The Prevalence of Irritable Bowel Syndrome among Medical Students and Interns in Jeddah, Saudi Arabia

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Abstract

Objectives: Irritable bowel syndrome (IBS) is a common gastrointestinal disease presenting with abdominal pain, discomfort, and bloating, along with change in bowel habits. This study aimed to determine the prevalence of IBS and its associated risk factors among the medical students and interns of King Saud bin Abdulaziz University (KSAU-HS), Jeddah, Saudi Arabia.

Methods: A cross-sectional descriptive study was carried out among the 179 medical students of the university through a face-to-face following the validated self-designed questionnaire which constitute items to describe their demographic profile, diagnose IBS using Rome IV criteria, and Kessler 6 criteria of psychological distress assessment.

Results: The IBS prevalence was 15.64% with males having more diagnosed cases 13% than that of the females. However, there was no statistically significant difference on the prevalence of IBS between the male and female population with a p value > 0.05. High level of stress, family history of IBS, and lack of exercise were found to be significantly associated with IBS with a p-value of 0.00, 0.045 and 0.0229, respectively (p < 0.05). Hence, these may be considered as risk factors for IBS.

Conclusions: IBS is a significant health problem among medical students. Stress, family history of IBS, and lack of exercise predispose the participants to develop IBS. Large-scale study among all medical schools in Saudi Arabia may be done to assess the magnitude and impact of being a medical student to the development of IBS.

Keywords: Irritable Bowel Syndrome; Medical Students; Stress

Introduction

Irritable bowel syndrome (IBS) is a chronic functional gastrointestinal disorder characterized by recurrent episodes of abdominal pain and discomfort, and altered bowel habits that are not explained by structural or biochemical abnormalities [1]. IBS is the most common chronic disease affecting the digestive system, approximately 10 - 20% of general population [2]. Only 15 % of these patients seek medical attention [2]. Some studies revealed that 12% of primary health care visits and 28% of referrals to gastroenterologists are due to IBS [3,4]. The pathogenesis of this disease is not fully understood. However, many factors such as anxiety, depression, and stress are positively related to the degree of severity of IBS symptoms [5]. Medical students undergo a high level of stress that may negatively impact their general health. A Korean study found that the prevalence of IBS was 29.2% among 319 medical students [6]. A local study in Eastern Province of Saudi Arabia showed that the prevalence of stress among medical students was 53% [7]. As a result, medical students are at higher risk

of experiencing IBS. A cross-sectional study conducted on medical students in Beijing, China showed that the prevalence of IBS is 33.3% [8]. A similar study done at King Abdulaziz University, Jeddah presented a 31.8% prevalence of IBS among medical students and interns [9]. The aim of this study is to determine the prevalence of IBS and its risk factors among medical students and interns of King Saud bin Abdulaziz University for Health Sciences, Jeddah, Saudi Arabia.

Methods

A cross-sectional descriptive study was carried out from September to October 2017 to determine the prevalence of IBS among medical students from the third to sixth year and interns of King Saud bin Abdulaziz University in Jeddah, KSA. A total of 229 medical students and interns were participated by face-to-face interview using a self-designed questionnaire which constitutes the participant's information sheet, Rome IV criteria to diagnose irritable bowel syndrome, and Kessler 6 criteria for psychological distress. However, 50 participants failed to meet the inclusion criteria, so that their data were not included in the final analysis, reducing the final participants to only 179. The designed questionnaire was pilot tested to ensure its construct and content validity and subsequently revised to suit the level of understanding of the participants. Questionnaire was designed in English language. Only those who gave their consent were considered final participants of the study. Participants who have self-reported organic gastrointestinal disorders, family history of cancer, history of weight loss, history of bloody stool, or who recently underwent gastrointestinal surgeries were excluded from the study. We assumed that the prevalence rate of IBS in Saudi Arabia was 30%. The sample size required for the study was approximately 284 (95% confidence interval).

Statistical Methods

Statistical analysis was performed using Stata/IC 12.1-2011 software (StataCorp LP, College Station, TX). The percentage of participants who responded to each question was determined.

The prevalence of IBS in our study subjects was estimated with the 95% confidence interval. IBS and non-IBS were compared in a univariate analysis using the x^2 and t tests for categorical and continuous data, respectively. For the qualitative data, frequency and percentages were reported. A p-value of < 0.05 was considered statistically significant.

Ethics

The ethics committee of King Abdullah International Medical Research Center (KAIMRC) approved the study. The students filled the consent under supervision of the investigators. All of the information was collected and kept strictly confidential.

