

Psychiatric, Somatic and Other Functional Gastrointestinal Disorders in Patients With Irritable Bowel Syndrome at a Tertiary Care Center

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Background/Aims

To study the prevalence of somatic and psychiatric co-morbidities in the patients of irritable bowel syndrome (IBS) and to assess the quality of life (QOL) of these patients.

Methods

One hundred and eighty-four IBS patients and 198 controls were included. Diagnosis of IBS, its sub-classification and assessment of other functional gastrointestinal disorders (FGIDs) was made on basis of Rome III criteria. Severity of IBS was assessed using IBS severity scoring system. Psychiatric evaluation was done using Patient Health Questionnaire. QOL was evaluated using WHO QOL-BREF.

Results

One hundred and forty-seven (79.9%) and 158 (85.9%) patients with IBS had at least one other FGID or at least one somatic co-morbidity, respectively. Higher number of patients had at least one psychiatric co-morbidity compared to controls (79.9% vs 34.3%; $P < 0.001$). Major depressive syndrome (47.3% vs 5.1%; $P < 0.001$), somatoform disorder (50% vs 14.6%; $P < 0.001$) and panic syndrome (44% vs 11.6%; $P < 0.001$) were more common in IBS than controls. Only 14 (7.6%) patients were receiving drug treatment for their psychiatric illness. Severe IBS symptoms were present in significantly higher number of patients with constipation predominant IBS than diarrhea predominant IBS. Those with severe disease had higher prevalence of psychiatric (95.1%) and somatic (96.7%) co-morbidities compared with mild disease. QOL of IBS patients was significantly lower in all four domains compared to controls. Presence of at least one other FGID was significantly associated with presence of one or more psychiatric co-morbidity ($P < 0.001$).

Conclusions

Majority of IBS patients presenting to a tertiary care center had associated psychiatric, somatic co-morbidities and reduced QOL. Very few of them received specific psychiatric treatment.

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Key Words

Anxiety disorders; Depression; Irritable bowel syndrome; Quality of life; Severity

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Introduction

Irritable bowel syndrome (IBS) is a functional gastrointestinal disorder (FGID) characterized by abdominal pain or discomfort and alteration of bowel habits in the absence of an organic disorder. IBS is the most common gastrointestinal disorder and the prevalence varies from 4% to 22% in the general population.¹⁻⁴ Although the pathophysiology of IBS is not completely understood; post infection inflammation, disordered intestinal motility, psychological distress and somatization, stressful life events and imbalance in the brain-gut interaction are a few proposed mechanisms which lead to onset and maintenance of symptom complex of IBS.⁵⁻⁷

Systematic review of the literature suggests that about 50% of patients with IBS have one or more somatic disorders and many IBS patients meet the diagnostic criteria for other FGID.⁸ In a recent meta-analysis, Ford et al⁹ reported an overlap between IBS and functional dyspepsia in 15%-42% of patients. Asian consensus on IBS has also highlighted an overlap between functional dyspepsia and IBS.¹⁰ Not only somatic or other FGIDs, but also 54% to 94% of patients with IBS do have associated psychiatric co-morbidities.^{8,11-14}

Studies have shown that patients with IBS make twice to thrice higher number of health-care visits per year than the age matched controls, and about 80% of these visits are for non-intestinal complaints.¹⁵⁻¹⁷ Similarly, patients with IBS and somatic comorbidity, in comparison with patients with IBS only, have more severe IBS symptoms, a higher rate of psychopathology such as depression, anxiety and somatization and a poor quality of life (QOL).^{8,17-19} There have been studies both in the West and Asia showing IBS patients having a poor QOL as compared to the general population.²⁰⁻²³ The QOL in patients with IBS depends not only on the symptoms specific to IBS, but also on the associated comorbid psychiatric and somatic diseases.^{17,24} There is a striking lack of data on somatic and psychiatric comorbidities in Asian patients with IBS. Unless these somatic and psychiatric manifestations are recognized and treated, the treatment of IBS will remain incomplete. In fact there are evidences that even low dose tricyclic antidepressants (TCAs) lead to overall improvement in the symptoms of IBS.²⁵

We, therefore, decided to study the prevalence of somatic and psychiatric co-morbidities in IBS patients, the awareness of magnitude of such problem will help in developing a holistic approach towards management of these patients. We also assessed the

QOL of these patients in comparison to controls.

