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The Prevalence of Irritable Bowel Syndrome Among Board-Certified Medical Doctors In Saudi Arabia: A Cross-sectional Study

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ABSTRACT

Introduction: Irritable bowel syndrome (IBS) is one of the most common functional gastrointestinal disorders. A pooled analysis showed a global prevalence of 11.2%. Few studies looked at the prevalence of IBS in health care providers. The aim of this study was to determine the prevalence of IBS among board-certified physicians and surgeons.

Methods: Board-certified physicians and surgeons in Saudi Arabia were invited to complete a web-based survey. It included questions regarding participant demographics, specialty, practice type and hours worked per week. The Rome IV-validated questionnaire was used to identify subjects with IBS. The primary outcome of the study was the prevalence of IBS among physicians. Secondary outcomes included exploring the effect on IBS prevalence of age, gender, marital status, work hours, specialty, gastroenterology subspecialty and working in a public versus private hospital.

Results: The final analysis included 594 subjects, with 419 males and a median age of 41. The vast majority (86%) were married. Nearly 90% worked in a public hospital exclusively, and the median number of hours worked per week was 48. The overall prevalence of IBS was 16.3%. In a binary logistic regression model, age (odds ratio [OR] = 0.931, $P < 0.0001$), gender (OR = 0.504, $P = 0.003$) and work hours (OR = 2.397, $P < 0.0001$) significantly predicted the presence of IBS. Marital status and specialty did not predict IBS prevalence.

Discussion: This cross-sectional study shows that the prevalence of IBS among physicians in Saudi Arabia to be 16.3%. IBS was more common in females, those who worked longer hours and younger physicians. There was no association between practicing certain specialties and IBS. However, the lack of difference in our cohort may be attributed to the relatively small sample size from each specialty.

Keywords: *Functional gastrointestinal disorders; Irritable bowel syndrome; Prevalence*

Irritable bowel syndrome (IBS) is one of the most common functional gastrointestinal disorders. The hallmark of this chronic illness is abdominal pain in association with altered bowel habits, abdominal distention and bloating (1). Patients with IBS have higher health care use than the general population. This, in association with lower productivity, leads to higher cost for society (2). The disease is more common in women than men, and occurs in all age groups although prevalence tends to decline in people above the age of 50 (3,4). Little is known about the pathophysiology of this disorder. Potential mechanisms include alteration in gut microbiota, dysregulation of the immune system, visceral hypersensitivity and psychosocial comorbidities (5).

The prevalence of IBS varies in different countries. A pooled analysis showed a global prevalence of 11.2% (4). The

prevalence of the disease is highest in Latin America (21%) and lowest in Southeast Asia (7%) (4). Data on the prevalence of IBS in the Middle East are scarce. In a population-based study from the West Bank, the overall prevalence of IBS was 30%. IBS was more common in rural areas than urban centers (6). In Saudi Arabia, a survey of adults found a prevalence of 11.4% using Rome II criteria (7).

Health care providers represent a distinct part of society. Their careers are perceived as stressful with specific challenges. Few studies looked at the prevalence of IBS in this population. Among medical students in a Canadian university, the prevalence of IBS was found to be 22% (8). The same group looked at physicians doing their residency training. The prevalence of IBS in that population was 19%. Two thirds of the subjects with IBS in that study were women (9). The disease was also found to be common in nurses, affecting more than 30%. The prevalence was even higher among nurses who worked rotating shifts, reaching 48% (10).

The aim of this study was to determine the prevalence of IBS and its subtypes among board-certified physicians and surgeons. We also assessed whether the type of practice, specialty or number of hours worked per week influenced prevalence. We hypothesize that the prevalence of IBS in medical doctors is high and that this would be higher in physicians and surgeons working longer hours.

METHODS

Study Subjects

Physicians in Saudi Arabia were contacted through professional groups in the instant messaging system WhatsApp. Interested subjects were directed to a web-based study survey. All survey answers were collected anonymously without identification information. The study protocol and survey were reviewed and approved by the institutional review board at King Fahad Specialist Hospital-Dammam, Saudi Arabia. The study recruitment period was between May and June of 2018.

Subjects with a self-reported pre-existing organic gastrointestinal disorder that would preclude a diagnosis of IBS were excluded from the study. These include inflammatory bowel disease, peptic ulcer disease, previous gastrointestinal surgery, malignancy, severe cardiac or respiratory conditions and current pregnancy or breastfeeding. The remaining subjects were included in the final analysis.

Questionnaires

All subjects completed the following surveys;

1. General demographic form, including questions on age, gender, marital status and smoking habits.
2. A questionnaire on the average number of hours worked per week, medical specialty and type of practice, private versus public hospitals.
3. IBS modules from Rome IV criteria (11). This validated survey was used to identify subjects with IBS. Permission was obtained from the Rome Foundation for use of this questionnaire. The survey also classifies subjects with IBS into the following four subgroups: constipation-predominant IBS, diarrhea-predominant IBS, mixed IBS or unsubtyped IBS subgroups. The Rome IV diagnostic criteria for IBS and different subtypes are shown in Box 1 and 2.

