



Original Article

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## ***Prevalence of Irritable Bowel Syndrome IBS and Its Risk Factors among Medical Students in Hail University***

**Fatmah Fahad Alreshidi<sup>1\*</sup>, Munira Abdulkarim Alsammari<sup>2</sup>, Arin Essa Almallahi<sup>2</sup>, Khulud Saud Alshammari<sup>2</sup>, Ebtahaj Saud Almughais<sup>1</sup>, Farida Habib Khan<sup>1</sup>, Sadaf Anwar<sup>3</sup>, Dalal Alayed<sup>4</sup>**

<sup>1</sup>Department of Family and Community Medicine, College of Medicine, University of Hail, Hail, Saudi Arabia.

<sup>2</sup>College of Medicine, University of Hail, Hail, Saudi Arabia.

<sup>3</sup>Department of Biochemistry, College of Medicine, University of Hail, Hail, Saudi Arabia.

<sup>4</sup>Department of Family and Community Medicine, College of Medicine and Medical Sciences, Qassim University, Buraydah, Saudi Arabia.

\*Email: [Dr.ffalreshidi@gmail.com](mailto:Dr.ffalreshidi@gmail.com)

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### **ABSTRACT**

*The irritable bowel syndrome (IBS) incidence and its related risk factors greatly vary among communities. Thus, the present study aimed to evaluate the occurrence of irritable bowel syndrome IBS and modifiable risk factors amongst medical students at the University of Hail, Saudi Arabia. The Methodology of the study involved a cross-sectional examination performed at Ha'il University, Ha'il, Saudi Arabia, during the period from November 2021 to February 2022. About 308 medical students were included in this study. About 21.5% of the participants were previously diagnosed with IBS and 23.9% of the contributors were found to fit Rome IV criteria for IBS diagnosis. Regarding modifiable risk factors, around 63.9% were detected with stress and 63.6% claimed lack of exercise. IBS prevalence amongst medical students at the University of Ha'il was among the relatively higher rates, locally and globally. Stress and physical inactivity were the most modifiable risk factors in this study population.*

**Key words:** Irritable bowel syndrome, Medical students, Risk factors, Rome IV criteria

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### **INTRODUCTION**

Irritable bowel syndrome (IBS) is a common chronic efficient gastrointestinal (GI) syndrome, which is more frequent among females. The common features of IBS comprise bloating, abdominal distension, abdominal pain, and different bowel movements with alteration of diarrhea and constipation [1, 2].

Many modifiable risk factors have been linked to the etiology of IBS involved a combined genetic predilection, bowel microbial alternation, changed gut-brain relations, mucosal inflammation, visceral hypersensitivity, and psychosocial aspects could have contributed to IBS progress [3, 4]. Stress and lack of physical activity were also reported as IBS risk factors [5, 6].

The prevalence rates of IBS are usually influenced by the diagnostic criteria employed. The diagnostic method is important for realizing the burden of disease, comparing worldwide subpopulations, creating pathophysiologic investigation, sharing health care and research resources, and highlighting new therapies. There are considerable procedural drawbacks in the epidemiology of IBS, so establishing local and international IBS prevalence rates is challenging. The Rome Foundation Global Epidemiology Study was intended to settle these difficulties and attain more acceptable outcomes [7]. IBS is usually diagnosed by Applying Rome IV or Rome III criteria. It was found

that applying the Rome IV criteria has more significant diagnostic acumens than the Rome III principles in the IBS diagnosis, though the clinical relevance is doubtful [8].

Variable prevalence rates of IBS were reported from different regions in Saudi Arabia [9, 10]. Therefore, the present study aimed to measure the irritable bowel syndrome IBS frequency and modifiable risk factors amongst medical students at the University of Hail, Saudi Arabia.