Materials and Methods

This study was conducted between May 2010 and April 2011. One hundred and eighty four adult patients who were diagnosed to have IBS were recruited from the Outpatient Department of Gastroenterology and Human Nutrition, All India Institute of Medical Sciences, New Delhi. The diagnosis of IBS was made on the basis of Rome III criteria. Imaging studies were done to rule out any colon organic diseases only if there was a clinical indication. Only adult patients greater than 18 years of age were enrolled for the study. The subjects were interviewed on the basis of a pre-designed proforma. The diagnosis of IBS was further classified based on Rome III criteria into constipation predominant IBS (IBS-C), diarrhea predominant IBS (IBS-D), patients presenting with a mix of the 2 symptoms (IBS-M) and IBS unsubtype (IBS-U) with neither constipation or diarrhea.²⁶

Controls

One hundred and ninety eight apparently healthy relatives of the patients visiting outpatient departments and hospital employees were recruited as controls. Controls were similar to IBS patients with respect to age and gender. Only healthy adults greater than 18 years of age were taken as controls. We excluded all those who were suffering from any underlying medical or surgical conditions. Controls were assessed for psychiatric disorders and QOL. They were not evaluated for somatic complaints.

Ethics Committee approval was obtained from the Institutional Ethics Committee and informed consent was taken from the participants of the study.

Acquisition of the Data

The proforma consisted of the following parts:

Demographic features

The demographic features such as age, gender, domicile, religion, marital status, family type were recorded. The socio-economic status of patients and controls was calculated using modified Kuppuswamy scale.²⁷

Symptoms and severity of irritable bowel syndrome

It consisted of questions pertaining to diagnosis of IBS and its subtypes using Rome III criteria.²⁶ The severity of the IBS symptoms (IBS severity) was assessed using irritable bowel severity scoring system based on severity of pain perceived, number of pain days, days and severity of abdominal distension, sat-

isfaction with bowel habit and the quantization of interference in the patient's general life by these symptoms. Each of these questions generated a maximum score of 100 using prompted visual analogue scales. Scores generated for each of these modalities were summed up to get the final severity score (maximum up to 500). On the basis of the cumulative severity score, patients were classified having mild IBS (IBS severity score 75-175), moderately severe IBS (score 175-300) and severe IBS (score > 300).²⁸

Assessment for other functional gastrointestinal disorders

Presence of other FGIDs such as postprandial distress syndrome, unspecified excessive belching, cyclic vomiting syndrome, and proctalgia fugax were evaluated using Rome III criteria.^{29,30}

Assessment for somatic co-morbidities

Tension headache, migraine with and without aura, and cluster headache were evaluated using International Classification of Headache Disorders-2.³¹ Fibromyalgia was diagnosed using the American College of Rheumatology 1990 Criteria for the Classification of fibromyalgia.³² Patients were also asked for presence of disturbed sexual function, premenstrual syndrome and dysmenorrhoea. Patients were also evaluated for presence of asthma, palpitations and symptoms of fatigue.

Assessment of psychiatric co-morbidities

The patients with IBS and controls were screened for psychiatric co-morbidities using a Patient Health Questionnaire (PHQ).³³ Based on the responses to a model of questions, the comorbidities were classified into somatisation disorder, major depressive syndrome, other depressive syndrome, panic syndrome, other anxiety syndrome, bulimia nervosa, and binge eating disorder. However it should be kept in mind that since we have used PHQ and not a structured interview such as Structured Clinical Interview for DSM-IV (SCID-IV), we have only screened the participants for the above mentioned psychiatric disorders.

