Research and Reviews: Journal of Clinical and Medical Case Studies

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

Mohammed Y Hasosah[1*], Samer A Alamri[2], Faisal A Al-Husayni[2], Rakan M. Aljedaani[2], Mohammad A Zwawy[2] and Abdulaziz A Al-Zahrani[2]

[1]Department of Pediatric Gastroenterology, King Saud Bin Abdulaziz University for Health Sciences, King Abdullah International Medical Research Center (KAIMRC), National Guard Hospital, Jeddah, Saudi Arabia

[2]Department of Academic Affairs, King Saud Bin Abdulaziz University for Health Sciences, King Abdullah International Medical Research Center (KAIMRC), National Guard Hospital, Jeddah, Saudi Arabia

Research Article

Received date: 03/11/2017
Accepted date: 19/12/2017
Published date: 27/12/2017

***For Correspondence**

Mohammed Y Hasosah, Department of Pediatric Gastroenterology, Assistant Professor of Pediatric, Pediatric Consultant Gastroenterologist, King Saud Bin Abdulaziz University for Health Sciences, National Guard Hospital, Jeddah, Saudi Arabia, Tel: 2348036327951.

E-mail: hasosah2007@yahoo.com

Keywords: Irritable bowel syndrome, Medical students, Stress

ABSTRACT

Objective: 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.

Conclusion: 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.

INTRODUCTION

Irritable bowel syndrome (IBS) is a chronic functional gastrointestinal disorder characterized by recurrent episodes of abdominal pain, 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]. Local studies in Saudi Arabia 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, there are many factors that can affect symptoms and severity of IBS such as anxiety, depression, and stress [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 in 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 were participated by face-to-face interview using a self-designed questionnaire which constitute 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 disorder, family history of cancer, weight loss, bloody stools and who recently underwent gastrointestinal surgery 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 analyses will be performed using Stata/IC 12.1-2011 software (StataCorp LP, College Station, TX). The percentage of participants who responded to each question will be determined.

The prevalence of IBS in our study subjects is 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 investigator. All of the information was collected kept strictly confidential.

RESULTS

Demographic Characteristics of the Participants

A total **Table 1** of 179 medical students and interns from KSAU participated in this study. Sixty percent of the respondents are from age group 20 to 23 year old and 34.08% were from age group 24 to 26 year old. Most of the participants were males 83.8% while only 16.2% were females. Only 6.7% were married and majority was single with a percentage of 93.3%. Most of the respondents belong to 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 male and 2.64% were female. This prevalence gave a statistically no significant difference on the mean prevalence of IBS between the male and female participants with a p-value of 0.7971 **(Table 2)**.

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 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.

Association between IBS and risk factors

The possible risk factors of irritable bowel syndrome included family history of IBS and lack of exercise has a statistically significant association with IBS having 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).

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

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
6th year level	29	16.20
Intern	28	15.64

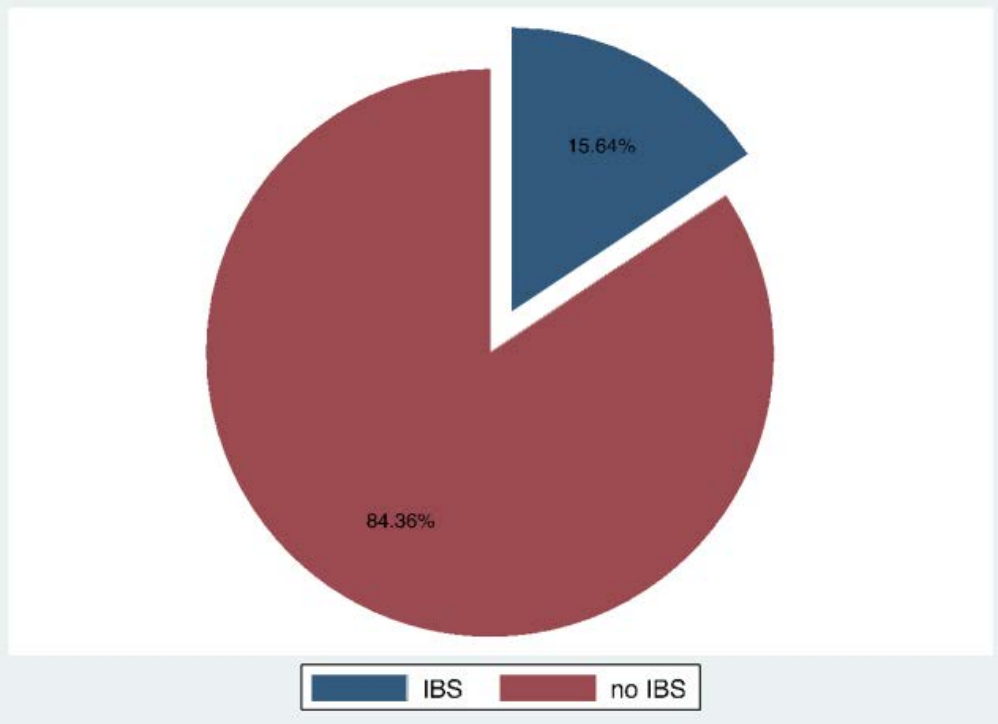

Figure 1. Prevalence of irritable bowel syndrome among medical students and interns of KSAU-HS, Jeddah, KSA.

