Original Article :

Prevalence of Irritable Bowel Syndrome (IBS) Among Students of Majmmah University, Saudi Arabia: Comparison Between Medical and Non-Medical Students.

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Abstract

Background and Aims:
Irritable Bowel Syndrome (IBS) is a functional gastrointestinal disorder that manifests as a chronic episode of abdominal pain accompanied by altered bowel habits. It is one of the most frequent illnesses of GIT. Medical students are more susceptible to IBS. The objectives of this study were to determine the prevalence of IBS among medical and non-medical students at Majmaah University, Saudi Arabia, to assess the association between IBS and lifestyle, and to determine the effect of IBS on the academic performance of the students.

Methods:
A cross-sectional study to study the prevalence of IBS was conducted. Two hundred and seventy-nine students from two medical colleges and two non-medical colleges were enrolled in the study. Data were obtained through an online questionnaire. Rome IV criteria and perceived stress scale were applied to diagnose IBS, stress, and anxiety.

Results:
The prevalence of IBS was found to be 17.2%. The prevalence of IBS among medical and nonmedical students was 34.4% and 13% respectively. Time to reach the university, Cumulative Grade Point Average (CGPA), physical exercise, stress, and anxiety were found to be significantly associated with IBS.

Conclusions:
Irritable Bowel Syndrome is more prevalent among students of Majmaah University. IBS is more prevalent among medical students and students in the College of Medicine have the highest prevalence of IBS. IBS is associated with the time to reach the university, gender, CGPA, exercise, stress, and anxiety.

Keywords:
Irritable bowel Syndrome, Medical students, Stress.

Introduction

Irritable Bowel Syndrome is "a chronic functional gastrointestinal disorder characterized by recurrent episodes of abdominal pain, discomfort, and altered bowel habits"[1]. Biological, psychological, and social factors contribute to IBS. Aside from that, there are no structural or biochemical abnormalities associated with the disease. Rome IV criteria are used to define the syndrome.

IBS is one of the most frequent chronic illnesses of the digestive tract. IBS prevalence varies widely over the world, ranging from 3.3% to 31.6% [2]. A community-based study to determine the prevalence of IBS in Saudi Arabia was found to be 22.9% [3]. Women are more likely to get the disease than men [4], and individuals under the age of 50 are more likely to be diagnosed with the disease[5]. IBS places a significant financial and social burden on individuals, families, communities, and healthcare systems. IBS can lower a patient's productivity, prohibiting them from engaging in activities such as sports, family duties, and even having sexual relations [6]

Studies showed that the risk factors of irritable bowel syndrome are female gender, severe infection, character genetic components, and diet of excessive fats and sugars [7, 8]. Some research related IBS to the bodily state of being inactive, stress, and anxiety [9,10]. Smoking is slightly related to IBS[11]. Finally, poor sleep habits can also play a part in developing IBS [12].

Regarding IBS among university students, a study conducted in Saudi Arabia that applied Rome IV criteria found that the prevalence of IBS amongst undergraduate students is 15 %. In addition, this study determined that medical college students are three times more likely to meet the criteria for an IBS diagnosis in comparison with non-medical students [13]. Different studies were conducted on medical college students at several universities and showed various results, at King Abdulaziz University, King Faisal University, and Hail University, the prevalence was 31.8%, 44%, and 28.5% respectively [9,14,15].

The Objectives of this study were to determine the prevalence of irritable bowel syndrome among medical and non-medical students of Majmaah University, Saudi Arabia, to assess the association between IBS and lifestyle among medical and non-medical students, and to determine how IBS affects the academic performance of medical and non-medical students.

Methodology

The study was cross-sectional to compare the prevalence of irritable bowel syndrome among medical and non-medical

students in Majmaah University, Riyadh region of Saudi Arabia. The study population included all registered students at all levels, both male and female from four colleges, two medical (College of Medicine and College of Applied Medical Science) and two non-medical (College of Engineering, and College of Business and Administration). Simple random sampling was used to select the colleges. The study excluded external students and students who have Gastrointestinal Tract diseases (peptic ulcer, colorectal cancer, gastric cancer, inflammatory bowel disease, and diverticulitis), a history of previous abdominal surgery, or ongoing pregnancy in females.

