Original Article :

Comparing Prevalence of Irritable Bowel Syndrome among Medical Sciences Students in Qassim, Saudi Arabia

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Abstract

Background & Aims:
This study aimed to measure the prevalence of Irritable Bowel Syndrome (IBS) among medical sciences students and differences in the prevalence with respect to specialty.

Methods:
A cross-sectional study was conducted on a sample of 271 medical field students (medicine, pharmacy, nursing, applied medical sciences, and dentistry students) in Qassim, Saudi Arabia. A self-administered Rome IV questionnaire was used for data collection. Data were analyzed using the statistical package for the social sciences (SPSS) version 21.0.

Results:
About 14.8% of the respondents had chronic health problems, (35.8%) have a positive family history of IBS, and (29.9%) enrolled in the college of medicine. We found that the overall prevalence of IBS was 20.5% among medical field students, with the highest (31.4%) of nursing followed by medical and dental 28.4%, 27.1%, respectively. The lowest prevalence (5.5%) was among applied medical sciences stu-

الملخص

الخلفية و الاهداف :
تهدف هذه الدراسة الى قياس نسبة مرض القولون العصبي بين طلاب وطالبات الكليات الصحية في منطقة القصيم.

طريقة البحث :
دراسة مقطعية شملت ٢٧١ طالب وطالبة من الكليات الصحية في القصيم. تم استخدام استبيان ROME IV لجمع البيانات وتم تحليلها عن طريق برنامج SPSS.

النتائج :
١٤.٨٪ من المشاركين كان لديهم مشاكل صحية مزمنة، ٣٥.٨٪ لديهم تاريخ عائلي للقولون العصبي و٢٩.٩٪ من المشاركين كانوا من طلاب وطالبات كلية الطب البشري. وجدنا في هذه الدراسة ان ٢٠.٥٪ من المشاركين في هذه الدراسة مصابين بالقولون العصبي، ٣١.٤٪ منهم كانوا من كلية التمريض يليهم كلية الطب (٢٨.٤٪) وطب الاسنان (٢٧.١٪)، وأقل نسبة (٥.٥٪) كانت بين طلاب وطالبات كلية العلوم الطبية التطبيقية. بالإضافة الى أن ٤٢.٥٪ من الطلاب والطالبات المشاركين في هذه الدراسة لديهم أمراض مزمنة و٢٩.٩٪ لديهم تاريخ عائلي للقولون العصبي. ٣٣.٣٪ من المدخنين و١٦.١٪ من الطلاب الذين يحصلون على ساعات نوم تزيد عن ٨ ساعات تم تشخصيهم بالقولون العصبي. وجدنا ان التاريخ العائلي ومجال الدراسة من أقوى العوامل المساهمة في التشخيص في القولون العصبي.

الخلاصة:

dents. In addition, (42.5%) of students with chronic diseases, 29.9% of students with a family history of IBS, (33.3%) of smokers students, and (16.1%) of students who sleep more than eight hours have been diagnosed with IBS. Family history of IBS and field of study were significant predictors of IBS among medical field students.

Conclusion:

The prevalence of IBS in medical sciences students was found to be high. This calls decision-makers to control this problem by developing strategies to detect, treat, and prevent IBS. Further large-scale studies are required to generalize the findings.

Keywords:

IBS; Medical sciences; ROME IV; Students; Saudi Arabia

نسبة طلاب وطالبات الكليات الصحية في القصيم المصابين بالقولون العصبي عالية. هذا يمكن المسؤولون من المساهمة بالتقليل من الاعداد المصابة في المستقبل عن طريق الحماية من الإصابة ومعالجة المصابين. وأيضا هناك حاجة لدراسات أخرى مستقبلية في هذا الموضوع للمساعدة بالوقاية والعلاج منه.

الكلمات المفتاحية:

القولون العصبي، الكليات الصحية، ROME IV، طلاب وطالبات، المملكة العربية السعودية.

INTRODUCTION

Irritable bowel syndrome (IBS) is a chronic functional disorder that affects the large intestine[1]. IBS affects 10-20% of the general population, with only 15% seeking medical care[2]. In addition, 5% or more visits to general practitioners and 20-50% of referrals to gastroenterologists are due to IBS-related complaints[3].

