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Study of Prevalence of Irritable Bowel Syndrome and Its Association with Anxiety and Depression among Medical Students

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Abstract

Background: Irritable Bowel Syndrome (IBS) is a common functional gastrointestinal disorder influenced by psychological stressors such as anxiety and depression. Medical students, due to their academic pressures, represent a vulnerable group for developing IBS.

Objective: To estimate the prevalence of IBS and examine its association with anxiety and depression among undergraduate medical students at Government Medical College, Thiruvananthapuram.

Methods: A cross-sectional study was conducted in February 2022 among 212 MBBS students, using a stratified non-random sampling method. IBS was diagnosed using Rome III criteria. Anxiety and depression were assessed using the Generalized Anxiety Disorder-7 (GAD-7) and Patient Health Questionnaire-9 (PHQ-9), respectively. Statistical analysis was performed using the Chi-square test and odds ratios to identify associations.

Results: The prevalence of IBS among the study population was 17.45%, with a higher rate in females (21.7%) than males (10.8%). IBS was significantly associated with depression (OR = 6.933, $p < 0.001$) and anxiety (OR = 11.802, $p < 0.001$). More than half of the participants exhibited depressive symptoms (54.7%) and nearly half had anxiety (49.5%).

Conclusion: IBS is prevalent among medical students and is strongly associated with psychological factors, particularly anxiety and depression. These findings highlight the need for early mental health screening and interventions within academic institutions to reduce the burden of IBS.

Keywords: Irritable Bowel Syndrome, medical students, prevalence, anxiety, depression

Introduction

Irritable bowel syndrome (IBS) is a functional gastrointestinal disorder characterized by frequent abdominal pain or discomfort associated with a change in bowel habits. IBS is one of the most common diagnoses made by medical practitioners. The worldwide prevalence of IBS among the general population ranges from 5.7% to 34%. The overall prevalence of IBS in Western countries, as reported by various studies, ranges from 17-22%. However, in Asian countries, a highly variable range of prevalence has been observed, i.e., 2.3-34%.

Various diagnostic tools have been employed for the detection of IBS, including Manning criteria, Rome I criteria, or Rome II criteria. Manning criteria appear to

yield higher values compared to either the Rome I or II criteria. Currently, the Rome III criteria are being used more commonly.[1]

According to the Rome III definition, irritable bowel syndrome (IBS) is a biopsychosocial dysfunction. It means that a biological bowel dysfunction is the final result of brain-gut linkage and is modified by the social, environmental, and psychological factors.[2]

Stress is a major contributing factor to IBS. It has been postulated that stress stimulates colonic spasms. Lately, many studies have reported that IBS is associated with elevated levels of emotional and psychological stress. Some patients with IBS have reported anxiety disorders, depression, as well as somatization disorder. Psychosocial factors also affect the outcome of IBS in some patients. Mechanisms due to abnormal physical activity and visceral hypersensitivity are among other causative factors responsible for Irritable Bowel Syndrome.[1]

The Patient Health Questionnaire – 9 (PHQ-9) and Generalized Anxiety Disorder – 7 (GAD-7) are short screening measures used in medical and community settings to assess depression and anxiety severity.[3]

It has been identified that stress is very common among medical students and is a major factor for IBS. Thus, it may be possible that IBS is common among medical students.[1] IBS has an obvious impact on the living and quality of life of sufferers, leading to the excessive social costs for medical-seeking behaviour and absenteeism. Today, IBS has been included as one of the commonly presented functional gastrointestinal disorders (FGIDs). It is of interest how commonly it presents in society. In addition, knowing the IBS prevalence may help estimate how it would consume the limited medical resources in society.[2]

Therefore, the objectives of our current study were to estimate the prevalence of IBS and to estimate the association of psychological states like anxiety and depression with IBS among medical students of the Government Medical College, Thiruvananthapuram.

Objective

Primary Objective: To estimate the prevalence of Irritable Bowel Syndrome among medical students of Government Medical College, Thiruvananthapuram.