The sample size was calculated as 204 using the formula:

$n = Z2pq/ d2$ where (p= the prevalence, Z=normal standard deviate 1.96, q=1-p, d= 0.05)

$n=1.96^2 * 0.158 * 0.842 / 0.05^2 = 204$

Data were collected by a pre-tested questionnaire after obtaining ethics approval from Majmaah University IRB. Informed consent was obtained from all participants. The data included items that applied Rome IV criteria to detect the prevalence of IBS. The questionnaire contained socio-demographic characteristics, physical activity, sleep habits, psychological disorders, anxiety, smoking, and academic performance. Data were analyzed by using a statistical package for social sciences (SPSS) version 24. The qualitative data was used to compare differences and a p-value of less than 0.05 was considered statistically significant.

Results

Figure 1 shows the prevalence of IBS among all participants. The prevalence of IBS was found to be 17.2% (n=48). Fig. 2 shows the distribution of IBS among students in medical and non-medical colleges. IBS was more prevalent among medical students (34.4%) compared to non-medical students (13%).

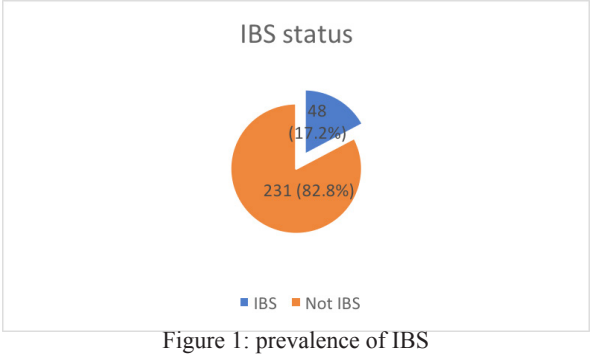


Figure 1: prevalence of IBS

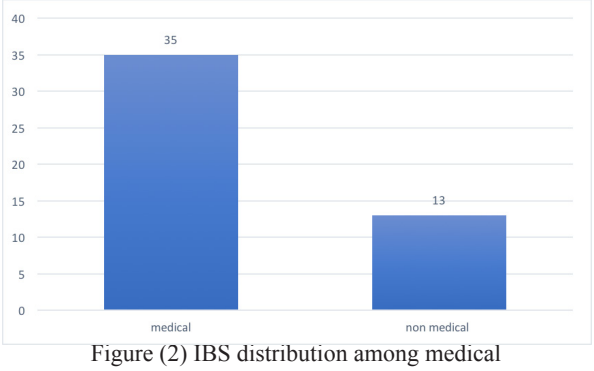


Figure (2) IBS distribution among medical and non-medical students

Table (1) shows the sociodemographic characteristics of the students based on

college type. Most of the medical and non-medical students are more than 20 years of age (73.9% and 71.4%). Most of the medical students are females (60.6%) while most of the non-medical students are males (67%). Unmarried students represent most of the medical and non-medical students constituting 95.7% and 97.8% respectively. One hundred and thirty-seven (72.9%) of the medical students live with their families, 21.2% live alone, 5.9% live with their friends; while 85.7% of the non-medical students live with their families, 9.9% live alone, and 4.4 % live with their friends. The family income of most of the medical and non-medical students is less than 1000 SRs (56.4% vs 61.5%). Most of the medical and non-medical students live in cities (83.5% vs 87.9%). Most of the medical and non-medical students take less than half an hour to reach the university from their residence (67.6% vs 72.5%) respectively. Regarding students' level, most of the sample was in the Fourth year constituting 30.9% and 26.5% for medical and non-medical students respectively.

Table (1) Sociodemographic characteristics of the students

characteristics	Medical students		Non-medical students		Total No. (%)
	No.	%	No.	%	
Age/years					
18-20	49		26	28.6%	
20 and more	139	26.1%	65	71.4%	75(26.8)
		73.9%			204(73.2)
Gender					
Male	74	39.4%	61	67%	135 (46.5)
Female	114	60.6%	30	33%	144(53.5)
Social status:					
Unmarred	180	95.7%	89	97.8%	269 (96.4)
Married	8	4.3%	2	2.2%	10(3.6)
Living:					
With family	137	72.9%	78	85.7%	215(77.1)
Alone	40	21.2%	9	9.9%	49(17.6)
With friends	11	5.9%	4	4.4%	15(5.3)
Family monthly income (SRs):					
Less than 1000	106	56.4%	56	61.5%	
Between 1000-2000	60	31.9%	22	24.2%	162(58.1)
More than 2000	22	11.7%	13	14.3%	82(29.4)
					35(12.5)
Residence:					
City	156		80	87.9%	
Village	32	83%	11	12.1%	236(84.6)
		17%			43(15.4)

