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A Cross-Sectional Study to Assess the Prevalence and Risk Factors of Irritable Bowel Syndrome IBS among Medical Students at the University of Hail, Saudi Arabia

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ABSTRACT

Objectives: *Irritable Bowel Syndrome (IBS) is a common chronic function Gastrointestinal (GI) disorder presenting with abdominal pain, bloating, and change in bowel habits. This study aims to assess the prevalence of irritable bowel syndrome in medical students at Hail's University, Saudi Arabia.* ***Methods:*** *A cross-sectional study on the prevalence of irritable bowel syndrome was distributed among medical students at Hail University in Hail, Saudi Arabia from November to February 2022 involving 308 medical student participants.* ***Results:*** *In 21.5% of the participants have been diagnosed with IBS and 23.9% fit Rome IV criteria for the diagnosis of IBS. Stress with a percentage of 63.9% and lack of exercise at 63.6% are the highest risk factors for IBS.* ***Conclusion:*** *Our result showed there are a small number of medical students are suffering from inflammatory bowel syndrome.*

Keywords: Irritable bowel syndrome, Medical students, Risk factors, Rome IV criteria

INTRODUCTION

Irritable Bowel Syndrome (IBS) is a common chronic function Gastrointestinal (GI) disorder that affected women more than men 1.5-2:1 at age 20 to 39 [1]. It is characterized by recurrent, chronic abdominal pain due to changes in bowel habit frequency or stool consistency [2]. The alteration of bowel habits in the absence of specified organic substances [3]. The main pathophysiology of its development is not fully understood until now. There is a combination of genetic predisposition, bowel microbial alternation, altered gut-brain interactions, mucosal inflammation, visceral hypersensitivity, and psychosocial aspects that may have also contributed to IBS development [2,4,5]. The lack of objective diagnostic features to identify IBS has restricted its diagnosis to the use of individual medical history. At present, an IBS diagnosis depends on using the Rome IV criteria [6]. The Rome IV criteria are as follows: repeated abdominal pain on average at least 1 day per week during the previous 3 months associated with 2 or more of the following factors: pain related to defecation, change in stool frequency, and appearance. In 2016, the Rome III criteria were updated to Rome IV [7]. In addition, abdominal pain is usually not relieved by defecation; it may remain the same or even increase post-defecation [8]. Multiple risk factors have been strongly associated with IBS progress [9]. Cigarette smoking and alcohol are associated with IBS, but no significant association [10]. All types of stress, whether

physical, psychosocial, or psychological stresses are strongly associated with IBS and can affect IBS symptoms [11]. An example of psychological stress anxiety is a risk for recurrent IBS symptoms [12]. Chronic stress also raises the severity of symptoms and leads to a delay in the improvement state in patients with IBS [13]. Dietary factors are the eating habits of the individual and cultures [14]. Understanding the impact of these parameters will improve awareness and provide an effective way to protect against IBS. Prevention is better than treatment. It is evident from the prospective causes of IBS, which this study will explore in detail which these factors. This study is significant as it will aid the researchers to recognize the behaviors and habits that are likely to cause IBS and how they can improve upon them to diminish the risk of this disease [3]. The data collection will be achieved with due consent, and all precautions will be taken to ensure that there is no mental or physical harassment of any person [15].

Therefore, this study aimed to determine the prevalence of IBS and its associated risk factors among medical students at the University of Hail, Saudi Arabia, using the recent Rome IV diagnostic criteria for IBS.