Secondary Objective: To determine the association of Irritable Bowel Syndrome with anxiety and depression.

Methodology

Study design: Cross sectional study

Study setting: Government medical college, Thiruvananthapuram

Study Population: Undergraduate medical students

Exclusion criteria: 2021 batch medical students, House surgeons, Students with self-reported history of **C**eliac sprue, Inflammatory Bowel Disease, Major abdominal surgery, Severe weight loss, Blood in stools.

Study period: February 2022

Sample size: According to a study conducted in Maulana Azad Medical College, New Delhi, India the prevalence of IBS among medical students was found to be 16.5%

At 95% confidence level $Z\alpha=1.96$

$p=16.5$

$q=83.5$

d, absolute precision=5%

$$\text{Sample size} = \frac{(Z\alpha)^2 * p * q}{d^2}$$

Sample size= 212

Sampling technique: Stratified non-random sampling

Stratification done on the basis of batch. The study participants were selected from all MBBS batches proportionate to the size of the batch.

From batch 2017=46

batch 2018=46

batch 2019=59

batch 2020=59

The participants were consecutively recruited to the study till the requisite participant number from each batch was obtained.

Study variable

- Outcome variable: Prevalence of IBS using Rome III criteria
- Exposure variable

a) Socio-demographic variables-Age, Gender, Residence

b) Depression by PHQ-9 questionnaire

c) Anxiety by GAD-7 questionnaire

Data collection tool: Semi structured online questionnaire with the following components:

1. Proforma to collect socio demographic details
2. IBS prevalence was determined by ROME III criteria:

According to this criterion a person is said to have IBS if there is at least three months, with onset at least six months previously, of recurrent abdominal pain or discomfort* associated with two or more of the following:

- Improvement with defecation; and/or
- Onset associated with a change in frequency of stool; and/or
- Onset associated with a change in form (appearance) of stool.

*Discomfort means an uncomfortable sensation not described as pain.[4]

The questionnaire not only allows for identification of subjects with IBS based on Rome criteria, but also includes temporal factors in its questions allowing for subtyping of IBS based on Rome III; IBS with constipation (IBS-C), IBS with diarrhoea (IBS-D), and IBS with both diarrhoea and constipation at a given point in time (IBS-M).

a) Irritable bowel syndrome with constipation (IBS-C) was defined by Rome III criteria, but endorsing 1 or more constipation symptoms (less than 3 bowel movements [BMs] per week, hard stools, straining) and no diarrhoea symptoms (greater than 3 BMs per week, loose stools, urgent stools).

b) Conversely, IBS with diarrhoea (IBS-D) was defined by meeting III criteria, and endorsing 1 or more diarrhoea symptoms but no constipation symptoms.

c) Mixed IBS (IBS-M) was defined as meeting Rome criteria but not meeting criteria for IBS- C or IBS-D.[5]

GAD-7 Anxiety Severity: The 7-item Generalized Anxiety Disorders Scale (GAD-7) was developed as a screener for generalized anxiety disorder (GAD) in primary care settings.

Originally, the development of the GAD-7 started with 13 items based on the criteria for GAD in the Diagnostic and Statistical Manual for Mental Disorders, Fourth Edition (DSM-IV) and other items in anxiety measures. Items were then correlated with the total score. The seven items with the highest correlation with the total 13-item scale were selected. The seven items assess.

1. feeling nervous, anxious, or on edge
2. being able to stop or control worrying;
3. worrying too much about different things;
4. trouble relaxing;
5. being restless;
6. becoming easily annoyed or irritable; and
7. feeling afraid as if something awful might happen.

Even though GAD-7 was developed for GAD, it is also used in other anxiety disorders. The GAD-7 is increasingly used as a measure for anxiety in general and in anxiety disorder research.

For each of the questions a score of:

- 0 was awarded for Not at all
- 1 for Several days
- 2 for More than half the days
- 3 for Nearly everyday

And individuals are ranked in a total score of 21:

- 0-4 : minimal anxiety
- 5-9 : mild anxiety
- 10-14 : moderate anxiety
- 15-21 : severe anxiety.[6]

PHQ-9 Depression scale: The Patient Health Questionnaire (PHQ) is a new instrument for making criteria-based diagnoses of depressive and other mental disorders commonly encountered in primary care.