Assessment for quality of life

The QOL was determined using the World Health Organization-QOL (WHO-QOL)-BREF questionnaire which has been validated and used in our population previously.³⁴ The WHO-QOL assesses the individuals perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations standards and concerns.³⁵ It consisted of a set of 26 questions whose responses were graded on a 5 point scale. Four domains of QOL such as physical, psychological, social and environmental domains were assessed. The scores for each domain were represented as trans-

formed scores (0-100).

Statistical Methods

Statistical analysis was conducted using the STATA 11.1 statistical software (StataCorp, College Station, TX, USA). Comparisons between different IBS subgroups were performed using Chi-square test for categorical data and *t* test or ANOVA test for continuous data. Results were expressed in mean \pm SD. Correlation for scatter plot was done using linear regression and odds ratio was calculated using logistic regression. A *P* < 0.05 was considered significant.

Table 1. Demographic Characteristics of Patients With Irritable Bowel Syndrome and Control

Demographic characteristics	IBS (n = 184)	Controls (n = 198)	<i>P</i> -value
Age group (n [%])			0.274
18-30	69 (37.5)	94 (47.5)	
31-40	71 (38.6)	67 (33.8)	
41-50	31 (16.8)	25 (12.6)	
51-60	10 (5.5)	11 (5.6)	
> 60	3 (1.6)	1 (0.5)	
Gender (n [%])			0.272
Male	134 (72.8)	134 (67.7)	
Female	50 (27.2)	64 (32.3)	
Domicile (n [%])			0.001
Rural	69 (37.5)	43 (21.7)	
Urban	115 (62.5)	155 (78.3)	
Marital status (n [%])			0.001
Married	139 (75.5)	115 (58.1)	
Unmarried	43 (23.5)	83 (41.9)	
Widow	1 (0.5)	0 (0.0)	
Type of family (n [%])			0.001
Separated ^a	1 (0.5)	0 (0.0)	
Nuclear ^b	99 (53.8)	120 (60.7)	
Extended ^c	50 (27.2)	9 (4.5)	
Joint ^d	35 (19.0)	69 (34.8)	
Socioeconomic status (n [%])			< 0.001
Upper	25 (13.6)	10 (5.1)	
Upper middle	58 (31.5)	110 (55.6)	
Lower middle	70 (38.0)	57 (28.8)	
Upper lower	30 (16.4)	16 (8.0)	
Lower	1 (0.5)	5 (2.5)	

^aSeparated family, a family in which the primary couple are not living together despite being alive; ^bNuclear family, a family unit consisting of a mother and father and their progeny; ^cExtended family, a family unit and various relatives living in one household and functioning as a larger unit; ^dJoint family, a type of extended family composed of parents, their children and children's spouses and offspring in one household.
IBS, irritable bowel syndrome.

Results

Demographic Characteristics

The mean age of patients with IBS and controls was 32.9 ± 9.4 years (72.8% male) and 31.6 ± 10 years (67.7% male) ($P = 0.17$ for age and $P = 0.22$ for gender). The demographic characteristics of both patients and controls are shown in Table 1.

Subtypes and Severity of Irritable Bowel Syndrome

The 184 patients of IBS were further sub-classified into IBS subtypes using Rome III criteria. Of 184 patients, 57 (31%) had IBS-C, 69 (37.5%) had IBS-D, 58 (31.5%) had IBS-M and none had IBS-U. Based on IBS scoring system, 35 (19%), 88 (47.8%) and 61 (33.2%) had mild, moderately severe and severe IBS, respectively.

