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The Impact of irritable bowel syndrome disease on social and academic life of medical students

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Abstract

Irritable bowel syndrome (IBS) is a chronic biopsychological Disorder that is characterized by altered bowel habits with abdominal discomfort or pain with the absence of organic pathology. It carries significant feedback on self-confidence and quality of life. Medical students are expected to develop irritable bowel syndrome because they are subjected to stress due to over academic pressure. This study designed to Investigate irritable bowel syndrome prevalence among medical students, & to detect the impact of the disease on their social and academic life. A cross-sectional study was carried out among medical students in March and April (2024) at university of Baghdad college of medicine. All participants were asked to complete a confidential self-administered questionnaire. Diagnosis of IBS was according to Rome III criteria. A total number of 300 medical students completed the questionnaire showed 61 (20.3%) of medical students with IBS. A statistical significant was found between IBS and non IBS. Students who have IBS have statistical significant regarding anxiety conditions, following the entry into the college of medicine and in the skipping of social activities, embarrassment in the public places, impact on the hobbies, performance, avoidance of a certain type of food, effect on mental wellbeing, and impact on academic life performance ($p<0.05$). **In conclusion,** this study revealed that the transition into medical school significantly increases the prevalence of IBS among students. And there was a strong impact of IBS on social life and academic performance on medical students.

Keywords: Academic life. Irritable bowel syndrome, IBS, medical students, social life.

Introduction

Irritable bowel syndrome (IBS) is a highly prevalent gastrointestinal disorder that has an incontrovertible impact on health care and patients' quality of life (1). IBS is a chronic biopsychological disorder that is characterized by altered bowel habits with abdominal discomfort or pain with the absence of organic pathology. Besides the motility defect and distorted visceral perception of sensation, IBS is associated with several gastrointestinal and extra-intestinal manifestations (2, 3). Although IBS is the most common diagnosis made by a gastroenterologist in the United States, the etiology of the disease remains unknown. Several physical and psychological factors, however, are known to contribute to IBS's pathogenesis, such as stress, anxiety, and abnormal attitudes towards illness,

which exacerbate patients' conditions (4). Considering several factors, the worldwide prevalence of IBS ranges between 3-22% of the population (5). Besides the acknowledged burden of IBS on health care systems, patients' quality of life is greatly affected, a fact that increases concern about IBS patients. Results of a health-related quality of life survey that was designed to assess the impact of IBS on the quality of life of the patients revealed a significant decline in the scores of mental health and social function domains in IBS patients (6,7). IBS has also induced an occupational hazard as it affects the performance of patients at work. This was reported in a study from Canada where IBS became the second leading cause of absenteeism after common cold (8,9). Furthermore, social embarrassment might be a major dilemma for IBS patients because of unpredictable bowel movements. Medical students are thought to experience more stress than other groups of the population due to the stressful academic environment. They are not only undergo a lot of physical stress and sleeplessness, but also suffered from psychological stress, because they demand to carry great future responsibilities. Besides lifestyle and eating habits of medical students, the busy academic environment might explain the high prevalence of IBS. In order to study this phenomenon, many literature studies have examined the prevalence of IBS among medical students, associated factors that contribute to IBS in this group of the population, diagnostic tools, and different ways of managing these patients (10). Consequently, this study designed to shed light on IBS among medical students from medical colleges in different Iraqi universities in Baghdad/ Iraq.

Methods

Ethical approval

This study approved by Medical Ethics Committee University of Baghdad /College of Medicine (Date: academic year: 2023-2024)

Study design, setting and participants

This study is a cross-sectional study carried out in March and April (2024). The study included 300 undergraduate medical students aged from 18 years and more in the medical universities of Baghdad ,in the academic year (2023-2024). The study was in line with the ethical principles of: respect of persons, beneficence, non-maleficence, confidentiality and privacy. The sampling technique is based on (Convenient sampling).

Study variables and data sources

variables were evaluated through a confidential, self-administered, and reliable questionnaire consisted of historical data (e.g. gender, academic year, basal metabolic rate) and risk factor data (e.g. sports, hours of sleep, food habits, abdominal pain after (stressful conditions, consuming caffeine, taking medications, becoming a medical student). In addition, participants were asked if they complained of some symptoms (e.g. abdominal pain, abdominal distension, heartburn, diarrhea, constipation, both diarrhea and constipation), and asked about the effects of IBS on their life including (e.g. avoiding food, doing hobbies, academic performance, mental health, social wellbeing, restroom necessity).

Data collection and processing

the questionnaires were in Arabic language to make sure that all the questions were fully understood, the data included all the medical students at university of Baghdad and others medical colleges with no exclusion regarding gender, stage or age. Irritable bowel syndrome (IBS) was diagnosed by room 3 criteria ,which defines IBS as recurrent abdominal pain or discomfort for at least 3 days/months during last 6 months associated with two or more of the following features:

1) Improvement with defecation.
2) And/or, Onset associated with a change in frequency of stool.
3) And/or, Onset associated with a change in form (appearance) of stool.