Statistical Analysis

The primary outcome of the study was defined a priori as the prevalence of IBS among board-certified medical doctors. Secondary outcomes included exploring the effect on IBS prevalence of demographic factors such as age, gender, marital status, smoking, work hours, specialty, gastroenterology

Box 1. Rome IV diagnostic criteria for irritable bowel syndrome (11)

Recurrent abdominal pain, on average, at least 1 day per week in the last 3 months, associated with 2 or more of the following criteria:

- Related to defecation.
- Associated with a change in frequency of stool.
- Associated with a change in form (appearance) of stool.

Criteria fulfilled for the last 3 months with symptom onset at least 6 months before diagnosis.

Box 2. Rome IV diagnostic criteria for IBS subtypes (11)

Predominant bowel habits are based on stool form on days with at least one abnormal bowel movement.

- IBS with predominant constipation: More than one-fourth (25%) of bowel movements with Bristol stool form types 1 or 2 and less than one-fourth (25%) of bowel movements with Bristol stool form types 6 or 7. Alternative for epidemiology or clinical practice: Patient reports that abnormal bowel movements are usually constipation.
- IBS with predominant diarrhea (IBS-D): more than one-fourth (25%) of bowel movements with Bristol stool form types 6 or 7 and less than one-fourth (25%) of bowel movements with Bristol stool form types 1 or 2. Alternative for epidemiology or clinical practice: Patient reports that abnormal bowel movements are usually diarrhea.
- IBS with mixed bowel habits (IBS-M): more than one-fourth (25%) of bowel movements with Bristol stool form types 1 or 2 and more than one-fourth (25%) of bowel movements with Bristol stool form types 6 or 7. Alternative for epidemiology or clinical practice: Patient reports that abnormal bowel movements are usually both constipation and diarrhea.
- IBS unclassified (IBS-U): Patients who meet diagnostic criteria for IBS but whose bowel habits cannot be accurately categorized into 1 of the 3 groups above should be categorized as having IBS unclassified.

subspecialty and working in a public versus private hospital. Analyses were carried out using IBM SPSS version 24 using binary logistic regression and χ^2 testing, depending on the variable being analyzed.

RESULTS

A total of 777 subjects responded to the survey. Among these, 691 met the inclusion criteria. Of those 97 were later excluded for meeting one of the exclusion criteria. The final analysis included 594 board-certified physicians, with 419 males and a median age of 41. The vast majority (86%) were married. Nearly 90% worked in a public hospital exclusively, and the median number of hours worked per week was 48. There were 70 surgeons in the cohort, and 130 subspecialty gastroenterologists (paediatric or adult). Of the 594 subjects included, 124 were smokers (21%).

Overall prevalence of IBS was 16.3%, with no significant difference in gastroenterologists (16.2%), surgeons (14.3%), or paediatricians (15.3%). The most frequent type of IBS was mixed IBS affecting 45.4% of those with the disease. Diarrhea-predominant IBS was second affecting (32%), followed by constipation-predominant IBS and unsubtyped IBS (20.6%) and (2.1%), respectively.

In a binary logistic regression model, age (odds ratio [OR] = 0.931, $P < 0.0001$), gender (OR = 0.504, $P = 0.003$) and work hours (OR 2.397, $P < 0.0001$) significantly predicted the presence of IBS. Marital status and specialty did not predict IBS prevalence (Table 1).

Discussion

This cross-sectional study of physicians and surgeons in Saudi Arabia shows that the overall prevalence of IBS is (16.3%). IBS was more common in subjects who worked longer hours and those who were younger.

To our knowledge, this is the first study to look at the prevalence of IBS among physicians and surgeons utilizing the Rome IV criteria. Only one previous study looked at the prevalence of IBS among resident physicians (9). In that study, the prevalence of IBS was (19%) which is not that different from our results. Our sample included 130 board-certified paediatric and adult gastroenterologists. Of those gastroenterologists, 21 (16%) met the Rome IV criteria for IBS. It would be intriguing to see if this group of patients, who happen to have expertise in the disease, would benefit from a single session of reassurance. This has been shown to decrease self-perception of impairment in patients with IBS regardless of their educational level (12).

It appears that the method used to survey subjects has an influence on the prevalence of IBS. Self-completed questionnaires similar to what was used in our study yield higher prevalence of IBS compared with questionnaires completed during phone interviews or face to face meetings (4).

In our study, smokers were not more likely to have IBS compared with those who did not smoke. This is in line with what was found previously in a study looking at the prevalence of IBS among nurses (13). Female gender was associated with a higher rate of IBS in our cohort. The results may have been influenced by low number of female participants. This in itself is a reflection of gender composition of physicians in Saudi Arabia. There are more male physicians compared with female physicians. While studies looking at the prevalence of IBS in the general population found it more common among women (4), this has not been shown to be the case among health care providers (9,10). The gender difference was not found in population-based studies looking specifically at Asian populations (14,15).