## MATERIALS AND METHODS

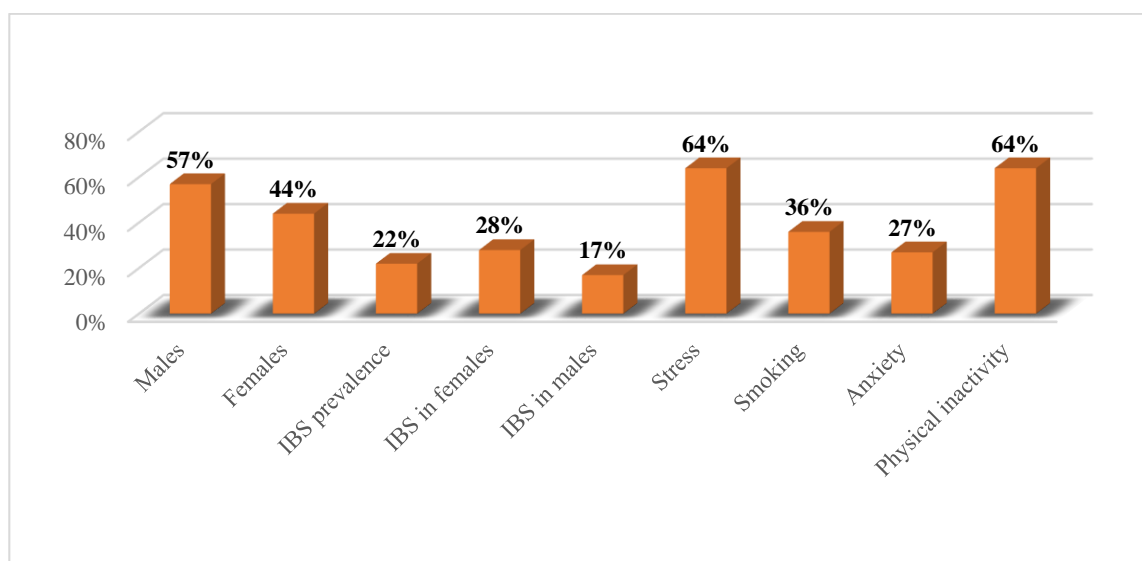
In this survey, a cross-sectional analysis was performed at Ha'il University, Ha'il, Saudi Arabia, during the period from November 2021 to February 2022. The study involved 308 medical students from the College of Medicine, University of Ha'il. Data were collected using an electronic questionnaire designed for this purpose. The questionnaire was distributed through multiple social media applications. The questionnaire was 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) [11]. The questionnaire consisted of three sections. In the first section, Sociodemographic data were obtained, including 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 & 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 evaluated with 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 < 0.05 was considered statistically important.

### Ethical consent

Each participant consented by introducing acceptance of participation before filling out the questionnaire. The research has been revised and ratified by the research ethics committee (REC), at the University of Ha'il, Saudi Arabia, No: H2021-209.

## RESULTS AND DISCUSSION

Three hundred and eight (308) participants complete the questionnaire. **Tables 1 and 2** are details of the research group sociodemographic features. Men encompassed 56.5% of the research group, and roughly (54%) which is between 22-25. Most of the study participants are in their clinical years (59%). The most 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 physicians previously diagnosed them as having IBS.



**Figure 1.** Description of participants by prevalence rates

**Table 1.** Distribution of the study population by demographical characteristics

		Total		Yes (IBS)		No (IBS)	
		No	%	No	%	No	%
Academic phase	Pre-clinical	120	39.0%	28	23.3%	92	76.7%
	Clinical	181	58.8%	35	19.3%	146	80.7%
	Intern	7	2.3%	4	57.1%	3	42.9%
Age in years	18-21	129	41.9%	26	20.2%	103	79.8%
	22-25	165	53.6%	38	23.0%	127	77.0%
	> 25	14	4.5%	3	21.4%	11	78.6%
Gender	Male	174	56.5%	30	17.2%	144	82.8%
	Female	134	43.5%	37	27.6%	97	72.4%
Body mass index	Underweight	46	14.9%	10	21.7%	36	78.3%
	Normal	151	49.0%	30	19.9%	121	80.1%
	Overweight	76	24.7%	16	21.1%	60	78.9%
	Obese	35	11.4%	11	31.4%	24	68.6%
Marital status	Unmarried	299	97.1%	64	21.4%	235	78.6%
	Married	9	2.9%	3	33.3%	6	66.7%
Living with whom?	With my family	225	73.1%	45	20%	180	80%
	At students housing	6	1.9%	1	16.7%	5	83.3%
	Alone	56	18.2%	15	26.8%	41	73.2%
	With friends	21	6.8%	6	28.6%	15	71.4%
	Family member/friend	45	14.6%	17	37.8%	28	62.2%