The PHQ-9 is the 9-item depression module from the full PHQ. Major depression is diagnosed if 5 or more of the 9 depressive symptom criteria have been present at least "more than half the days" in the past 2 weeks, and 1 of the symptoms is depressed mood or anhedonia. Other depression is diagnosed if 2, 3, or 4 depressive symptoms have been present at least "more than half the days" in the past 2 weeks, and 1 of the symptoms is depressed mood or anhedonia. One of the 9 symptom criteria ("thoughts that you would be better off dead or of hurting yourself in some way") counts if present at all, regardless of duration.

For each of the questions a score of

- 0 was awarded for Not at all
- 1 for Several days
- 2 for More than half the days
- 3 for Nearly everyday

And individuals are ranked in a total score of 27

- 0-4 None to minimal
- 5-9 mild
- 10-14 moderate
- 15-19 moderately severe
- 20-27 severe.[7]

Data Collection technique

The self-administered questionnaire was prepared using a computer-based data collection tool. The questionnaire was sent to the participating students as a web link through social media. The consent form was sent along with the questionnaire and those willing to take part in the study can proceed to the questionnaire; alternatively, the students can disagree to take part on the study and opt out. The data received from the students was stored in a database in Excel format.

Statistical Analysis

Data was received with MS Excel and analyzed using SPSS software. Categorical variables like gender, residence and year of study were expressed as proportions and age was expressed as mean with standard deviation. The prevalence of IBS among the students was assessed using Rome III criteria. Proportion of students with anxiety and depression was assessed using GAD7 and PHQ- 9 questionnaires respectively. The statistical test of Chi Square was used to test the association of sociodemographic variables, anxiety and depression with IBS.

Results

The study was conducted among the medical students of 2017, 2018, 2019 and 2020 batches of Govt. Medical College Thiruvananthapuram using Rome III criteria, GAD-7 score and PHQ-9 scoring system. Out of the 272 entries received, 212 entries that met the criteria under study were taken.

General Characteristics Of Study Population

Gender Distribution Of Study Population

Of the 212 study participants, 83(39%) were male and 129(61%) were female.

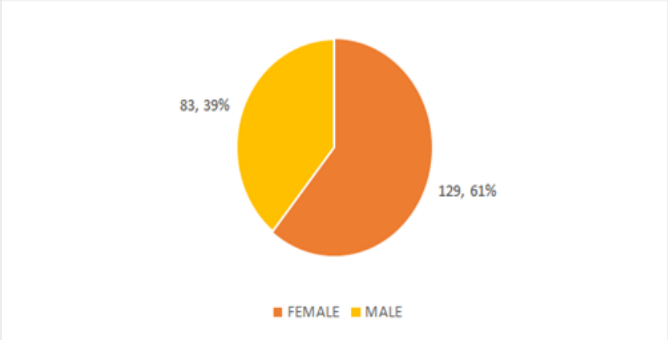

Figure 1: Gender Distribution of Study Population

Age Distribution of Study Population

The study participants were aged between 18 and 25 years and the age distribution is shown in figure 2. Mean age of the study participants was 21.57 years (SD =1.387).

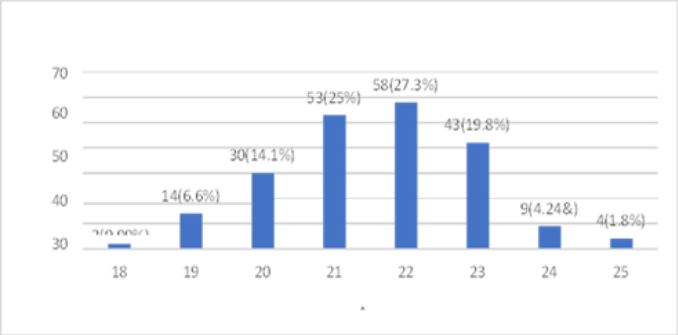

Figure 2: Age Distribution of Study Population

Batch Distribution Of Study Population

The study participants were selected from all MBBS batches proportionate to the size of the batch and the number of students from each batch is shown in table 1.