characteristics	Medical students		Non-medical students		Total No. (%)
	No.	%	No.	%	
Time from residence to university:					
Less than half an hour	127	67.6%	66	72.5%	
Half an hour to an hour	38	20.2%	16	17.6%	193(69.2)
More than an hour	23	12.2%	9	9.9%	54(19.4)
					32(11.4)
College year					
First	06	3.2%	14		
Second	42	22.3%	12	15.4%	20 (7.2)
Third	32	17.0%	27	13.2%	54 (19.4)
Fourth	58	30.9%	16	29.7%	59 (21.1)
Fifth	19	10.1%	17	17.6%	74 (26.5)
Sixth	31	16.5%	5	18.6%	36(12.9)
				5.5%	36 (12.9)

Table (2) shows education variables and lifestyle characteristics of the students based on college type. Eighty-seven (46.3%) and (57.1%) of medical and non-medical students have a healthy lifestyle respectively (p=0.214). Six (3.2%), 31.9%,37.2%, and 27.7% of the medical students have Cumulative Grade Point Average (CGPA) as less than 3, 3-3.9, 4-4.4, and more than 4.4 respectively. However, 13.2%, 35.1%, 23.1%, and 28.6% of the non-medical students have CGPA as less than 3, 3-3.9, 4-4.4, and more than 4.4 respectively (P=0.037).

Table (2) Education variables and adjusted lifestyle

Characteristics	Medical students		Non-medical students		P
	No	%	No	%	
Lifestyle:					0.214
Healthy lifestyle	87	46.3%	52	57.1%	
Unhealthy lifestyle	101	53.7%	39	42.9%	
Total	188	100%	91	100%	
CGPA:					0.037
	06	3.2%	12	13.2%	
Less than 3	60	31.9%	32	35.1%	
3-3.9	70	37.2%	21	23.1%	
4-4.4	52	27.7%	26	28.6%	
4.5 and more	188	100%	91	100%	
Total					

Lifestyle findings are shown in Table (3). Most of the medical and non-medical students sleep for 4-6 hours constituting 57.4% and 45% respectively (p=0.917). Most of the medical and non-medical students eat fast food 1-7 times per week con-

stituting 77.1% and 79.1% respectively, (p=0.620). Most of the medical students (68.1%) exercise for less than 50 minutes/ week while most of the non-medical students (54.9%) exercise for the same duration (p=0.046). Results show that most of the medical and non-medical students were non-smokers (83% vs 80.2%), p=0,803).

Table (3) Lifestyle characteristics of the students

characteristics	Medical students		Non-medical students		P
	no	%	no	%	
Sleep hours daily average					
Less than 4 hours	14	7.4 %	3	3.3%	
4-6	108	57.4%	41	45%	0.917
7-9	58	30.9%	37	40.7%	
More than 9 hours	8	4.3%	10	11.0%	
Total	188	100%	91	100%	
Weekly Number of fast-food meals:					
not at all	21	11.2%	8	8.8%	
1-7 times	145	77.1%	72	79.1%	0.620
8-16 times	19	10.1%	7	7.7%	
More than 16	3	1.6%	4	4.4%	
Total	188	100%	91	100%	
Average time spent doing exercise/Week					
Less than 50 min	128	68.1%	50	54.9%	
50-99 min	27	14.4%	23	25.3%	0.046
100-150 min	15	8%	9	9.9%	
More than 150	18	9.5%	9	9.9%	
Total	188	100%	91	100%	
Smoking habits					
Smokers	32	17%	18	19.8%	0.803
Non-smokers	156	83%	73	80.2%	
Total	188	100%	91	100%	

Table (4) shows the stress and anxiety status of the study population. The results show that there is a variation in both stress and anxiety prevalence between medical and non-medical students. High perceived stress is more prevalent among medical students (22.9%) while only 11% of non-medical students have high levels of stress (p=.014). The results show that 25.5% of medical and 14.3% of non-medical students have anxiety (P=0.003).