Studies in the general population have reported varying prevalence of IBS[4-6]. Similarly, a wide variation in the prevalence of IBS among medical students has been reported. Studies from other countries and Saudi Arabia have reported prevalence of IBS among medical students with a range from 12.6% to 38%[7-13].

All these studies have focused only on medical students, and none of them has compared prevalence across different specialties within medical sciences. Differences in curriculum, stress levels, number of bachelor years, and population characteristics associated with each of the specialties may lead to differences in IBS risk among students in these fields, thus affecting the prevalence. This study aimed to estimate and compare the prevalence of irritable bowel syndrome among medical sciences students in the Qassim region of Saudi Arabia.

METHODS

Study design and population:

This was a cross-sectional study among

medical colleges (Medical schools, nursing, applied medical sciences, pharmacy, and dentistry colleges) in the Qassim region, Saudi Arabia. Medical sciences students (medicine, pharmacy, nursing, applied medical sciences, and dentistry students) enrolled in participating institutes.

Sample size:

The sample size was calculated using the Open Epi online sample size calculator. The prevalence of IBS among medical students has been reported to be 13.7% in the Qassim region in a previous study [11]. We used this as expected prevalence for our sample size calculations. At 95% confidence level and 5% margin of error, the calculated sample size was 182. We further applied a design effect of 1.5 to account for non-random sampling. The final sample required was 273 medical sciences students (medicine, pharmacy, nursing, applied medical sciences, and dentistry students).

Sampling procedure:

A convenience sampling strategy was used to enroll potential participants. Medical field students currently enrolled in medical, nursing, applied medical sciences, pharmacy, and dentistry colleges in the Qassim region eligible to participate in the study. We approached batch leaders of different specialties in different years via WhatsApp groups, and they helped in disseminating the questionnaire.

Data collection:

Data was collected using a self-administrating questionnaire distributed online to the potential participants. The questionnaire had two sections. The first question had variables related to personal and clinical information, i.e., age, gender, marital status, current parents' status, Family history of IBS, chronic health problems, food allergies, daily sleeping hours, smoking status, regular exercise, Grade Point Average (GPA), specialty and year of studying. The second section consisted of a Rome IV questionnaire for adults. Rome IV questionnaire is a validated tool and has been used in various studies[12, 14].

Data analysis:

Data was downloaded as an excel sheet and exported to SPSS version 21.0 for analysis. Variables in Rome IV were coded, and sum scores were calculated according to the standard guidelines of the tool. Descriptive analysis was carried out to estimate frequencies and proportions, and prevalence of IBS. A Chi-square test was used to compare the prevalence among categories of personal and clinical variables. Logistic regression analysis was done to assess the association of IBS with specialty and other factors. Variables with a p-value less than 0.2 in the univariate analysis and biologi-

cal plausibility were included in the multivariate models regardless of statistical significance. Variables in the final model were retained based on changes in -2log likelihood ratios. Crude and adjusted odds ratio (OR) along with associated 95% confidence intervals (CIs) were calculated.

Ethics:

The study proposal was reviewed and approved by the subcommittee of Health Research Ethics, Deanship of Scientific Research, Qassim University. Permission for data collection was sought from the administration of participating institutes. Informed consent was obtained from all the participants. Confidentiality of the participants was maintained at all levels, and no personal identifier was obtained.

RESULTS

A total of 271 medical sciences students participated and completed the questionnaire. Socio-demographic characteristics of medical and allied health sciences students are presented in Table 1.