In our study, marital status was not associated with higher prevalence of IBS. Nonetheless, it is difficult to draw firm conclusions given that the majority of our study subjects were married. Marital status and functional dyspepsia have been looked at in a study on nurses. Being married was associated with lower risk of having dyspepsia (16).

There was no association between practicing certain specialties and having IBS. In particular, there was no increase in the prevalence in those who specializes in a surgical based fields compared with nonsurgeons. However, the lack of difference in our cohort may be attributed to the small sample size from each specialty. This study was not powered to address this specific point.

Previous research has shown that rotating shift work is associated with increased prevalence of IBS. Findings were consistent both in health care providers (10) and the general public (17). The health care system from which this sample was taken does not require physicians to do shift work. The exception is

Table 1. Characteristics of subjects with and without irritable bowel syndrome

	Irritable bowel syndrome	No irritable bowel syndrome	*P* value
Age	37.2	41.9	<0.001*
Gender			0.003*
Male	56	363	
Female	41	134	
Working hours	50.0	47.4	<0.0001*
Specialty			0.869**
Medical	83	415	
Surgical	10	60	
Other	4	22	

*Generated using χ^2 testing.

**Generated using logistic regression.

emergency room physicians and some critical care departments. The number of subjects in this study from both specialities was too low to draw tangible conclusions.

The potentially stressful nature of a physician's career may lead one to believe that it has a negative impact on health or social life. Its impact on health has not been shown in this study or others that looked at functional gastrointestinal disorders. A detrimental effect on social life has not been shown either. A U.S. study looking at divorce rates among physicians and other health care providers showed that it was lower than the rate in the general population (18).

The impact of IBS on sufferers should not be underestimated. The average patient would sacrifice 10 to 15 years of their remaining life expectancy for a cure (2). In a study from the United States, subjects with IBS reported lower ability to perform physical activity compared to their healthy colleagues. This had a negative impact on their quality of life (19). In the year the diagnosis is made, IBS patients in United States will require on average six blood tests, one radiological study and one outpatient procedure (20).

The cost of caring for IBS patients is also high. A population-based study from Iran, a country with similar cultural and ethnic background to Saudi Arabia, found IBS to be the most costly functional bowel disorder. This was attributed to the high number of visits to physicians and the low productivity at work. The mean absence of work in that population was 2.26 days over a 6-month period (21). The detrimental effect of IBS on work productivity is a major problem for the society as a whole. This is an even more pressing challenge when one considers a study population like physicians and surgeons.

In our study, IBS was diagnosed based on the Rome IV criteria. Such an approach of making the diagnosis based on symptoms alone with limited testing has been endorsed by experts in the field (22). A Danish noninferiority trial compared two strategies in diagnosing patients with suspected IBS. A positive diagnostic approach based on symptoms and very limited investigations was compared to a strategy of exclusion, utilizing more tests including flexible sigmoidoscopy. At 1-year follow-up, the two approaches had similar effects on symptoms, patient satisfaction and subsequent use of health resources. There were no cases of colorectal cancer, celiac disease or inflammatory bowel disease in the study population. The cost was significantly lower when the symptom-based approach was utilized (23).

The survey in this study was conducted using an instant messaging application WhatsApp. The application is widely used among health care providers in the country for professional and patient care–related matters. Doctors find it practical, easy to use and an efficient way of communication (24). Few publications highlighted its use in providing clinical services among physician in Saudi Arabia (25–27).

Our study has limitations. Completing the survey was voluntary which may have led to selection bias. Given the nature of the questionnaire and the method in which it was distributed, it was difficult to estimate the overall response rate. Apart from exclusion criteria, we had limited information about the subject's past medical and surgical history. The cross-sectional design of the study makes it difficult to assess causal relationships. As with most observational studies there may have been unidentified confounders.

The strengths of the study include the use of a validated online survey. This ensures confidentiality and privacy. We excluded physicians and surgeons doing their residency training to avoid the potential impact of rotating call shift on bowel symptoms.

In conclusion, we found the prevalence of IBS among physicians and surgeons in Saudi Arabia to be 16.3%. IBS was more common in men, those who worked longer hours and younger physicians. There was no association between practicing certain specialties and IBS.

What Is Current Knowledge?

- Irritable bowel syndrome is a common functional gastrointestinal disorders.
- Prevalence in the general population around 11.2%.
- Little is known about the prevalence of IBS among physicians.

What Is New Here?

- Prevalence of IBS among board-certified physicians and surgeons was 16.3%.
- Longer working hours but not speciality predicted the presence of IBS.
- IBS was more common among female doctors compared to their male counterparts.

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