Table 1: Year of study of the study participants

Year of study	Number	Percentage
First year	59	27.8
Second year	59	27.8
Third year	46	23.6
Final year	46	23.6

Residence of Study Population

Majority of the students were residing in the hostel 155(73%) and the rest were day scholars 57(27%).

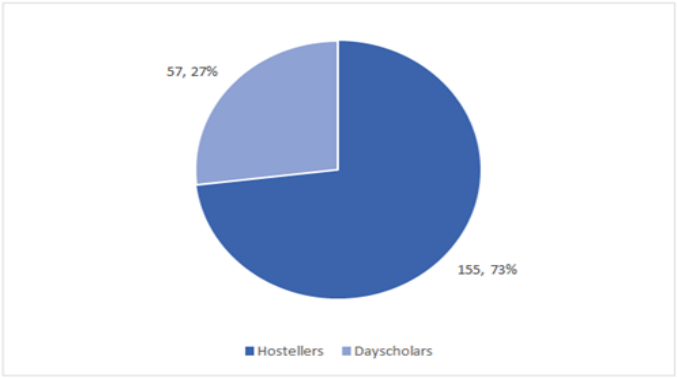

Figure 3: Residence of Study Population

Prevalence Of IBS Among The Study Population

The prevalence of IBS was determined using Rome III criteria. Of the 212 MBBS students studied, 37 (17.45%; 95% confidence interval is (12.24,22.66)) had irritable bowel syndrome. Among those who had IBS,

a) 14(7%) belonged to IBS-C (IBS with constipation)
b) 12(6%) belonged to IBS-D (IBS with diarrhoea)
c) 11(5%) belonged to IBS-M (IBS with both diarrhoea and constipation)

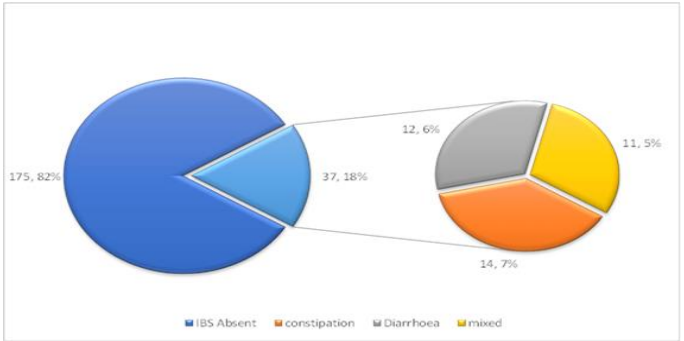

Figure 4: Prevalence of IBS Among Study Population

Prevalence of Depression And Anxiety Among The Study Population

Prevalence of Depression Among The Study Population

The presence and severity of depression was determined using PHQ-9. Of the 212 MBBS students studied, 96 (45.3%) had none to minimal depression, 68 (32.1%) had mild depression, 25 (11.8%) had moderate depression, 13 (6.1%) had moderately severe depression and 10 (4.7%) had severe depression.

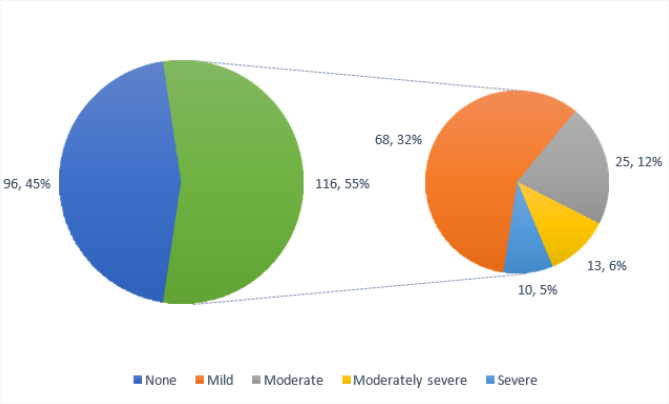

Figure 5: Prevalence of Depression Among Study Population

Prevalence of Anxiety Among The Study Population

The severity of Generalised Anxiety Disorder was measured using GAD-7. Of the 212 MBBS students studied, 107 (50.5%) had minimal anxiety, 68(32.1%) had mild anxiety, 21 (9.9%) had moderate anxiety and 16 (7.5%) had severe anxiety.