Patients With Irritable Bowel Syndrome Having Co-existent Other Functional Gastrointestinal Disorders

One hundred and forty-seven (79.9%) patients had at least 1 or more other associated FGIDs. Unspecified belching was the most common functional disorder associated with IBS and was

present in 101 (54.9%) of IBS patients. Other associated FGIDs were postprandial dyspepsia syndrome (PPDS) in 98 (53.3%), cyclic vomiting syndrome in 28 (15.2%), and proctalgia fugax in 17 (9.2%) patients. Co-morbidity with at least one FGIDs was significantly higher in patients with IBS-C (87.7%) compared to those with IBS-D (69.6%) ($P = 0.045$). The presence of at least one FGID was also significantly higher among patients with severe IBS as compared to mild IBS (93.4% vs 51.4%, $P = 0.003$) and moderately severe IBS (93.4% vs 81.8%, $P = 0.003$). Both PPDS (66.7% vs 36.2%, $P = 0.003$) and unspecified belching (66.6% vs 44.9%, $P = 0.045$) were more common in patients with IBS-C than those with IBS-D.

Patients With Irritable Bowel Syndrome Having Co-morbid Somatic Disorders

One hundred and fifty-eight (85.9%) patients had at least 1 or more somatic complaints. Fatigue was the most common somatic symptom associated with IBS and was present in 105 (57.1%) patients. The prevalence of other somatic complaints among IBS patients has been shown in Table 2. The presence of at least one somatic complaint was also significantly higher among patients with severe IBS symptoms in comparison to those with mild IBS symptoms (96.5% vs 58.6%, $P = 0.003$) and moderately severe IBS symptoms (96.5% vs 83.8%, $P = 0.003$). The prevalence of at least one somatic complaint was not significantly different among various subtypes of IBS such as IBS-C, IBS-D or IBS-M. However, there was a significant difference between prevalence of individual somatic co-morbidities amongst different subtypes of IBS. Fibromyalgia (48.3% vs 21.7%, $P = 0.006$), back pain (60.3% vs 26.1%, $P = 0.003$) and palpitations (72.4% vs 43.5%, $P = 0.003$) were significantly more common in patients with IBS-M as compared to those with IBS-D.

Patients With Irritable Bowel Syndrome Having Co-morbid Psychiatric Disorders

At least one or more psychiatric co-morbidity was identified in 147 patients with IBS which was significantly higher in comparison to controls (79.9% vs 34.3%, $P < 0.001$). The comparison of individual psychiatric illnesses between IBS patients and controls has been shown in Table 3. The presence of at least one psychiatric illness was significantly higher among patients with severe disease in comparison to those having mild IBS (94.4% vs 35.7%, $P = 0.003$) and moderately severe IBS (94.4% vs 76.1%, $P = 0.018$). Furthermore, patients with moderately severe IBS

Table 2. Somatic Co-morbidities in Patients With Irritable Bowel Syndrome

Somatic complaints	IBS (n = 184)
Excessive fatigue (n [%])	105 (57.1)
Palpitations (n [%])	101 (54.9)
Low back pain (n [%])	78 (42.4)
Tension headache (n [%])	66 (35.9)
Disturbed sexual function (n [%])	66 (35.9)
Fibromyalgia (n [%])	64 (34.8)
Migraine (n [%])	38 (20.7)
Dysmenorrhea (n [%])	23 (60.5)
	(premenopausal females)
Temporo-mandibular joint dislocation (n [%])	21 (11.4)
Premenstrual syndrome ^a (n [%])	16 (42.1)
	(premenopausal females)
Migraine (n [%])	7 (3.8)
Cluster headache (n [%])	6 (3.3)

^aPremenstrual syndrome refers to a wide range of physical or emotional symptoms that typically occur about 5 to 11 days before a woman starts her monthly menstrual cycle. The symptoms usually stop when menstruation begins, or shortly thereafter.
IBS, irritable bowel syndrome.

