conclusions

In summary, a good knowledge score was found to be around only a quarter of residents and 37% of consultants underlining the need for continuous medical education and directing the educational efforts towards the new guidelines in GERD diagnosis and management. This will hopefully result in a significant reduction in morbidity and mortality related to this disease. Furthermore, our findings suggest that around one-third of physicians are unaware of, or do not follow the current internationally published guidelines for the management of GERD. Also, most physicians do not recognize the importance of maintenance therapy for patients with severe GERD despite the large body of evidence to support its use.

Highlight

Our findings emphasize the need for the development of a National Clinical Guidelines for GERD.

Recommendations

We recommend that larger studies are needed to compare the diagnosis and management strategies of Internal Medicine consultants, PCPs, and GE consultants in Saudi Arabia. We although believe that educational efforts directed to physicians who treat patients with acid reflux disease may require different strategies for different types of healthcare providers.

Limitations

The first limitation is that participants were recruited from a local specific population in Riyadh, KSA, thus may not reflect national practice patterns. External validity cannot be taken for granted. The second limitation is that this study is subjected to a response bias. It is possible that the attitudes and practices of non-responders are significantly different than those of responders. The third limitation is that the term consultant included Internal medicine consultants, PCPs, and GE consultants. Due to the small sample size, we were not able to divide them into three categories and compare them. We

recommend that a larger-scale study to be conducted to compare the practice of all the three categories.

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Conflicts of interest

There are no conflicts of interest.

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