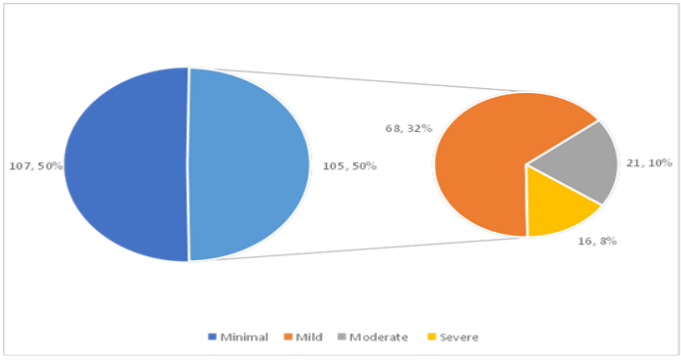

Figure 6: Prevalence of Anxiety Among Study Population

Factors Associated With IBS

Those diagnosed with IBS were compared with others with regard to sociodemographic factors, depression and anxiety by univariate analysis (chi-square test and odds ratio). Participants with none to minimal depression were considered as having no depression and the rest were considered as having depression. Those with minimal anxiety were considered as having no anxiety and the rest were considered as those with anxiety. All calculated $p<0.05$ were considered to be significant. Female gender (OR-2.279), depression (OR-6.933) and anxiety (OR-11.802) were found to have a significant association with IBS as shown in table 2.

Table 2: Factors associated with IBS

Exposure variable		IBS		Chi square	P value	Odds ratio (Confidence interval)
		Yes	No			
Gender	Female	28(21.7%)	101(78.2%)	4.14	0.042	2.279 (1.015-5.117)
	Male	9(10.8%)	74(89.1%)			
Residence	Hosteller	26(16.7%)	129(83.2%)	0.184	0.668	0.843 (0.386-1.841)
	Day scholar	11(19.2%)	46(80.7%)			
Depression	Yes	32(27.5%)	84(72.4%)	18.26	<0.001	6.933 (2.581-18.623)
	No	5(5.2%)	91(94.8%)			
Anxiety	Yes	33(31.4%)	72(68.6%)	28.21	<0.001	11.802 (4.006-34.770)
	No	4(3.7%)	103(96.3%)			

Discussion

Irritable bowel syndrome (IBS) is a functional bowel disorder characterized by abdominal pain or discomfort and altered bowel habits in the absence of detectable structural abnormalities. No clear diagnostic markers exist for IBS; thus the diagnosis of the disorder is based on clinical presentation. Throughout the world, about 10–20% of adults and adolescents have symptoms consistent with IBS, and most studies show a female predominance. Severity of symptoms varies and can significantly impair quality of life, resulting in high health care costs. Advances in basic, mechanistic, and clinical investigations have improved our understanding of this disorder and its physiologic and psychosocial determinants. Altered gastrointestinal (GI) motility, visceral hyperalgesia, disturbance of brain–gut interaction, abnormal central processing, autonomic and hormonal events, genetic and environmental factors, and psychosocial disturbances are variably involved, depending on the individual. This progress may result in improved methods of treatment.[18]

Problem Statement: the worldwide prevalence among general population ranges from 5.7%- 34%. The overall prevalence of IBS in western countries as reported by various studies ranges from 17-22%. However, in Asian countries a highly variable range of prevalence has been observed ie. 2.3- 34 %.[1]