The participants of the study were divided into a group with IBS and another without IBS.

Statistical methods

statistical analysis was done using SPSS (version 26.0, IBM, New York, USA). Categorical data were analyzed using the Chi-square test with Yate's (continuity) correction. Fisher's exact test was used if one or more expected value <5.

Results

A total of 300 questionnaires were distributed, completed and analyzed with a response rate of 100%. The subjects include 213 (71%) female and 87 (29%) male students. Depending on Rome III criteria, it shows us that 61 (20.3%) of medical students have IBS. Table.1 shows IBS females' prevalence is 41 (67.2%). more than males' prevalence, which is 20 (32.8%), but there is no significant difference as P value was 0.465. As for stages, there was a statistically significant difference as the P value was 0.042 as moving to a higher stage with the majority for stage four (37.5%). BMI shows no significant difference among different conditions as P value was 0.556 and most of them were normal weight. On the other hand, we asked the participants about the symptoms, most of IBS patients had abdominal distension (68.8%), other symptoms were heartburn (57.3%), constipation and diarrhea (mixed) (39.3%), diarrhea (24.5%), constipation (19.6%) and only 2 of IBS people chose (no symptoms).

		people with IBS				
		yes		no		P value
gender	male	20	32.8%	67	28.0%	0.465
	female	41	67.2%	172	72.0%	
stage in the college	stage one	2	3.3%	8	3.3%	0.042
	stage two	1	1.6%	19	7.9%	
	stage three	30	49.2%	139	58.2%	
	stage four	15	24.6%	25	10.5%	
	stage five	9	14.8%	38	15.9%	
	stage six	4	6.6%	10	4.2%	
BMI	underweight	6	9.8%	19	7.9%	0.556
	normal weight	37	60.7%	161	67.4%	
	overweight	15	24.6%	54	22.6%	
	obese	3	4.9%	5	2.1%	

sympt oms they have	none	2	3.3%	94	39.3%	0.000
	constipation	12	19.6%	18	7.5%	
	diarrhea	15	24.5%	19	7.9%	
	abdominal distension	42	68.8%	83	34.7%	
	heartburn	35	57.3%	36	15.0%	
	constipation and diarrhea	24	39.3%	35	14.6%	

Table. 2 shows there was no significant difference (p-value>0.05) regarding the kind of food had been eaten, sleeping hours, doing sport or no and if there is abdominal pain after taking certain drug among medical students who have IBS and who don't have .However, statistical significant (P-value<0.00) was found in experiencing abdominal pain after drinking drinks that contain caffeine ,during anxiety conditions and after entering college of medicine.

Table. 2: the shows the kind of food, sleeping hours, in people with IBS show no significant difference (p-value>0.05)

	People with IBS					
	Yes			No		P value
Kind of food	healthy diet	25	22.9 %	84	77.1 %	0.406
	unhealthy diet (filled with fat)	22	16.8 %	109	83.2 %	
	fast food	14	23.3 %	46	76.7 %	
Abdominal pain after drinking caffeine drinks	yes	32	33.0 %	65	67.0 %	0.000
	no	29	14.3 %	174	85.7 %	
Sleep hours	less than 6 hours	20	21.3 %	74	78.7 %	0.946
	6 – 8 hours	32	19.6 %	131	80.4 %	
	more than 8 hours	9	20.9 %	34	79.1 %	
Sport practice	yes	11	17.2 %	53	82.8 %	0.481
	no	50	21.2 %	186	78.8 %	
Abdominal pain during anxiety conditions	yes	54	26.1 %	153	73.9 %	0.000
	no	7	7.5%	86	92.5 %	
Abdominal pain after taking certain drug	yes	17	28.8 %	42	71.2 %	0.071

	no	44	18.3%	197	81.7%	
Abdominal pain started or increases after entering college of medicine	yes	45	28.5%	113	71.5%	0.000
	no	16	11.3%	126	88.7%	

A chi-square test was conducted to examine the impact of IBS on the social and academic life of medical students and the results were statistically significant for all the questions. The test compared the proportion of IBS participants who answered yes to the questions to those who did not (no), against a total sample of 300 participants.

Tables. 3 shows the results with significant differences ($p<0.05$) in the skipping of social activities, embarrassment in the public places, impact of IBS on the hobbies performance, avoidance of IBS patients to a certain type of food, effect on mental wellbeing, The essential of public toilet presence, the avoidance of lectures in college, impact on concentration during the lecture, impact on study performance and impact of students' performance on exams.