Results

Demographic characteristics of the participants

A total of 179 medical students and interns from KSAU participated in this study. Sixty percent of the respondents were from the age group of 20 to 23 year-old, and 34.08% were from the age group of 24 to 26 year-old. Most of the participants were males (83.8%), while only 16.2% were females. Only 6.7% were married, while the majority of participants were single with a percentage of 93.3%. Most of the respondents were at the 3rd year academic level (37.99%) and only 15.64 % were interns. Figure 1 illustrates that 28 (15.46%) out of 179 participants were diagnosed with IBS, based on Rome IV Criteria. From this prevalence, 13% were males and 2.64% were females. This prevalence presents a statistically no significant difference on the mean prevalence of IBS between the male and female participants with a p-value of 0.7971.
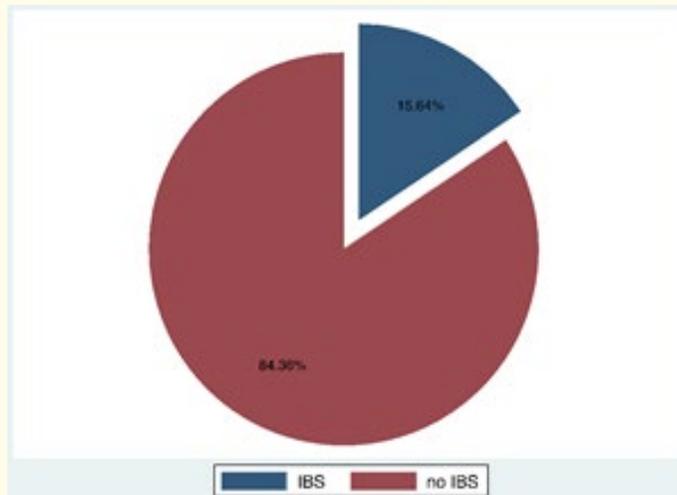
Figure 1: Prevalence of irritable bowel syndrome among medical students and interns of KSAU-HS, Jeddah, KSA.

Demographic characteristics	Number	%
Age in years		
20 - 23	108	60.34
24 - 26	61	34.08
27 - 30	10	5.59
Gender		
Male	150	83.8
Female	29	16.2
Marital Status		
Single	167	93.3
Married	12	6.70
Academic Level		
3rd year level	68	37.99
4th year level	34	18.99
5th year level	20	11.17
Sixth year level	29	16.20
Intern	28	15.64

Table 1: Demographic characteristics of the medical student and interns respondents, KSAU-HS, Jeddah, KSA (n = 179).

	Gender	N	IBS		Mean	SD	t-value	p value
			Yes (n = 28)	No (n = 151)				
	Male	150	23 (13)	127 (71)	1.85	0.361		
Rome IV	Female	29	5 (2.64)	24 (13.36)	1.83	0.384	.2575	.7971

Table 2: Test for significant difference between the prevalence of IBS and gender of respondents KSAU-HS, Jeddah, KSA (n = 179).

*p value from t-Test

Association between IBS and stress

Using Kessler Psychological Distress Scale (K6) test to assess the level of stress among the respondents, table 3 presents that 7.26% of those who have high level of stress were diagnosed with IBS, while only 8.38% of those with low level of stress were diagnosed with the condition. This disparity gives a statistically significant association between IBS and stress with a p value of < 0.000. This explains the higher the level the stress of a medical student, the more likely that he or she experiences IBS. Table 4 shows that the highest diagnosis of IBS was seen among the 3rd year medical students with prevalence of 42.86% followed by the interns, 4th year and 6th year levels with a prevalence of 28.57%, 10.71% and 10.71% respectively. Using chi square test, there was a statistically no significant association between the academic year level of the medical students and IBS with a p-value of 0.195. This may mean that the academic year level of the students is not a risk factor to experience IBS.

Kessler (Stress)	IBS		p-value chi square test
	Yes (n = 28), N (%)	No (n = 151), N (%)	
High level of stress	13 (7.26)	23 (12.85)	
Low level of stress	15 (8.38)	128 (71.51)	0.000

Table 3: Association between IBS and stress among medical students and interns of KSAU-HS, Jeddah, KSA (n = 179).

Academic Year Level	IBS		p-value chi square test
	Yes (n = 28), N (%)	No (n = 151), N (%)	
3rd Year	12 (42.86)	56 (37.09)	
4th Year	3 (10.71)	31 (20.53)	
5th Year	2 (7.14)	18 (11.92)	
6th Year	3 (10.71)	26 (17.22)	0.195
Intern	8 (28.57)	20 (13.25)	

Table 4: Association between IBS and academic year level among medical students and interns of KSAU-HS, Jeddah, KSA (n = 179).