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

	Gender	N	IBS		Mean	SD	t-value	p value
			YES (n=28)	NO (n=151)				
ROME IV	Male	150	23 (13)	127 (71)	1.85	0.361	0.2575	0.7971
	Female	29	5 (2.64)	24 (13.36)	1.83	0.384		

*p value from t-test

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

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)	0.000
Low level of stress	15 (8.38)	128 (71.51)	

Table 4. Association between IBS and academic year level 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)	0.195
4th Year	3 (10.71)	31 (20.53)	
5th Year	2 (7.14)	18 (11.92)	
6th Year	3 (10.71)	26 (17.22)	
Intern	8 (28.57)	20 (13.25)	

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

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

DISCUSSION

The global prevalence of IBS is estimated to be 10-15% [4]. This 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 in China among university students (7.85%) [16] and in an international study 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, culture, learning environment, and perhaps 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 experiencing 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 increased stress [12] which may be due to the length of time to finish medical school, difficult courses, exams, not to mention the number of case studies and other requirements to accomplish [18,19]. In addition, a study described the academic, clinical and external factors as the three main stressors among those paramedical students taking up nursing [20]. 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 in the 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 to 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 in this current study. Relevant literature searches on the risk factors of IBS revealed that prevalence of IBS was exponentially higher among those individuals with food hypersensitivity problem [10,21]. 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 [22]. Smoking was statistically associated with IBS in this current study which is supported by the findings of a study in one university in Saudi [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.

ACKNOWLEDGEMENT

We would like to thank Ms. Mawaddah Hussain for her support and contribution in data collection.

REFERENCES

1. Guthrie E, et al. Abdominal pain and functional gastrointestinal disorders. BMJ. 2002;325:701-703.
2. Wald A, et al. Irritable bowel syndrome. 2017.
3. Weiser K, et al. Patient knowledge and perspective on irritable bowel syndrome: Development of a survey instrument. Dig Dis Sci. 2007;53:284-295.
4. Agarwal N, et al. The effect of irritable bowel syndrome on health-related quality of life and health care expenditures. Gastroenterol Clin North Am. 2011;40:11-19.
5. Swift D. The challenge of IBS in teens. 2017.
6. Jung HJ, et al. Are food constituents relevant to the irritable bowel syndrome in young adults? A Rome III based prevalence study of the Korean Medical Students. J Neurogastroenterol Motil. 2011;17:294-299.
7. Rahman A, et al. Stress among medical Saudi students at College of Medicine, King Faisal University. J Prev Med Hyg. 2013;54:195-199.
8. Liu Y, et al. A school-based study of irritable bowel syndrome in medical students in Beijing, China: Prevalence and some related factors. Gastroenterol Res Pract. 2014;4:1-8.
9. Ibrahim N, et al. Prevalence and predictors of irritable bowel syndrome among medical students and interns in King Abdulaziz University, Jeddah. Libyan J Med. 2013;8:212-287.
10. Al-Ghamdi S, et al. A study of impact and prevalence of irritable bowel syndrome among medical students. Int J Med Med. 2015;7:139-147.
11. Okami Y, et al. Lifestyle and psychological factors related to irritable bowel syndrome in nursing and medical school students. J Gastroenterol. 2011;46:1403-1410.
12. Okeke EN, et al. Prevalence of irritable bowel syndrome in a Nigerian student population. Afr J Med Med Sci. 2005;34:33-36.
13. Jung HJ, et al. Are food constituents relevant to the irritable bowel syndrome in young adults? A Rome III based prevalence study of the Korean medical students. J Neurogastroenterol Motil. 2011;17:294.
14. Naeem SS, et al. Prevalence and factors associated with irritable bowel syndrome among medical students of Karachi, Pakistan: A cross-sectional study. BMC Res Notes. 2012;24:52-55.
15. Jafri W, et al. Frequency of irritable bowel syndrome in college students. J Ayub Med Coll Abbottabad. 2005;17:9.
16. Dong YY, et al. Prevalence of irritable bowel syndrome in Chinese college and university students assessed using Rome III criteria. World J Gastroenterol. 2010;16:4221.
17. Hungin AP, et al. The prevalence, patterns and impact of irritable bowel syndrome: An international survey of 40 000 subjects. Aliment Pharmacol Ther. 2003;17:643-650.
18. Mansour-Ghanaei F, et al. Prevalence and characteristics of irritable bowel syndrome (IBS) amongst medical students of Gilan Northern Province of Iran. Middle East J Dig Dis. 2009;1:100-105.
19. Carroccio A, et al. Fecal assays detect hypersensitivity to cow's milk protein and gluten in adults with irritable bowel syndrome. Clin Gastroenterol Hepatol. 2011;9:965-971.
20. Al Murayshid A, et al. Prevalence of irritable bowel syndrome among students in King Saud University, Riyadh, Saudi Arabia. World Fam Med J. 2011;9:17-20.