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Does irritable bowel syndrome plague our budding doctors? – A study from an Indian medical college

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Abstract:

BACKGROUND: Irritable bowel syndrome (IBS) is a lifestyle disease associated with significant morbidity and healthcare expenses. Although the pathophysiology of this disease remains obscure till date, there are many possible predisposing factors that have been described. Medical education is extremely demanding and taxing, with students facing multiple stressors throughout their course. Stress and mental illnesses being one of the main risk factors for IBS, these students are possibly at a much higher risk of suffering from this disease.

OBJECTIVE: The objective of this article is to study the frequency of IBS among a sample of students in a medical college in India and try to determine the determinants associated with this disease.

MATERIALS AND METHODS: This is a cross-sectional study conducted among students studying in Kasturba Medical College, Mangalore. A self-administered World Gastroenterology Organization (WGO) questionnaire was filled by the participants. The responses were analyzed for identifying those likely to be suffering from IBS based on a scoring system and to assess the association between risk categories and IBS.

RESULTS: Prevalence of IBS among 397 participants was found to be 16.9%. About 20.8% of females suffered from IBS as against 11.4% of males. It was also found that the proportion of medical undergraduates likely to be suffering from IBS was more in those belonging to the NRI category (28.6%), those who consumed a diet which was predominantly vegetarian (19.1%) and less in those staying at home (14.5%).

CONCLUSION: The proportion of students suffering from IBS was observed to be 16.9% of the sample population with a significant female gender preponderance.

Keywords:

Cross-sectional study, IBS, irritable bowel syndrome, students, WGO questionnaire

Introduction

Irritable bowel syndrome (IBS) or spastic colon is defined as "functional bowel disorder characterized by abdominal pain or discomfort and altered bowel habits in the absence of detectable structural abnormalities."[1] IBS is a commonly seen functional gastrointestinal (GI) disorder with a global prevalence of 10–15%, while in India, prevalence ranges from 4.2% to 7.5%.[2,3]

Multiple risk factors have been identified for IBS. It is more likely to occur in people falling under the age group of late teenage to 40 years of age and has a female gender preponderance. A positive family history for IBS, stress, traumatic experiences, and certain psychiatric medical conditions can all predispose a person to IBS.

The pathophysiology of IBS is a multifactorial one. Some suggested that mechanisms include an alteration in bowel motility, visceral hypersensitivity, central nervous

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system effects, a neurotransmitter imbalance, and alterations in epithelial barrier function with increased mucosal immune activation. Infections, bacterial overgrowth in the small bowel, abnormal bacterial flora in the colon, genetic influences, environmental as well as psychosocial factors may also have a role in the pathogenesis.[4]

IBS most commonly presents with abdominal pain or cramps, flatulence, either diarrhea or constipation or alternating episodes of both, and mucoid discharge in the stool. The condition is episodic and chronic in nature. The symptoms cause significant morbidity by interfering with routine life activities and social functioning in many patients. There is also significant expenditure on health care both directly and indirectly.

The Rome III criteria system uses clinical symptoms to classify functional GI disorders. This criterion provides a definition as well as categorization of patients based on the severity of the disease.[5] The Rome III criteria can be used to establish a diagnosis of IBS in any healthy individual who is below 50 years of age and fulfills the criteria, hence may require minimal to no diagnostic testing. Alarming symptoms such as rectal bleeding, progressive abdominal pain present at night, weight loss and anemia associated with a positive family history of inflammatory bowel disease, colon cancer, or celiac disease can indicate a serious underlying condition and may warrant additional investigations.

The treatment approach varies based on several factors including the type of symptoms, severity of the condition, presence of other aggravating comorbidities, and impact on patient's overall physical and mental well-being. A key aspect of any treatment plan for IBS is an effective doctor–patient relationship. These patients usually require only reassurance, education, recommendations for dietary and lifestyle modifications, and advice for engaging in health-promoting practices. Short-term medications are normally reserved for acute exacerbations.[6]

There is a dearth of studies describing IBS in Indian medical students, although this has been extensively researched in the Western world. IBS is a disease that can negatively impact the quality of life and incur high medical costs; thus, studies to understand the disease are imperative and hence we undertook this study. The objectives of this study are to determine the proportion of undergraduate medical students suffering from IBS as per the World Gastroenterology Organization (WGO) questionnaire and assess the association between IBS risk categories with IBS.

Materials and Methods

Study design and setting

This was a facility-based descriptive cross-sectional study done at Kasturba Medical College, Mangalore, a medical institution situated in southern part of coastal South India.