Tables. 3: Shows a significant differences ($p<0.05$) in the skipping of social activities, embarrassment in the public places and impact of IBS on the hobbies performance.

		people with IBS				
		yes		no		P value
Abdominal pain makes them skip a social activity	yes	27	35.5%	49	64.5%	0.000
	no	34	15.2%	190	84.8%	
Abdominal pain makes them feel embarrassed in a public place	yes	30	31.6%	65	68.4%	0.001
	no	31	15.1%	174	84.9%	
Abdominal pain effect their hobbies performance level	yes	34	35.4%	62	64.6%	0.000
	no	27	13.2%	177	86.8%	
Abdominal pain makes them avoid some certain types of food	yes	46	29.3%	111	70.7%	0.000
	no	15	10.5%	128	89.5%	
Abdominal pain affects their mental wellbeing	yes	42	29.0%	103	71.0%	0.000
	no	19	12.3%	136	87.7%	
Public toilets are essential in public places	yes	34	29.8%	80	70.2%	0.001
	no	27	14.5%	159	85.5%	

Abdominal pain makes them avoid lectures in college	yes	21	31.3%	46	68.7%	0.011
	no	40	17.2%	193	82.8%	
does the abdominal pain affect their concentration during the lecture	yes	47	30.9%	105	69.1%	0.000
	no	14	9.5%	134	90.5%	
does the abdominal pain affect their study performance	yes	32	32.7%	66	67.3%	0.000
	no	29	14.4%	173	85.6%	
does the abdominal pain affect their performance during exams	yes	31	26.3%	87	73.7%	0.040
	no	30	16.5%	152	83.5%	

Discussion

The significant heterogeneity in IBS prevalence had been noticed in different areas of the world and different sectors of peoples (11,12). In the Arab countries, out of 12 studies, a systematic review reports for IBS prevalence were ranging from 8.9% to 79.7% (13). Moreover, of IBS prevalence is 9.3-35.3% among medical students worldwide (14).
According to Rome III criteria, the prevalence of IBS among medical students in this study was %20.3 and the results falls with the worldwide prevalence of IBS among medical students. Similarly in other study in Saudi Arabia, from King Abdulaziz University in Jeddah, they examined 597 medical students and interns using the Rome III criteria, which revealed an IBS prevalence of about 31.8% in all participants (15). In Pakistan, a study from one medical school in Karachi reported the prevalence of IBS to be 28.3% using the Rome III criteria. The variation of IBS prevalence among different studies could be related to the variation in cultural and dietary patterns, sample sizes, age ranges, gender. The high prevalence of the disease might be due to the longer duration of medical courses too many exams, and academic stress faced by medical students.
Regarding gender, our study was parallel to Ibrahim et al. who showed no statistically significant association between IBS and gender (16). However, Al-Turki et al. detected that many IBS cases were females (P =0.006) (17). Furthermore, studies in Japan (18) and India (19) demonstrated that males reported IBS symptoms more than female medical students. Consistent with several other studies (20, 21, 22). The unrelated relation of gender and IBS prevalence could be due to the unequal prevalence of the two genders' participation in the study and sample size.
Diet is a critical factor in the development and exacerbation of IBS. Medical students, due to their fast-paced schedules, they often rely on (ready-made food, rich in fat, low fibers) because most of their time they want to use it for the academic period and exams. So, after eating this kind of food, may can cause abdominal pain and discomfort (23). Unfortunately, the results of the current study did not find significant relation between types of food or food habits and IBS prevalence. Similar findings were reported in the study from other country that showed no relation between different food types and the

prevalence of IBS (24). On the contrary, another previous study found that 15.5% of IBS symptoms can be related to dietary factors (25). An Indian study reported that fatty food increased the risk of having IBS (26). However, the Chinese study showed that patients with IBS consumed more processed food than fresh food (27).

Anxiety and stress are common triggers for IBS flare ups, particularly after entering medical school cause students become more worried about there exams, clinical duties, and performance. also, Medical students may become anxious and scary from flaring-ups during academic periods which will worsen the symptoms of IBS. There was a significant association between anxiety, depression and IBS ($P<0.001$ and $P=0.005$ respectively). The results of many other previous studies affirmed our result (28, 29, 30).

Furthermore, Dissanayake et al. revealed that medical students with depression were 16.91% times more likely to get IBS (23). This could be explained by, the immense academic load making medical students under excessive stress (32). Strong relation between Caffeine consumption and medical students, who often rely on coffee, tea, energy drinks, and others to stay alert and manage long study hours. caffeine is commonly used as a stimulant to enhance focus and reduce fatigue, its effects on the gastrointestinal system can exacerbate symptoms of irritable bowel syndrome. Furthermore, the current study observed that coffee consumption was nearly significantly associated with higher odds of experiencing IBS (25). This finding is supported by another study that investigated the link between adult coffee consumption and IBS. The study concluded that individuals who consumed coffee weekly or more frequently had a higher risk of experiencing IBS compared to non-consumers (33).