In a study among medical students in MAMC, New Delhi, India, the prevalence of IBS was estimated to be around 16.5%. In a Malaysian medical school, a study conducted on its students reported that 15.8% of them experienced IBS.[8] Two studies from Iran, the first from Shiraz University of Medical Sciences, the second from Gilan University, showed that 16.4% and 12.6% of medical students had IBS, respectively.[9] The highest prevalence of IBS among medical students was reported in a study from Japan, which revealed a prevalence of 35.5% among participants[10], while the lowest prevalence of IBS among medical students was reported in Northern China to be 9.3%.[11]

Clinical Features: IBS is a disorder that affects all ages, although most patients have their first symptoms before age 45. Older individuals have a lower reporting frequency. Women are diagnosed with IBS two to three times as often as men and make up 80% of the population with severe IBS. Pain is a key symptom for the diagnosis of IBS. This symptom should be associated with defecation and/or have their onset associated with a change in frequency or form of stool. Painless diarrhoea or constipation does not fulfil the diagnostic criteria to be classified as IBS. Supportive symptoms that are not part of the diagnostic criteria include defecation straining, urgency or a feeling of incomplete bowel movement, passing mucus, and bloating.[18]

Rome III Diagnostic Criteria For Irritable Bowel Syndrome

The Rome III criteria were introduced in 2006 with the most significant change being the classification of IBS by subtypes. Subtypes were based on stool consistency rather than stool frequency, and included IBS-C (constipation), IBS-D (diarrhoea) and IBS-M (mixed). Another significant change was that the symptom of bloating as a primary symptom was eliminated from the definition. This change was based on the view that bloating as a symptom is so widespread that it is neither sensitive nor specific for IBS alone. A validation study by Ford and colleagues of patients with IBS symptoms who underwent colonoscopy reported a sensitivity of the Rome III criteria as 68.8% and specificity of 79.5% .

Since the release of the Rome III criteria in 2006, research in the field of IBS has surged. Creative investigative work in both the basic sciences and clinical sciences identified

new etiologies of IBS and provided a better understanding of the complex pathophysiology that underlies the generation of IBS symptoms.

According to this criterion a person is said to have IBS if there is at least three months, with onset at least six months previously, of recurrent abdominal pain or discomfort* associated with two or more of the following: Improvement with defecation; and/or onset associated with a change in frequency of stool; and/or onset associated with a change in form (appearance) of stool.

*Discomfort means an uncomfortable sensation not described as pain.[4]

Abdominal Pain: Abdominal pain in IBS is highly variable in intensity and location. It is frequently episodic and crampy, but it may be superimposed on a background of constant ache. Pain may be mild enough to be ignored or it may interfere with daily activities. Pain is often exacerbated by eating or emotional stress and improved by passage of flatus or stools. In addition, female patients with IBS commonly report worsening symptoms during the premenstrual and menstrual phases.

Altered Bowel Habits: Alteration in bowel habits is the most consistent clinical feature in IBS. The most common pattern is constipation alternating with diarrhoea, usually with one of these symptoms predominating. Stools are usually hard with narrowed calibre, possibly reflecting excessive dehydration caused by prolonged colonic retention and spasm. Most patients also experience a sense of incomplete evacuation, thus leading to repeated attempts at defecation in a short time span. In other patients, diarrhoea may be the predominant symptom. Diarrhoea resulting from IBS usually consists of small volumes of loose stools.

Gas and Flatulence: Patients with IBS frequently complain of abdominal distention and increased belching or flatulence, all of which they attribute to increased gas. In addition, patients with IBS tend to reflux gas from the distal to the more proximal intestine, which may explain the belching. Some patients with bloating may also experience visible distention with increase in abdominal girth. Both symptoms are more common among female patients.

Upper GI Symptoms: Between 25 and 50% of patients with IBS complain of dyspepsia, heartburn, nausea, and vomiting. This suggests that other areas of the gut apart from the colon may be involved. The prevalence of IBS is higher among patients with dyspepsia. Furthermore, IBS symptoms are prevalent in noncardiac chest pain patients, suggesting overlap with other functional gut disorders.