Study participants

This study included 397 medical undergraduates studying in the first, second, third, and fourth years of MBBS of Kasturba Medical College, Mangalore.

Sample size and sampling

Based on a study conducted in Jeddah, the prevalence of IBS was 31.8% among medical students.[7] Taking relative precision of 15% and a confidence level of 95%, the sample size was calculated to be 366. Adding 10% as nonresponse error, final sample size was found to be 403. Study participants were recruited for this study using nonprobability sampling technique.

Data collection tool and technique

The study tool used was a confidential, anonymous, and self-administered WGO questionnaire for IBS. In addition to this, questions were added to capture the data relating to personal and demographic information of the study participant. The WGO is an international professional medical federation representing over 60,000 individual members who are part of over a hundred national GI societies and four regional associations of gastroenterology. The WGO questionnaire is based on the English version of the Rome III criteria.[8,9] Rome III criteria can be useful in diagnosing IBS in the absence of red flag symptoms. The sensitivity of this criteria in the absence of red flag symptoms is 65%, while specificity is nearly 100%. The positive and negative predictive values are observed to be 100% and 76%, respectively. The definition of IBS as per the Rome III criteria is "recurrent abdominal pain or discomfort for at least 3 days per month during the past 3 months, associated with two or more of the following features: (a) improvement with defecation; and/or (b) onset associated with a change in frequency of stool; and/or (c) onset associated with a change in form (appearance) of stool."

The WGO questionnaire has 20 items and the score value ranges from 0 to 3 for the first question and from 0 to 2 for questions 2–15. A sum of the scores for questions 1–15 is calculated; a score between 25 and 30 indicates a likelihood of suffering from IBS, a score between 15 and 24 means the individual most probably suffers from IBS; however, other conditions may be kept in mind. A score of below 15 indicates that symptoms may not be due to IBS and other conditions should be taken into consideration.

Ethical consideration

After the approval from the ethics committee, semi-structured questionnaires were distributed to the selected medical undergraduates. The objectives of the study were explained to the students and a written informed consent was obtained from all participants. Following this, they were requested to fill the questionnaires using nonprobability sampling technique.

Data analysis

Data were entered and analyzed using statistical software SPSS version 11.5. Descriptive statistics like mean, proportions, and standard deviation were used for expressing the results. The relationship between IBS and personal and demographic characteristics was analyzed using Chi-square test and P value < 0.05 was considered statistically significant.

Results

According to the WGO questionnaire, risk categorization was done, and using the scores, students were categorized based on their likelihood for suffering from IBS. Of the 397 medical undergraduates, 330 (83.1%) scored below 15 and hence were found not to be suffering from IBS. Sixty-five students (16.4) scored between 15 and 24, indicating a possibility of them suffering from IB. Only two (0.5%) scored above 25; hence, it was concluded they had a high likelihood of suffering from IBS as depicted in Table 1.

Of the 166 males and 231 females, 19 (11.4%) males and 48 (20.8%) females were found to be suffering from IBS and this was statistically significant, indicating a possible female gender preponderance. Fifty-three (16.4%) out of the 323 Indian nationals and 14 (18.9%) out of the 74 foreign nationals were found to have IBS.

Among the 315 undergraduates living in hostels, 52 (16.5%) were found to be suffering from IBS, compared to 9 (14.5%) out of the 62 undergraduates living at home. Similarly, 6 (30%) out of the 20 undergraduates living elsewhere were found to have IBS.

Of the 114 pure vegetarians, 17 (14.9%) were found to have IBS. Twenty-one (19.1%) out of the 110 predominantly vegetarian and 29 (16.8%) out of the 173 predominantly nonvegetarian undergraduates were found to have IBS.

Out of the 16 undergraduates with positive family history of IBS-related disorders, 5 (31%) were found to be suffering from IBS and 11 (69%) did not have IBS. Similarly, out of the remaining 381 undergraduates with no such family history, 67 (16.8%) were found to be suffering from IBS and 330 (83.2%) did not have IBS as shown in Table 2.