Table 3. Psychiatric Disorders in Patients With Irritable Bowel Syndrome and Controls

Psychiatric disorder	IBS (n = 184)	Controls (n = 198)	P-value	OR (95% CI) ^a
Somatoform disorder (n [%])	92 (50.0)	29 (14.6)	< 0.001	5.83 (3.57-9.50)
Major depressive syndrome (n [%])	87 (47.3)	10 (5.1)	< 0.001	16.86 (8.38-33.92)
Other depressive syndrome (n [%])	31 (16.8)	30 (15.2)	0.651	1.13 (0.66-1.96)
Panic syndrome (n [%])	81 (44.0)	23 (11.6)	< 0.001	5.98 (3.55-10.10)
Other anxiety syndrome (n [%])	56 (30.4)	17 (8.6)	< 0.001	4.66 (2.59-8.39)
Bulimia nervosa (n [%])	1 (0.5)	0 (0.0)	0.200	-
Binge eating disorder (n [%])	2 (1.1)	2 (1.0)	0.900	1.08 (0.15-7.72)

^aThe OR along with 95% CI were calculated for association of each psychiatric disorder with IBS using logistic regression. IBS, irritable bowel syndrome.

Table 4. Quality of Life Scores in 4 Different Domains in Patients With Irritable Bowel Syndrome

QOL domains	Control	IBS	IBS-C	IBS-D	IBS-M	P-value (IBS-C vs IBS-D)	P-value (IBS-D vs IBS-M)	P-value (IBS-C vs IBS-M)
Physical (mean ± SD)	63.9 ± 6.0	48.9 ± 13.4	44.6 ± 13.9	52.9 ± 3.4	48.5 ± 11.7	< 0.001	0.092	0.221
Psychological (mean ± SD)	73.0 ± 7.2	47.3 ± 16.8	43.5 ± 16.1	52.5 ± 15.6	45.0 ± 17.5	< 0.001	0.005	0.100
Social (mean ± SD)	79.6 ± 13.4	59.8 ± 24.1	52.3 ± 23.9	66.6 ± 20.5	59.3 ± 26.2	< 0.001	0.190	0.290
Environmental (mean ± SD)	87.3 ± 8.6	60.3 ± 19.1	54.8 ± 17.0	65.3 ± 19.2	59.7 ± 19.7	< 0.001	0.185	0.416

QOL, quality of life; IBS, irritable bowel syndrome; IBS-C, constipation predominant IBS; IBS-D, diarrhea predominant IBS; IBS-M, mixed IBS.

had a significantly higher number of patients having at least one psychiatric disorder in comparison to those having mild IBS (76.1% vs 35.7%, $P = 0.003$). The prevalence of somatoform disorder (17.1% vs 75.4%, $P < 0.001$), major depressive syndrome (11.4% vs 75.4%, $P < 0.001$) and panic syndrome (22.9% vs 67.2%, $P < 0.001$) were also significantly more in those having severe IBS in comparison to those having mild IBS. There was no significant difference in the prevalence of psychiatric disorders amongst various IBS subtypes such as amongst those having IBS-C, IBS-D or IBS-M. There was no correlation between the presence of psychiatric disorder with age, gender and socio-economic status of the patients with IBS.

Use of Psychoactive Drugs in Patients With Irritable Bowel Syndrome

Only 14 (7.6%) IBS patients were taking medications for a psychiatric disorder while just 1 (0.5%) control was taking medication for a psychiatric disorder. These medications were being prescribed by a psychiatrist.

Association Between Co-morbidities in Patients With Irritable Bowel Syndrome

Presence of at least one other FGID was significantly asso-

ciated with presence of one or more psychiatric comorbidity/morbidities ($P < 0.001$) with 99 patients having one FGID as well as one psychiatric co-morbidity. Similarly, presence of somatic co-morbidity was also significantly associated with presence of psychiatric comorbidity ($P < 0.001$) with 137 patients having at least one of both somatic and psychiatric comorbidities. There was no significant influence of the demographic factors on various psychiatric or somatic co-morbidities.