**Table 2.** Distribution of the study subjects by socioeconomic characteristics

Category	Variable	Total		Yes (IBS)		No (IBS)	
		No	%	No	%	No	%
Family history of IBS	Yes	133	43.1%	13	9.8%	120	90.2%
	No	175	56.9%	64	36.6%	111	63.4%
Type of own car	Don't have a car	10	3.2%	5	50.0%	5	50.0%
	Small car	86	27.9%	18	20.9%	68	79.1%
	Intermediate care	192	62.3%	36	18.75%	156	81.25%
	Big car	20	6.5%	8	40.0%	12	60.0%
Who drives the car	Taxi	11	3.6%	5	45.5%	6	54.5%
	My self	205	66.6%	33	16.1%	172	83.9%
	Private driver	47	15.3%	12	25.5%	35	74.5%
Monthly income	< 5000 SR	24	7.8%	6	25.0%	18	75.0%
	5000-10000 SR	49	15.9%	13	26.5%	36	73.5%
	10000-15000 SR	66	21.4%	7	10.6%	59	89.4%
	15000-20000 SR	71	23.1%	18	25.4%	53	74.6%
	> 20000 SR	98	31.8%	23	23.5%	75	76.5%

P: Pearson  $X^2$  test; \$: Exact probability test; \* P < 0.05 (significant)

The IBS predominance based on Rome IV measures in the research was 22% (**Table 3**). Predominantly IBS in females was more 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 3.** IBS clinical data and management among medical students at the University of Hail, Saudi Arabia (n=67).

<b>Clinical data</b>	<b>No</b>	<b>%</b>
The onset of having IBS		
<i>Before university</i>	22	34.4%
<i>During university</i>	42	65.6%
Who diagnosed IBS		
<i>Physician</i>	31	47.0%
<i>My self</i>	26	39.4%
<i>Family</i>	9	13.6%
Consulted a IBS specialist?		
<i>Yes</i>	28	41.8%
<i>No</i>	39	58.2 %
Received treatment for IBS		
<i>Yes</i>	32	50%
<i>No</i>	32	50%
Duration of having treatment		
<i>No treatment</i>	35	53.0%
<i>&lt; 3 months</i>	15	22.7%
<i>3-6 months</i>	6	9.1%
<i>&gt; 6 months</i>	10	15.2%
How often have you felt discomfort or pain anywhere in your abdomen?		
<i>Never</i>	3	4.5%
<i>Sometimes</i>	29	43.3%
<i>Most times</i>	27	40.3%
<i>All times</i>	8	11.9%
Does the discomfort or pain persist for 6 months or longer?		
<i>Yes</i>	51	76.1%
<i>No</i>	16	23.9%
This pain is accompanied by		
<i>No pain/ Nothing accompanies it</i>	13	19.4%
<i>More desire for defecation</i>	41	61.2%
<i>Less desire for defecation</i>	7	10.4%
<i>Uncontrolled defecation</i>	6	9.0%
Does pain or discomfort improve or stop after defecation?		
<i>Becomes better</i>	44	65.7%
<i>No change/ No pain</i>	19	28.3%
<i>Worse</i>	4	6.0%
Does this pain increases during the menstrual cycle?		
<i>Yes</i>	11	28.9%
<i>No</i>	27	71.1%
In the past three months, have you had?		
<i>Mixed (D&amp;C)</i>	11	16.4%
<i>Diarrhea</i>	14	20.9%
<i>Constipation</i>	16	23.9%
<i>Urgency for defecation</i>	18	15.7%
<i>Sense of incomplete evacuation</i>	45	39.1%