Table 1: Socio-demographic characteristics of medical sciences students in Qassim, Saudi Arabia (n=271)

Variable	N	%
Age		
Up to 22 years old	105	38.7
Older than 22 years old	166	61.3
Gender		
Male	89	32.8
Female	182	67.2
Marital Status		
Single	250	92.3
Married	21	7.7
Parents status		
Living together	219	80.8
Not living together	52	19.2
Chronic health problems		
Yes	40	14.8
No	231	85.2
Sleep hours		
More than 8 hours	137	50.6
Less than 8 hours	134	49.4
Smoking		
Smokers	36	13.3
Nonsmokers	235	86.7
Exercise		
Yes	77	28.4
No	194	71.6
Food Allergies		
Yes	41	15.1
No	230	84.9
GPA		
More than 3.75	192	70.8
Less than 3.75	79	29.2
Family History of IBS		
Yes	97	35.8
No	174	64.2
Specialty		
Medicine	81	29.9
Pharmacy	52	19.9
Dentistry	48	17.7
Nursing	35	12.9
Applied medical sciences	55	20.3
Year		
1st	17	6.3
2nd	35	12.9
3rd	29	10.7
4th	45	16.6
5th	43	15.9
6th (intern)	102	37.6

About 14.8% of the respondents had chronic health problems, (35.8%) have a positive family history of IBS, and (29.9%)

enrolled in the college of medicine. About 14.8% of the respondents had chronic health problems, (35.8%) have a positive family history of IBS, and (29.9%) enrolled in the college of medicine.

We found that the prevalence of IBS was 20.5% among medical field students; 28.4% of medical, 11.5% of pharmacy, 27.1% of dentistry, 31.4% of nursing, 5.5% of applied medical sciences students. In addition, (42.5%) of students with chronic diseases, 29.9% of students with a family history of IBS, (33.3%) of smokers students, and (16.1%) of students who sleep more than eight hours have been diagnosed with IBS. Around (31.4%) of nursing students, (28.4%) of students who are enrolled in the college of medicine and (17.6%) of interns have been diagnosed with IBS. Table 2 shows the association of the prevalence of IBS with the socio-demographic characteristics.

Table 2: Comparison of IBS prevalence with respect to socio-demographic characteristics among medical sciences students in Qassim, Saudi Arabia (n=271)

Variable	IBS (no)	IBS (yes)	p-value
	n (%)	n (%)	
Age			
Up to 22 years old	87 (82.9)	18 (17.1)	0.255
Older than 22 years old	128 (77.1)	38 (22.9)	
Gender			
Male	67 (75.3)	22 (24.7)	0.249
Female	148 (81.3)	34 (18.7)	
Marital Status			
Single	198 (79.2)	52 (20.8)	0.849
Married	17 (81)	4 (19)	
Parents status			
Living together	177 (80.8)	42 (19.2)	0.215
Not living together	38 (73.1)	14 (26.9)	
Chronic health problems			
Yes	23 (57.5)	17 (42.5)	<0.001
No	192 (83.1)	39 (16.9)	
Sleep hours			
More than 8 hours	115 (83.9)	22 (16.1)	0.058
Less than 8 hours	100 (74.6)	34 (25.4)	
Smoking			
Smokers	24 (66.7)	12 (33.3)	0.044
Non smokers	191 (81.3)	44 (18.7)	
Exercise			
Yes	65 (84.4)	12 (15.6)	0.193
No	150 (77.3)	44 (22.7)	

Variable	IBS (no)	IBS (yes)	p-value
	n (%)	n (%)	
Food allergies			
Yes	26 (63.4)	15 (36.6)	0.006
No	189 (82.2)	41 (17.8)	
GPA			
More than 3.75	153 (79.7)	39 (20.3)	0.824
Less than 3.75	62 (78.5)	17 (21.5)	
Family History of IBS			
Yes	68 (70.1)	29 (29.9)	0.005
No	147 (84.5)	27 (15.5)	
Specialty			
Medicine	58 (71.6)	23 (28.4)	
Pharmacy	46 (88.5)	6 (11.5)	
Dentistry	35 (72.9)	13 (27.1)	
Nursing	24 (68.6)	11 (31.4)	0.002
Applied medical sciences	52 (94.5)	3 (5.5)	
Year			
1st	13 (76.5)	4 (23.5)	
2nd	27 (77.1)	8 (22.9)	
3rd	25 (86.2)	4 (13.8)	
4th	35 (77.8)	10 (22.2)	
5th	31 (72.1)	12 (27.9)	0.695
6th (intern)	84 (82.4)	18 (17.6)	

Table 3: Factors associated with IBS among medical sciences students in Qassim, Saudi Arabia (n=271)