Absenteeism Because of Irritable Bowel Syndrome

Patients who were students, housewives or retired were excluded and the patients with IBS who were engaged in some occupation reported 8.7 ± 12.7 weeks of absenteeism from work in a year. The absenteeism from work was significantly more in those with severe IBS as compared with those of mild IBS (11.9 ± 12.1 vs 3.7 ± 11.2 weeks, $P = 0.045$). There was however no significant difference in the absenteeism from work amongst various subtypes of IBS such as IBS-C, IBS-D or IBS-M. Even those at work, they spent 18.1 ± 13.2 weeks suffering from symptoms of IBS. The suffering, in terms of time, while at work was also found to be significantly higher in patients with severe IBS (23.8 ± 13.4 weeks) than those with mild IBS (12.3 ± 11.3

Table 5. Quality of Life Scores in 4 Different Domains in Patients With Irritable Bowel Syndrome With Grades of Severity

QOL domains	Mild	Moderate	Severe	<i>P</i> -value (mild vs moderately severe)	<i>P</i> -value (moderately severe vs severe)	<i>P</i> -value (mild vs severe)
Physical (mean ± SD)	57.5 ± 11.4	51.1 ± 12.7	40.9 ± 11.3	0.027	< 0.001	< 0.001
Psychological (mean ± SD)	61.4 ± 14.6	50.2 ± 13.2	35.1 ± 14.5	< 0.001	< 0.001	< 0.001
Social (mean ± SD)	72.3 ± 21.4	63.4 ± 20.9	47.6 ± 24.8	0.147	< 0.001	< 0.001
Environmental (mean ± SD)	76.2 ± 14.2	62.3 ± 16.2	48.3 ± 17.9	< 0.001	< 0.001	< 0.001

QOL, quality of life.

weeks) ($P = 0.007$).

Quality of Life Scores in Irritable Bowel Syndrome

The QOL scores in all the four domains were significantly lower in patients with IBS as compared to controls ($P < 0.001$ in all the four domains) (Table 4). QOL scores were significantly lower in patients with IBS-C in comparison to those with IBS-D ($P < 0.001$ in all the four domains). The QOL scores in all the four domains were also worst in patients having severe IBS symptoms followed by those with moderately severe and mild IBS symptoms (Table 5).

Correlation Between Quality of Life and Severity of Irritable Bowel Syndrome

Using linear regression, it was observed that total QOL score decreased by 0.4 units (95% CI, 0.31-0.49) with each one unit increase in IBS severity score (Figure).

Discussion

IBS is known to coexist with other FGIDs, somatic disorders and psychiatric disorders as seen in the present study. The question arises whether these somatic disorders are actually separate disorders with some degree of overlap or as suggested by Wessely et al,³⁶ organization of these somatic complaints into discrete diagnosis is an artifact of medical sub-specialization. Wessely suggested that on the basis of clinical history, the same patient can be diagnosed having somatization disorder by a psychiatrist, fibromyalgia by a rheumatologist, IBS by a gastroenterologist, chronic pelvic pain by a gynecologist and so on. However, this coexistence of various somatic comorbidities with IBS also highlights that these disorders share a common underlying pathophysiology. Patients with IBS have enhanced visceral sensitivity to rectal or colonic distention as evidenced by decreased threshold

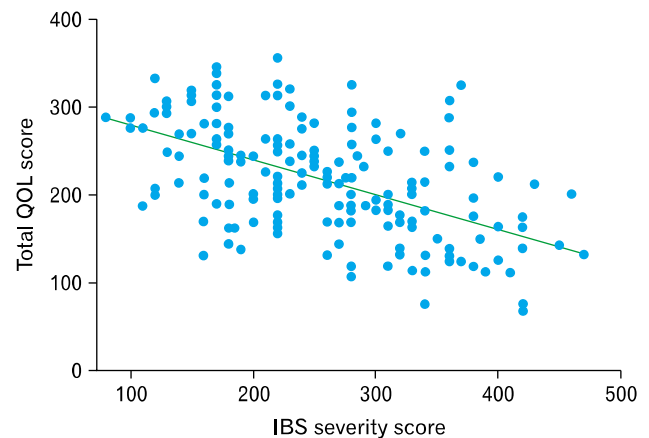


Figure. Correlation between irritable bowel syndrome (IBS) severity score and total quality of life (QOL) score. The total QOL score (the sum of QOL scores in all 4 domains) has been represented on the X-axis and IBS severity score has been represented on the Y-axis. A negative correlation was found between them. The total QOL score decreased by 0.4 units (95% CI, 0.31-0.49) with each 1.0 unit increase in IBS severity score (R-value, -0.55; $P < 0.001$).