Factors Associated With IBS

The cause of IBS is likely to be multifactorial. Patients often show evidence of visceral hypersensitivity and motility abnormalities. Many IBS patients have increased anxiety and/or depression and their symptoms are often exacerbated by mental or physical stress suggesting abnormal brain–gut interaction. Genetic studies suggest a few IBS patients may have genetic abnormalities affecting the serotonin transport system in the enteric nerves. Up to 30% of IBS patients may have bile acid malabsorption. Gut dysbiosis and impaired mucosa permeability also have been reported in many IBS patients. This may lead to subclinical mucosa inflammation.[18]

Literature reveals IBS prevails more among females than males.[1]

Various studies have shown that subjects with IBS have higher levels of depression, and anxiety as compared to those without IBS.[12–14] It has been identified that these are very common among medical students.[15,16] Thus, it may be possible that IBS is common among medical students.

Treatment

The treatment strategy of IBS depends on the severity of the disorder.

Treatment usually involves:

Patient Counselling and Dietary Alterations: Reassurance and careful explanation of the functional nature of the disorder and of how to avoid obvious food precipitants are important first steps in patient counselling and dietary change.

For IBS-D patients, treatments include gut-acting pharmacologic agents such as:

Antispasmodics: Clinicians have observed that anticholinergic drugs may provide temporary relief for symptoms such as painful cramps related to intestinal spasm.

Antidiarrhoeals: Peripherally acting opiate-based agents are the initial therapy of choice for IBS- D.

The newer gut serotonin modulators serotonin receptor antagonists have been evaluated as therapies for IBS-D.

IBS patients with pain and psychosocial difficulties are best managed with antidepressants and other psychological treatments. In addition to their mood-elevating effects, antidepressant medications like tricyclic antidepressants (imipramine, desipramine) have several physiologic effects that suggest they may be beneficial in IBS.

In IBS-C patients, increased fiber intake and the use of osmotic agents such as polyethylene glycol may achieve satisfactory results. For patients with more severe constipation, a chloride channel opener (lubiprostone) or GC-C agonist (linaclotide) may be considered.

For IBS patients with predominant gas and bloating, a low-FODMAP diet (fermentable oligosaccharides, disaccharides, monosaccharides, and polyols) may provide significant relief. A diet rich in FODMAP often triggers symptoms in IBS patients. FODMAPs are poorly absorbed by the small intestine and fermented by bacteria in the colon to produce gas and osmotically active carbohydrates. Some patients may benefit from probiotics and rifaximin treatment.[18]

To our knowledge, this is the first college-based epidemiological study on prevalence of IBS and its association with anxiety and depression among medical students in Kerala. The prevalence of IBS (using ROME III criteria) was observed to be 17.45% among which 21.7% of females and 10.8% of males were affected.

This is comparable to study conducted among medical students in MAMC, New Delhi, India, where the prevalence of IBS was estimated to be around 16.5%.[17] In a Malaysian medical school, a study conducted on its students reported that 15.8% of them experienced IBS.[8] Two studies from Iran, the first from Shiraz University of Medical Sciences, the second from Gilan University, showed that 16.4% and 12.6% of medical students had IBS, respectively.[9] The highest prevalence of IBS among medical students was reported in a study from Japan, which revealed a prevalence of 35.5% among participants,[10] while the lowest prevalence of IBS among medical students was reported in Northern China to be 9.3%.[11]

The prevalence of IBS may vary among different studies, which may be due to the difference in study population from different countries and different diagnostic criteria used.

Anxiety, depression and stress are major contributing factors to IBS.[12–14] It has been identified that these are very common among medical students.[15,16] Thus, it may be possible that IBS is common among medical students.

In the current study, the prevalence of depression and anxiety was found to be 54.7% and 49.5% respectively which was further graded. Among those students affected

with depression, 27.5% suffer from IBS and 31.4% of those affected with anxiety suffer from IBS.

Though IBS is not fatal, it is associated with substantial impairment of quality of life thereby causing a significant burden on society with sufferers experiencing higher rates of work absenteeism, reduced productivity, and higher reliance on healthcare resources. This is of even greater concern for medical college students who are at an underlying risk due to heavy stress and shift work.