Physical activities are useful for medical students in many ways, benefiting them in mental health because it causes comfort and reduces stress and anxiety, which is an important risk factor for IBS and maintaining the ideal physical body. Some research showed that regular physical activity was associated with reduced IBS symptom severity and improved quality of life. In contrast to the current showed no significant difference between IBS prevalence and whether doing exercise or not. A study by Basandra et al. (2014) showed a significant association between IBS prevalence and inadequate physical activities by Indian medical students (19) . Similarly, a study by Dong et al. (2010) revealed that low exercise levels indicate a high risk of IBS among Chinese university students (30).

Regarding entering medical school, the current study showed that entering medical school will increase the possibility of having IBS because of stressful academic life, lack of free time, caffeine consumption, reduction of sleeping hours leading to miscommunication between the brain and gut. Consequently, the results of the current study confirmed a strong relation between entering medical school and having IBS. These findings are compatible with previously published study that showed the existence of a positive correlation between students meeting the IBS criteria and the AS situations of academic overload and lack of time and the presence of IBS. The ratio indicates a dependency between the variables: when one of them increases so does the other at a constant proportion. (34, 35, 36, 37, 38, 39).

The results revealed that IBS had impact on the quality of social and personal life of medical students making them less liable to participate in social activities and had impact on their performance during exams and medical courses and this might be due to the academic stress that exacerbate the condition and the symptoms of the disease. This can be quite embarrassing and agreed with another published study conducted in the Health College. This study showed Health care students with IBS reported lower quality of life scores ($M = 52.17$, $SD = 21.06$) than those without IBS ($M = 67.41$, $SD = 23.59$) (36).

Moreover, the results are similar to another study that done among Medical Students and Interns in King Faisal University. This study showed a decrease in duties performance and participation in extracurricular activities among IBS medical students (37).
As for food avoidance, the study found that there was a strong relation as eating some kind of food triggers the symptoms and makes them worse, which make the patients avoid certain types of food. This finding is similar to an Iranian study that concluded IBS patients were more likely to avoid consumption of certain food (36). Same finding for another study in Mexico that concluded IBS patients with severe food avoidance and restriction constitute a subgroup with more severe symptoms (39).
In addition, we found that there is a strong association between mental health and IBS, as many of IBS patients suffer from anxiety and stress which negatively affects their life. Similar findings were shown from a study in India, which concluded that both IBS-C and IBS-D subtypes had higher levels of anxiety and depression in comparison to healthy controls (26), as well as in a study from Iran concluded a high prevalence of anxiety-depressive disorders among IBS patients (36).
The current study also found that IBS affects significantly on academic performance of medical students as it makes them avoid lectures, can't stay focused during the lectures and exams and therefore lower grades. This finding is supported by a study made in King Faisal University and another one from Umm Al-Qura University which concluded that IBS is significantly associated with decrease in the academic performance of medical students (37,38).

Limitations

There were few limitations, first, this survey was distributed using convenient sampling and didn't include an even number of participants of both genders and equal proportion of each academic stage to participate in. Secondly, the results were assessed through a self-administered questionnaire (Rome III), without performing gastrointestinal endoscopy to confirm the absence of organic colonic disorders. However, these scores have been largely used with good reliability. Thirdly, this survey was restricted to medical students, who are knowledgeable about IBS. So, the results of the current study can't be generalize to the general Iraqi populations.

Conclusion

In conclusion, the results of the current study showed that 20.3% of medical students met the Rome III criteria for IBS diagnosis. The transition into medical school significantly increases the prevalence of IBS among students. The heightened anxiety and stress associated with the demanding academic environment, coupled with the frequent consumption of caffeine to manage intense study schedules, contribute to the exacerbation of IBS symptoms. These factors together create a challenging environment that elevates the risk of developing IBS. Addressing stress and reducing caffeine intake may help mitigate these effects and improve the overall well-being of medical students. IBS had impact on the social and academic life of students participated in this study including skipping of social activities, embarrassment in public places and college, decrease their hobbies levels performance and made them more restrict about their food consumption, and also made them more liable to skip many academic activities including impact on their concentration during lectures and their performance during exams.

Declarations

Acknowledgment

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Ethics statement

The authors declare that the author approved that this research follows the journal's Attach Ethic Approval guidelines as appeared on the journal's author guidelines page.

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Competing interest's statement

The authors declare that they have no conflict of interest.

Author contributions

Reema Mohanad Najeeb (RMN): Statistical analysis & writing the manuscript draft
Jaafar Haider Mohammed (JHM): data collection.
Daniah Ali Sabri (DAS): data collection.
Manal A. Habib(MAH): Formal analysis, final revision.
Atheer H Abd Alhaboby (AHA): Revised and drafting of manuscript.

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