Discussion

In our study, it is found that out of 397 undergraduate medical college students, 67 were likely to be suffering from IBS, that is, 16.9%. Few other studies have revealed similar findings. Similarly, a recent study from Saudi Arabia found that 15.8% of students participating in the study suffered from IBS, while in a community-based study in Northern India, this proportion was found to be as low as 4%.[10,11]

Some studies have shown much higher proportions of medical students to be suffering from IBS. In a study by Elhosseiny D *et al*., of the 382 participants, 31.8% were found to be suffering from IBS.[12] Similarly, in a study conducted on medical students in Korea and in Jeddah, the proportion of participants found to have IBS was 29.2% and 31.8%, respectively.[7,13]

Our study reveals a statistically significant association between female gender and IBS (P < 0.01). The proportion of IBS in females was 20.8% as against 11.4% in males.

Table 1: Risk categorization for IBS as per Rome III (WGO) questionnaire (*n*=397)

Categorization	Scoring	Number (%)
Not suffering from IBS	<15	330 (83.1)
May suffer from IBS	15–24	65 (16.4)
Likely to be suffering from IBS	25–30	2 (0.5)

Table 2: Association between baseline characteristics and IBS risk categorization (*n*=397)

Characteristics	Yes, *n* (%) *n*=67	No, *n* (%) *n*=330	Total, *n* (%) *n*=397	*P*
Sex				
Male (*n*=166)	19 (11.4)	147 (88.6)	166 (100)	0.010
Female (*n*=231)	48 (20.8)	183 (79.2)	231 (100)	
Nationality				
Indian	53 (16.4)	270 (83.6)	323 (100)	0.196
Foreign	14 (18.9)	60 (81.1)	74 (100)	
Place of stay				
Hostel	52 (16.5)	263 (83.5)	315 (100)	0.255
Home	9 (14.5)	53 (85.5)	62 (100)	
Others	6 (30.0)	14 (70.0)	20 (100)	
Dietary habit				
Pure veg	17 (14.9)	97 (85.1)	114 (100)	0.705
Predominantly veg	21 (19.1)	89 (80.9)	110 (100)	
Predominantly nonveg	29 (16.8)	144 (83.2)	173 (100)	
Family history of disorders*				
Yes	5 (31.0)	11 (69.0)	16 (100)	0.117
No	62 (16.3)	319 (83.7)	381 (100)	
Total	67 (16.8)	330 (83.2)	397 (100)	

*Colon cancer, celiac disease, inflammatory bowel disease (colitis, Crohn's disease)

Few studies contradict this finding. A study in Pakistan concluded that there is a male preponderance.[14] However, our findings are in line with the majority of studies conducted on medical college students in Korea and Jeddah and community-based study in Northern India.[7,11,13] A study by Kim YS *et al*. states that the possible reason for this female preponderance is sex hormone related, although cultural and social factors may play a role.[15]

Our study found no statistically significant association between dietary habits and occurrence of IBS, similar to the Korean study.[13] However, there are a few studies that indicate a possible predisposition to IBS as a result of diet and lifestyle. A study in Saudi Arabia by Alharbi SH *et al*. found that low fiber diet and reduced water intake were possible risk factors for IBS.[16]

In our study, it was found that less proportion of students residing with their families had IBS (14%) as compared to students who stayed in the hostel, apartments, or as paying guests. A study conducted among medical students in Saudi Arabia revealed that students' prevalence rates for IBS were lower among those residing at home in comparison to those living in school dormitories.[7] The reason for this could indirectly be the diet consumed by the students. While students at home would consume a more healthy diet under parental supervision, the same won't apply to those living outside.

Medical students suffer from tremendous stress, anxiety, and various other mental illnesses which are some commonly associated risk factors for IBS. It becomes imperative to understand this condition and its prevalence in this population, especially because this disease is known to cause significant morbidity and reduced quality of life. Understanding risk factors and avoiding the same may help in early diagnosis and treatment of this disease, not only reducing the prevalence of this condition among medical students but also the morbidity associated with it.

Limitation and recommendation

Based on the findings of this study, it is imperative to screen for IBS among medical undergraduates and refer needy students to physician for further evaluation. More research on IBS prevalence and risk factors should be conducted preferably multicentric, comprising the study participants across the geographical location for better understanding of the condition and generalizability of results.

Conclusion

According to our study tool, the WGO questionnaire based on Rome III criteria, it was found that the proportion of medical undergraduates likely to be suffering from IBS was 16.9%.

A significant association was found between female gender and IBS. The proportion of females suffering from IBS was 20.8% as against 11.4% of male participants.

It was also found that the proportion of medical undergraduates likely to be suffering from IBS was more in those belonging to the NRI category, those who consumed a diet which was predominantly vegetarian, and less in those staying at home although not statistically significant.

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Conflicts of interest

There are no conflicts of interest.

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