Association between IBS and risk factors

The possible risk factors of irritable bowel syndrome including family history of IBS and lack of exercise has a statistically significant association with IBS with a p value of 0.045 (p < 0.05) and 0.0229 (p < 0.05), respectively are shown in table 5. Smoking did not show statistically significant association with the prevalence of IBS (p value > 0.05).

Risk Factors	IBS		Chi-square Value	p-value
	Yes, N (%)	No, N (%)		
Family History-IBS				
Yes	12 (42.86)	37 (24.5)	4.0022	0.045*
No	16 (57.14)	114 (75.5)		
Smoking				
Yes	8 (28.57)	26 (17.22)	1.9786	0.160
No	20 (71.43)	125 (82.78)		
Exercise				
Yes	11 (39.29)	78 (51.66)	1.4457	0.0229*
No	17 (60.17)	73 (48.34)		

Table 5: Association between IBS and other risk factors among medical students and interns of KSAU-HS, Jeddah, KSA (n = 179).

Discussion

The global prevalence of IBS is estimated to be 10 - 15% [4]. The current study reports a prevalence of 15.64% of IBS among the medical students and interns of King Saud bin Abdulaziz University in Jeddah, KSA which is lower than that of a similar study in Prince Sattam bin Abdulaziz University, KSA which reported a prevalence of 21% among medical students [10], in Japan (25.2%) among the male nursing and medical school students [11], in Nigeria (26.1%) among medical students [12], in Korea (29.2%) among medical and paramedical studies [13], and in two Pakistani studies which reported a prevalence of 28.3% in 2012 [14] and a prevalence of 34% in 2005 [15] among medical students. However, this result is higher compared with a study conducted in China among university students (7.85%) [16], and also higher than that in an international study done in eight different countries in Europe which reported a prevalence of 11.5% [17]. The disparity of our result with those of the cited published studies maybe attributed to the variability of the study group, age group, diagnostic criteria, cultural differences, learning environment, and perhaps due to the geographical location. The difference in sample size may also account for this difference. There was a statistically no significant difference on the prevalence of IBS between the male and female respondents which may be attributed to the coping mechanisms of the respondents. This result would mean that IBS respects no gender, where everyone is susceptible to experience the condition. In the current study, regardless of its source, stress among medical students maybe a major risk factor associated with the development of IBS. This finding corroborates the result of a study that medical students experience high level of stress which may be due to the length of time to finish medical school, difficult courses and exams, not to mention the number of case studies and other requirements to accomplish [18]. This study reports no statistically significant association between the academic year level of the medical student and irritable bowel syndrome. It is observed that whether starting or being in a higher year of medicine the likelihood of developing IBS is possible. This may be attributed to the academic demands in all year levels which may be a stress factor among the students. Stress is statistically associated with IBS as reported in this investigation. Furthermore, the result of this study supports a similar study among medical students in Saudi Arabia where no significant association between irritable bowel syndrome and academic year level of students was found with a p-value of 0.466 [10]. Looking at the other identified risk factors of IBS, only family history of IBS and lack of exercise were statistically associated with IBS in this current study. Relevant literature on the risk factors of IBS revealed that prevalence of IBS was exponentially higher among those individuals with food hypersensitivity problem [10,19]. Another study described a significant difference between the food intake of persons with IBS and those without the condition [12]. In addition, dietary choices were seen to be the risk factor of IBS in one study [20]. Smoking was not significantly associated with IBS in this current study which is supported by the findings of a study in one university in Saudi Arabia [10]. This study has some limitations that should be considered when making conclusions out of its results. First of all, the study was conducted in only one center which leads to a small sample size. Also, only third year female medical students were included since the university started accepting females three years ago.

Conclusion

The overall prevalence of IBS in this study was 15.6%. High level of stress, family history of IBS, and lack of exercise were significant predictors of IBS. Moreover, as stress is seen to be a primary predictor of IBS, improving or intensifying stress management in the medicine curriculum may help medical students to cope with and overcome stressors during their stay in the program and perhaps in dealing with life. It is recommended that a large-scale study among all medical schools in Saudi Arabia be done to assess the magnitude and impact of being a medical student to the development of IBS.

Competing Interest

No funding was received for this study and all authors have no conflicting interest to manipulate the findings.

Author's Contributions

All student authors were involved in every step of the study. Doctor authors were involved in supervising all steps of the research and provide guidance and solutions to encountered hurdles.

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