Discussion

This study was conducted to compare the prevalence of IBS among medical and non-medical students at Majmaah University, Saudi Arabia. The results show that out of 279, 48 (17.2%) students are diagnosed with IBS. This finding is higher than that reported in China (15.7%) and lower than the finding of 29.28% reported in Jouf

Table (4) Stress and anxiety status of the students

	Medical students		Non-medical students		P
	No.	%	No.	%	
Perceived stress					
Low stress	37.0	19.7	19	20.9	
Moderate stress	108.0	57.4	62	68.1	0.014
High stress	43.0	22.9	10	11.0	
Total	188	100%	91	100%	
Anxiety					
Normal	89	47.3	55	60.4	
Borderline	51	27.1	23	25.3	0.003
Anxiety	48	25.5	13	14.3	
Total	188	100%	91	100%	

University, KSA [16,17].

IBS was more common among medical students compared to non-medical students (34.4 % v 13.0 %). Ahmed et al Conducted a cross-sectional study about the prevalence of irritable bowel syndrome among medical students at Imam Mohammad ibn Saud Islamic University and found a prevalence of IBS at 12.6% [18]. Another study of irritable bowel syndrome among medical students and interns at King Faisal University, Saudi Arabia showed a high prevalence of IBS (44.5%) [14]. This variation may be related to the difference in education systems in these universities. A previous study conducted by Aldawsari, et al about the prevalence of irritable bowel syndrome among male medical students at Majmaah University showed that 9.6% of the students had the disease[19]. Worthy mentioning that more than half (52.1% n=25) of participants who met Rome IV criteria for IBS were undiagnosed. This fact reflects that IBS might be overlooked and reflects the necessity for further efforts to screen for the syndrome and educate the general population about it.

We found, in our study, a significant association between IBS and gender where females have a higher chance of getting IBS. The prevalence of IBS among females was 20.8% while only 13.3% of males had IBS. These findings are in line with other research [20,21]. Our study found no relation between income and IBS. Similar findings were reported by Canavan C et al [21]. There is no association between age and IBS. This finding is consistent with what has been reported by Backers AB, et al [22]. The study didn't find a significant relationship between IBS and marital status, gender, and residence [23].

In our study, we came across multiple associations between certain lifestyle characteristics and IBS. Regarding physical exercise, 21.3% of the students who

are doing physical exercise less than 50 min/week were found to have IBS while only 4.2% of those with average exercising 100-150 min/ week have met Rome IV criteria for IBS (p=.046). This finding is in line with another study [24].

Sleeping patterns differences were found to result in changes in IBS frequencies among participants, where students who sleep less than 4 hours/day had an IBS prevalence of 17.6%, and those who sleep more than 9 hours/day had only 11.1%, this finding is consistent with another study [25]. Our study found that IBS is insignificantly associated with smoking, and this is supported by the findings of another study [26]. However, different findings were reported by Basandra S, et al [27]. Stress is higher among medical students compared to non-medical students, 22.9% of medical students have a high level of stress compared to 11% for non-medical students (p=0.014). This finding is consistent with other studies [28], however, Mirza AA et al found no significant difference between the two groups [29].

Anxiety is higher among medical compared to non-medical students, 25.5% of the medical students have anxiety compared to 14.3% for the non-medical students (p=0.003). This finding is in line with multiple studies however it contradicts other studies that found that non-medical students showed a higher level of anxiety compared to medical students and this may be attributed to the stress and workload variations among different institutions and some extent the confounding risk factors[29,.30]. Our findings are consistent with a study that found a high prevalence of IBS at King Saud University especially among female students [31].

Conclusion

Irritable Bowel Syndrome is more prevalent among students of Majmaah University. IBS is more prevalent among medical students, and students in the College of Medicine have the highest prevalence. The disease is associated with the time to reach the university, gender, and academic performance expressed as CGPA, lack of exercise, stress, and anxiety. The study recommends that irritable bowel syndrome is requested to be considered in the intake of the students to the university especially those who are to join the College of Medicine. Special programs to help students improve their lifestyle are suggested.

Limitations of the study

The study was conducted at Majmaah University so can't be generalized to the students in the whole kingdom of Saudi Arabia.

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31. Prevalence of Irritable Bowel Syndrome and its Association with Anxiety among Medical Students at King Saud bin Abdulaziz University for Health Sciences in Riyadh Meshal Khaled Alaqeel 1, Nasser Abdullah Alowaimer 2, Anas Fahad Alonezan 3, Nawaf Yousef Almegbel 4, Fahad Yousef Alaujan 5