Conclusion

Prevalence of IBS has been on the rise. It largely remains undiagnosed and untreated. Psychological factors like anxiety and depression are major contributing factors to IBS and these are very common among medical students.

In our study the prevalence of IBS is found to 17.45% and it was found that students who suffer from anxiety and depression are more associated with IBS.

In conclusion, the prevalence of IBS in undergraduate medical college students in a medical college in Kerala was higher, more so over in female students. Association with anxiety and depression reflects their possible role in etiology of this disorder.

Limitations

- Samples were not taken randomly from each batch, therefore the generalizability of the results is poor.
- Online questionnaire was used owing to the covid19 scenario hence the responses may not be accurate as when the data is collected by an interviewer administered questionnaire.
- End aversion bias in Likert scale.
- The study was conducted in a single Medical College hence the results may not be generalizable.

Recommendations

As the prevalence of IBS is on the rise, it is necessary to bring down the etiological factors of IBS. Screening and early interventions should be done to reduce depression and anxiety among medical students and thus reduce the incidence of IBS.

Refresher training of clinicians can be done to enable them to pick up cases of IBS.

As health care professionals, it is our responsibility to educate the public about the need to seek timely interventions.

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Annexure

Rome 3 Criteria

Do you have a history of recurrent abdominal pain or discomfort for any 3 days per month in the last 3 months which is associated with any two out of three features:

1. Relieved with defecation; and/or
2. Onset associated with a change in frequency of stool; and/or
3. Onset associated with a change in form (appearance) of stool.

What were the symptoms?

1. Pain/discomfort relieved with defecation
2. Pain/discomfort associated with fewer BMs
3. Pain/discomfort with harder stools
4. Pain/discomfort associated with more BMs
5. Pain/discomfort with looser stools

6. >3 BMs/day
7. <3 BMs/week
8. Harder stool
9. Looser stool
10. Straining
11. Urgency
12. Incomplete evacuation
13. Passage of mucus
14. Bloating
15. Abdominal distention

PATIENT HEALTH QUESTIONNAIRE-9 (PHQ-9)

Over the last 2 weeks, how often have you been bothered by any of the following problems? *(Use "✔" to indicate your answer)*	Not at all	Several days	More than half the days	Nearly every day
1. Little interest or pleasure in doing things	0	1	2	3
2. Feeling down, depressed, or hopeless	0	1	2	3
3. Trouble falling or staying asleep, or sleeping too much	0	1	2	3
4. Feeling tired or having little energy	0	1	2	3
5. Poor appetite or overeating	0	1	2	3
6. Feeling bad about yourself — or that you are a failure or have let yourself or your family down	0	1	2	3
7. Trouble concentrating on things, such as reading the newspaper or watching television	0	1	2	3
8. Moving or speaking so slowly that other people could have noticed? Or the opposite — being so fidgety or restless that you have been moving around a lot more than usual	0	1	2	3
9. Thoughts that you would be better off dead or of hurting yourself in some way	0	1	2	3

FOR OFFICE CODING 0 + _____ + _____ + _____
=Total Score: _____

If you checked off any problems, how difficult have these problems made it for you to do your work, take care of things at home, or get along with other people?

Not difficult at all	Somewhat difficult	Very difficult	Extremely difficult
☐	☐	☐	☐

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GAD-7 Anxiety

Over the last 2 weeks, how often have you been bothered by the following problems? *(Use "✔" to indicate your answer"*	Not at all	Several days	More than half the days	Nearly every day
1. Feeling nervous, anxious or on edge	0	1	2	3
2. Not being able to stop or control worrying	0	1	2	3
3. Worrying too much about different things	0	1	2	3
4. Trouble relaxing	0	1	2	3
5. Being so restless that it is hard to sit still	0	1	2	3
6. Becoming easily annoyed or irritable	0	1	2	3
7. Feeling afraid as if something awful might happen	0	1	2	3

Column total = _____ + _____ + _____ + _____

Total score = _____