MATERIALS AND METHODS

A cross-sectional study among medical college students at Hail University College of Medicine, Saudi Arabia was conducted using an electronic questionnaire, which had been distributed through multiple social media apps to Assess the Prevalence and Risk Factors of Irritable Bowel Syndrome IBS among Medical Students at the University of Hail. The data collected was between November and February 2022. The questionnaire has been distributed in Arabic and was taken and validated from the previous study in Riyadh City (Al-Imam Mohammad Ibn Saud Islamic University Riyadh, Saudi Arabia 2020). The questionnaire consisted of three sections. In the first section Sociodemographic data were obtained which included sex, age, educational level, occupation, body mass index, and marital status of the medical students. The second section involved questions concerning IBS clinical data, management, knowledge, and awareness about symptoms, diagnosis, and treatment of IBS. The third section involved questions regarding Personal habits and stress risk factors and the etiology of IBS among medical students by their socio-demographic data of IBS. The consent of participants was obtained at the beginning of the questionnaire. Data were analyzed using IBM Statistical Package for the Social Science version 23 statistical software used to carry out the analysis throughout this study. Logistic regression analysis is the preferred method since the variable of interest is a binary outcome, i.e., whether the student has Inflammatory Bowel Syndrome (IBS) or not. A p-value less than 0.05 was considered statistically significant.

RESULTS

A total of 308 participants completed the questionnaire (Figure 1). Table 1 details the socio-demographic characteristics of the study group. Men comprised 56.5% of the study group, and approximately 54% is between 22 and 25. Most of the study participants are in their clinical years (59%). The majority of the participants were single (97%), living in their family home (73%). About 43% of participants reported a family history of IBS, while 11% of the total sample that they were previously diagnosed by physicians as having IBS.

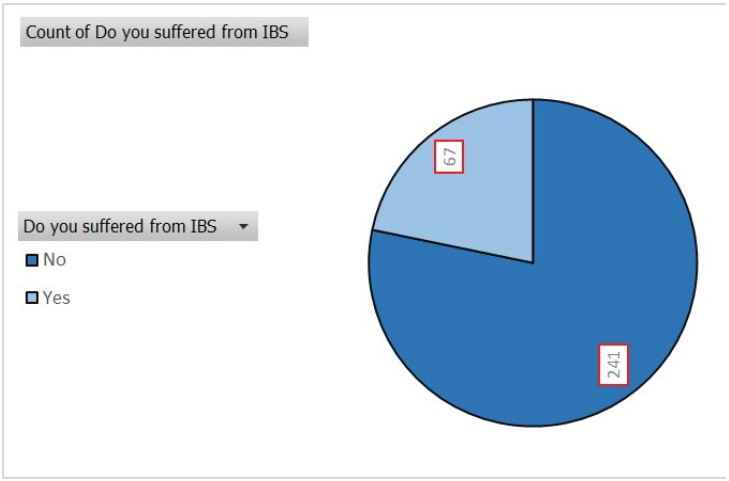

Figure 1 Count of do you suffered from IBS

Table 1 Distribution of IBS among medical students by their socio-demographic data

Socio-demographic data		Suffered from IBS					
		Total		Yes		No	
		No	%	No	%	No	%
Academic phase	Pre-clinical	120	39.00%	28	23.30%	92	76.70%
	Clinical	181	58.80%	35	19.30%	146	80.70%
	Intern	7	2.30%	4	57.10%	3	42.90%
Age in years	18-21	129	41.90%	26	20.20%	103	79.80%
	22-25	165	53.60%	38	23.00%	127	77.00%
	>25	14	4.50%	3	21.40%	11	78.60%
Gender	Male	174	56.50%	30	17.20%	144	82.80%
	Female	134	43.50%	37	27.60%	97	72.40%
Body mass index	Underweight	46	14.90%	10	21.70%	36	78.30%
	Normal	151	49.00%	30	19.90%	121	80.10%
	Overweight	76	24.70%	16	21.10%	60	78.90%
	Obese	35	11.40%	11	31.40%	24	68.60%
Marital status	Unmarried	299	97.10%	64	21.40%	235	78.60%
	Married	9	2.90%	3	33.30%	6	66.70%
Monthly income	<5000 SR	24	7.80%	6	25.00%	18	75.00%
	5000-10000 SR	49	15.90%	13	26.50%	36	73.50%
	10000-15000 SR	66	21.40%	7	10.60%	59	89.40%
	15000-20000 SR	71	23.10%	18	25.40%	53	74.60%
	>20000 SR	98	31.80%	23	23.50%	75	76.50%
Family history of IBS	Yes	133	43.10%	13	9.80%	120	90.20%
	No	175	56.90%	64	36.60%	111	63.40%
Type of own car	Don’t have a car	10	3.20%	5	50.00%	5	50.00%
	Small car	86	27.90%	18	20.90%	68	79.10%
	Intermediate care	192	62.30%	36	18.75%	156	81.25%
	Big car	20	6.50%	8	40.00%	12	60.00%
Who drive the car	Taxi	11	3.60%	5	45.50%	6	54.50%
	My self	205	66.60%	33	16.10%	172	83.90%
	Family member/friend	45	14.60%	17	37.80%	28	62.20%
	Private driver	47	15.30%	12	25.50%	35	74.50%
Living with whom?	With my family	225	73.10%	45	20%	180	80.00%
	At students housing	6	1.90%	1	16.70%	5	83.30%
	Alone	56	18.20%	15	26.80%	41	73.20%
	With friends	21	6.80%	6	28.60%	15	71.40%