for pain and exaggerated intensity of sensations.³⁷⁻³⁹ Similarly, somatic hypersensitivity has been extensively reported in disorders like fibromyalgia.⁴⁰ Widespread somatic hypersensitivity has also been shown in patients with IBS.⁴⁰⁻⁴³ This somatic and visceral hypersensitivity can thus be a common underlying pathophysiological factor for IBS and associated somatic co-morbidities such as migraine, fibromyalgia etc. The comorbidity of IBS with other FGIDs has also been extensively studied.⁴⁴ The visceral hypersensitivity and pan-gastrointestinal motility abnormalities in IBS can be a common pathophysiological basis for these FGIDs including IBS.⁴⁵

Like previous studies, present study also found an association between coexistence of somatic and psychiatric co-morbidities amongst patients with IBS.

We also observed those having moderately severe or severe IBS symptoms had one or more psychiatric or somatic co-mor-

bidities, which means thereby the associated comorbidities play a role in worsening of the disease severity. Furthermore, those with severe IBS had even worse QOL in all the four domains of assessable QOL. From the above data set, one can infer that presence of comorbid somatic or psychiatric comorbidities affect QOL of the individual. Also, patients with severe IBS reported a significantly higher duration of absenteeism from work when compared to those with mild IBS.

While approximately 80% of patients with IBS had one or more psychiatric disorder, only 7.6% of them were receiving any kind of psychiatric treatment. Presence of these psychiatric disorders warrants the use of pharmacological and non-pharmacological interventions in order to achieve the primary goal of treatment of IBS ie, improvement in QOL of these patients rather than just treating his/her gastrointestinal symptoms. Furthermore, previous studies have shown that excess health care costs in IBS are mainly due to associated comorbidities which is of immense importance considering the high prevalence of the IBS in the general population.^{8,15,16} TCAs have been found to improve general well being in addition to IBS symptoms in patients with IBS.²⁵ The dose of TCAs effective for this purpose is generally lower than that used for depression emphasizing further the fact that modulation of the brain-gut axis by increasing the central pain threshold rather than treating depression is the target in these patients.²⁵

The present study stresses that every 4 of 5 patients with IBS have associated psychiatric disorder or somatic disorder. Therefore, all patients with IBS need to be assessed for comorbid psychiatric or somatic disorders so as to develop a holistic approach towards management of these patients. Only then we would be able to treat these patients rather than treating their symptoms and will achieve the primary goal of improving the QOL of patients with IBS. We further emphasize, that a greater awareness is required amongst gastroenterologists, internists and primary care physicians about the associated comorbidities of IBS keeping in mind the high disease burden of this disease in the general population and the fact that most of these patients are treated by their primary care physicians. More time per patient seems to be an easy way to screen these patients for associated comorbidities.

While present study from an Asian country documents occurrence of psychiatric and somatic co-morbidities in high number of patients with IBS, this study has a few limitations. Since we used the PHQ and not a structured interview such as SCID-IV, the patients and controls were only screened for psychiatric co-morbidities. Thus the comorbid conditions may have been

overestimated in this study and this is a serious limitation of this study. Moreover this study was conducted at a tertiary care center, which generally receives referred patients having a prolonged and more severe disease. Therefore, there is a likelihood of higher estimation of associated psychiatric and somatic comorbidities in these patients in comparison to that seen in the general population and those seen by the primary or secondary care physicians. Moreover the patients and controls were similar only with respect to age group and gender and differed on the grounds of other demographic details.

In conclusion, majority of patients with IBS presenting to a tertiary care center have associated psychiatric or somatic comorbidities or overlapping other FGIDs. Majority of them have a worse QOL in comparison to controls. Only a few of them receive specific psychoactive treatment. This study emphasizes screening of all patients with IBS for presence of co-morbidities and if found, they should receive appropriate attention.

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