Characteristic	Univariate		Multivariate	
	Crude OR (95% CI)	p-value	Adjusted OR (95% CI)	p-value
Gender				
Male	1	0.250	1	0.163
Female	0.70 (0.38 - 1.29)		0.60 (0.29 – 1.22)	
Age				
Up to 22 years	1	0.256		-
Older than 22 years	1.43 (0.76 – 2.67)		-	
Marital Status				
Single	1	0.849		-
Married	0.89 (0.28 – 2.77)		-	
Parents status				
Living together	1	0.217	1	0.374
Not living together	1.55 (0.77 – 3.12)		1.46 (0.63 – 3.40)	

Characteristic	Univariate		Multivariate	
	Crude OR (95% CI)	p-value	Adjusted OR (95% CI)	p-value
Chronic health problems				
No	1	<0.001	1	<0.001
Yes	3.64 (1.78 – 7.44)		3.53 (1.44 – 8.63)	
Sleep hours				
More than 8 hours	1	0.060	1	0.083
Less than 8 hours	1.77 (0.97 – 3.23)		1.82 (0.92 – 3.60)	
Smoking				
Non-smokers	1	0.048	1	0.059
Smokers	2.17 (1.00 – 4.67)		2.47 (0.96 – 6.34)	
Exercise				
Yes	1	0.196		-
No	0.62 (0.31 – 1.26)		-	
Food allergies				
No	1	0.008	1	0.137
Yes	2.65 (1.29 – 5.46)		1.97 (0.80 – 4.83)	
GPA				
More than 3.75	1	0.824		-
Less than 3.75	0.93 (0.48 – 1.76)		-	
Family History of IBS				
No	1	0.006	1	0.030
Yes	2.32 (1.27 – 4.22)		2.13 (1.07 – 4.24)	
Specialty				
Applied medical sciences	1		1	
Medicine	6.87 (1.95 – 24.23)	0.003	8.20 (1.91 – 35.18)	0.005
Pharmacy	2.26 (0.53 – 9.55)	0.267	2.52 (0.47 – 13.47)	0.280
Dentistry	6.43 (1.70 – 24.25)	0.006	10.17 (2.26 – 45.84)	0.003
Nursing	7.94 (2.02 – 31.11)	0.003	11.63 (2.43 – 55.50)	0.002
Year				
6th (intern)	1		1	
1st	1.43 (0.41 – 4.91)	0.565	1.11 (0.26 – 4.79)	0.883
2nd	1.38 (0.54 – 3.53)	0.499	1.65 (0.50 – 5.45)	0.410
3rd	0.74 (0.23 – 2.41)	0.625	0.74 (0.19 – 2.83)	0.670
4th	1.33 (0.56 – 3.17)	0.516	0.84 (0.29 – 2.40)	0.752
5th	1.80 (0.78 – 4.17)	0.167	1.13 (0.39 – 3.24)	0.811

In the univariate analysis, we found that chronic health problems, food allergies, family history of IBS, smoking status, and specialty were significantly associated with IBS. In the multivariate analyses, chronic health problems adjusted odds ra-

tio (aOR) 3.53 (95% CI: 1.44 – 8.63) and family history of IBS aOR 2.13 (95% CI: 1.07 – 4.24) were significant predictors of IBS. The specialty was found to be significantly associated with the risk of IBS; nursing aOR 11.63 (95% CI: 2.43 – 55.50), dentistry aOR 10.17 (95% CI: 2.26 – 45.84), and medicine aOR 8.20 (95% CI: 1.91 – 35.18).

DISCUSSION

This study is one of the few studies from KSA to assess the burden of IBS and its association with medical sciences specialties. We found that 20.5% of students had IBS. This is more than the reported prevalence of IBS among medical students in the Qassim region, which was 13.7% [11]. Our estimate is also higher than reports from other regions of Saudi Arabia, 15.5% to 18%[9, 12]. Prevalence among medical students in our study 28.4% is comparable to a study from Jeddah 31.8%[10] and a national level study which showed prevalence among medical students to be 31.9%[15]. Our results are also comparable to estimates from Pakistan, where about 26% - 28% of the medical students were found to have IBS while higher than Iran 12.6%[7, 8, 16]. These variations in the studies could be explained partially by the differences in tools used for the assessment of IBS. Other reasons for the higher prevalence in our study could be the inclusion of different specialties other than medicine.