The prevalence of IBS based on Rome IV criteria in the study was 22% (Table 2). IBS was more prevalent in females than males (28% and 17%). Among IBS subtypes, mixed (16%) and constipation-predominant (24%) subtypes were dominant. Only 31 (41%) of the total 76 cases were previously diagnosed by a physician.

Table 2 IBS clinical data and management among medical students at the University of Hail, Saudi Arabia (n=67)

Clinical data	No	%
The onset of having IBS		
Before university	22	34.40%
During university	42	65.60%
Who diagnosed IBS		
Physician	31	47.00%
My self	26	39.40%
Family	9	13.60%
Consulted a doctor specialized in IBS?		
Yes	28	41.80%
No	39	58.20%
Received treatment for IBS		
Yes	32	50%
No	32	50%
Duration of having treatment		
No treatment	35	53.00%
<3 months	15	22.70%
3-6 months	6	9.10%
>6 months	10	15.20%
How often have you felt discomfort or pain anywhere in your abdomen?		
Never	3	4.50%
Sometimes	29	43.30%
Most times	27	40.30%
All times	8	11.90%
Have you had this discomfort or pain for 6 months or longer?		
Yes	51	76.10%
No	16	23.90%
This pain is accompanied by		
No pain/Nothing accompanies it	13	19.40%
More desire for defecation	41	61.20%
Less desire for defecation	7	10.40%
Uncontrolled defecation	6	9.00%
After defecation, does this pain or discomfort improve or stop?		
Becomes better	44	65.70%
No change/No pain	19	28.30%
More worse	4	6.00%
For women. Does this pain increases during the menstrual cycle?		
Yes	11	28.90%
No	27	71.10%
In the past three months, have you had?		
Mixed (D&C)	11	16.40%
Diarrhea	14	20.90%

Constipation	16	23.90%
Urgency for defecation	18	15.70%
Sense of incomplete evacuation	45	39.10%

Regarding Table 3 Personal habits and stress risk factors, about (12%) of participants were smokers, and (36%) practiced physical exercise. This portrays the relationship between IBS and the psychological aspect of participants; 64% of medical students and interns who experienced emotional stress in the 6-months that preceded the study had IBS. After analysis, the table also revealed the prevalence of IBS among participants who had an anxiety problem (prevalence of IBS was 25.3%, 24.0%, and 31.2% among students with severe anxiety, moderate anxiety, or slight).