Regarding **Table 3** Personal habits & stress risk factors, about (12%) of participants were smokers, and (36%) practiced physical exercise. It depicts the connection concerning the psychological trait of participants and IBS; 64% of medical students and interns who experienced mental distress during the 6 months prior to the research 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 4.** Personal habits & stress risk factors and etiology of IBS among medical students by their socio-demographic data

Personal habits & stress factors	Suffered from IBS				p-value
	Yes		No		
	No	%	No	%	
<i>Sleep duration / day</i>					
< 3 hours	9	50.0%	9	50.0%	.000
3-8 hours	43	18.9%	184	81.1%	
> 8 hours	15	23.8%	48	76.2%	
<i>Smoking duration</i>					
Non-smoker	54	19.9%	217	80.1%	.000
< 3 years	3	21.4%	11	78.6%	
3-6 years	4	36.4%	7	63.6%	
6-9 years	3	50.0%	3	50.0%	
> 9 years	3	50.0%	3	50.0%	
<i>Do you have bouts of anxiety, stress, or depression?</i>					
Yes	57	28.9%	140	71.1%	.000
No	10	9.0%	101	91.0%	
<i>If yes, the degree of stress/anxiety</i>					
Slight	14	24.1%	44	75.9%	.000
Normal	7	18.4%	31	81.6%	
Moderate	22	29.7%	52	70.3%	
Severe	18	39.1%	28	70.9%	
<i>How many hours do you exercise a day?</i>					
Not practice exercise	43	21.9%	153	78.1%	.000
< 1 hour	3	42.9%	4	57.1%	
1-2 hours	17	18.3%	76	81.7%	
> 2 hours	4	33.3%	8	66.7%	
<i>How many cups of coffee do you drink per day?</i>					
Never / irregular	14	17.9%	64	82.1%	.000*
1-3 cups	37	18.6%	162	81.4%	
3-5 cups	12	54.5%	10	45.5%	
> 5 cups	4	44.4%	5	55.6%	
<i>You preferred food</i>					
Proteins	31	22.3%	108	77.7%	.000*
Carbohydrates	30	21.7%	108	78.3%	
Fruits & vegetables	2	4.0%	24	96.0%	
All foods	4	80.0%	1	20.0%	

P: Pearson  $\chi^2$  test; \$: Exact probability test; \* P < 0.05 (significant)

The worldwide incidence of IBS is roughly 11.2% in the overall population, which differs regionally [12]. Our study resulted in a prevalence of 21.5% of IBS among the medical students and interns of Hail University in Hail city, KSA. 23.9% fit Rome IV principles for the IBS diagnosis 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 [13]. In Saudi Arabia, 16.3% of medical doctors have IBS [14] and in Jazan Region, Saudi Arabia, IBS prevalence was 16% [15]. However, our study result is lesser than a study in Japan 25.2% of the male nursing and medical school students have IBS [16]. In Nigeria, 26.1% of medical students also have IBS [17]. In Al-Imam Mohammad Ibn Saud Islamic University Riyadh, Saudi Arabia, the prevalence was 35% among medical students who have IBS [11]. In Najran City, Saudi Arabia, 39.8% of male secondary school students exhibited IBS signs evocative [18]. The disparity of our results with those of the cited published studies may be attributed to the research group variability, 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 worldwide and among medical students at Hail University in Hail city of Saudi Arabia. There was no substantial alteration in terms of the occurrence of IBS between male and female participants. This result would mean the gender is unrelated to IBS, which means 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 confirms 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

IBS prevalence amongst medical students at the University of Ha'il was among the relatively higher rates, locally and globally. Stress and physical inactivity were the most modifiable risk factors in this study population.

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**ETHICS STATEMENT :** None

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