Although the literature suggests that females are at higher risk of IBS than males[17]. A study of IBS among medical students in Beijing, China, showed that female students were twice more likely to suffer from IBS than males18. Some studies from Saudi Arabia have also demonstrated a significant association of female gender with a higher risk of IBS[10, 15]. Contrary to this, 24.7% of male students and 18.7% of female students had IBS in our study. This difference, however, was not significant. This finding is similar to other studies on medical students and school teachers in Qassim region[4, 11]. Although Saudi females have started to be involved in all work fields, males still have more financial responsibility, which makes them more susceptible to stress. This variation in the association of gender with IBS could also be explained in terms of socio-economic and cultural differences in different regions of Saudi Arabia. Although many studies support that exercise[11] and GPA[5] are significantly associated with IBS, in our study, we found that there is no significant association of exercise and GPA with IBS.

In this study, 36.6% of students with food allergies have IBS, while 17.8% of students without food allergies have IBS. However, in the multivariate analysis, food allergy

was not significantly associated with IBS. This finding is consistent with a study from Jeddah[10].

Although some studies showed no relation between sleep hours and prevalence of IBS, in this study, 25.4% of students who sleep < 8 hours are diagnosed with IBS, while only 16.1% of students who sleep > 8 hours are diagnosed with IBS. This, however, was not significant in the multivariate analysis. Other studies have reported an inconsistent relationship between sleep hours and IBS[10, 15]. Since genetic factors may play a role in the pathophysiology of IBS, many studies showed that having a positive family history of IBS increases the risk of developing the disease[15, 19]. We also found a significant association of family history of IBS with IBS.

Having chronic health problems was found to be significantly associated with IBS in our study. This is similar to a study of the prevalence of IBS among medical students conducted in the Qassim region, Saudi Arabia[11]. On the other hand, studies conducted among medical students and nurses in Jeddah, Saudi Arabia, showed that chronic health problems are not significantly associated with IBS[10].

As expected, students who have their parents divorced or dead (either one or both) have a higher prevalence of IBS (26.9%) compared to students whose parents live together. However, this difference was not significant. A finding contrasting other studies from Saudi Arabia where those living away from parents and family were at higher risk of IBS[10, 15]. We did not find a significant association between smoking and IBS, a finding similar to other study on medical students in Jeddah[10].

In this study, we found a significant association of specialty with the risk of IBS. Compared to applied health sciences, those in nursing, dentistry, and medicine were at higher risks of IBS. A study among undergraduate students in Saudi Arabia also showed that those in the medical field are about seven times higher risk of IBS than non-medical[15]. Stress is a very well-known risk factor of IBS[10, 19]. Those in the medical and nursing field may be exposed to higher stress and anxiety levels because of their curriculum and requirements[16]. This is an important finding with implications for policymakers and institutions to establish students help desks and provide counseling services to address anxiety and stress that may affect them.

Strengths and Limitation:

This study is one of few attempts to measure the burden of IBS among medical field students and assess the association of IBS with the specialty. We used a validated tool for the assessment of IBS. However, certain methodological limitations need to be

considered while interpreting the results of this study. Firstly, data were collected online due to which response rate cannot be ascertained as it was not possible to assure how many students received the questionnaire link. Secondly, the proportion of nursing students was disproportionately low compare to others. We powered our sample for the prevalence only. The sample may not be powered enough for some of the associations observed in this study.

CONCLUSION:

The prevalence of IBS in medical field students was found to be high. Students in nursing, medicine, and dentistry are at higher risk of having IBS. This calls the academic staff and decision-makers to address this problem by developing strategies to detect, treat, and prevent IBS. Regular screening based on the risk factors of the students of the medical sciences may help detect disorder early and help them maintain functionality.

Given the diversity of medical sciences fields, their curriculum, and institutions, we also recommend large-scale studies to validate the finding of our study. Such studies should utilize a uniform methodology and tool across disciplines and institutions to obtain comparable decision-making results.

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