Table 3 Personal habits and stress risk factors and etiology of IBS among medical students by their socio-demographic data

Personal habits and stress factors	Suffered from IBS				p-value
	Yes		No		
	No	%	No	%	
Sleep duration/day					
<3 hours	9	50.00%	9	50.00%	0
3-8 hours	43	18.90%	184	81.10%	
>8 hours	15	23.80%	48	76.20%	
Smoking duration					
Non-smoker	54	19.90%	217	80.10%	0.000
<3 years	3	21.40%	11	78.60%	
3-6 years	4	36.40%	7	63.60%	
6-9 years	3	50.00%	3	50.00%	
>9 years	3	50.00%	3	50.00%	
Do you have bouts of anxiety, stress, or depression?					
Yes	57	28.90%	140	71.10%	0.000
No	10	9.00%	101	91.00%	
If yes, the degree of stress/anxiety					
Slight	14	24.10%	44	75.90%	0.000
Normal	7	18.40%	31	81.60%	
Moderate	22	29.70%	52	70.30%	
Severe	18	39.10%	28	60.90%	
How many hours do you exercise/per day?					
Not practice exercise	43	21.90%	153	78.10%	0.000
< 1 hour	3	42.90%	4	57.10%	
1-2 hours	17	18.30%	76	81.70%	
> 2 hours	4	33.30%	8	66.70%	
How many cups of coffee do you drink/day?					
Never / irregular	14	17.90%	64	82.10%	0.000*
1-3 cups	37	18.60%	162	81.40%	
3-5 cups	12	54.50%	10	45.50%	
> 5 cups	4	44.40%	5	55.60%	
Your preferred food					

Proteins	31	22.30%	108	77.70%	0.000*
Carbohydrates	30	21.70%	108	78.30%	
Fruits and vegetables	2	4.00%	24	96.00%	
All foods	4	80.00%	1	20.00%	
*p<0.05 (significant)					

DISCUSSION

The global prevalence of IBS is approximately 11.2% in the general population, which varies regionally [9]. Our study results in a prevalence of 21.5% of IBS among the medical students and interns of Hail University in Hail city, KSA, and 23.9% fit Rome IV criteria for the diagnosis of IBS which is higher than a similar study was done in 2018 in our collage of medicine which reported a prevalence of 18% of medical students are having IBS [16]. In Saudi Arabia 16.3% of medical doctors have IBS and in Jazan Region, Saudi Arabia IBS prevalence was 16% [17,18]. However, our study result is lower compared with a study in Japan 25.2% of the male nursing and medical school students have IBS, and in Nigeria, 26.1% of the medical students are also having IBS [19,20]. In Al-Imam Mohammad Ibn Saud Islamic University Riyadh, Saudi Arabia the prevalence was 35% among medical students who have IBS [21]. In Najran City, Saudi Arabia 39.8% of male secondary school students expressed symptoms suggestive of IBS [22]. The disparity of our results with those of the cited published studies may be attributed to the variability of the study group, diagnostic criteria, age group, and learning environment. The difference in sample size may also be another reason for this difference in disparity. It turns out that IBS is increasing these days not only worldwide but also among medical students of Hail University in Hail city of Saudi Arabia. There was no significant difference in terms of the prevalence of IBS between male and female participants. This result would mean the gender is unrelated to IBS, which is mean everyone can get it. In this study, stress (63.9%) and lack of exercise (63.6%) are the highest risk factors for IBS. This study is confirming that medical students experience increased stress. In this study the habits (stress, sleep duration, lack of exercise, drinking coffee, and type of food show a highly significant association with IBS.

CONCLUSION

This study reveals a relatively low prevalence (22%) of IBS among medical college students at Hail University College of Medicine. IBS in females was more prevalent than in males (28% and 17%). A significant association was found between depression and anxiety and IBS and between having discomfort or pain and IBS. Those students with anxiety and depression and discomfort or pain for 6 months are more likely to have IBS. The students and smokers were more prone to develop IBS. A new finding suggests that when students have a family history, they also develop IBS. It is advisable to offer students psychological and emotional support to deal with stress and anxiety during their studies.

DECLARATIONS

Conflict of Interest

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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