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Evaluating Anxiety and Depression in Patients with Irritable Bowel Syndrome

Dr Amrit Pal Singh*

*Assistant Professor, Department of Psychiatry, School of Medical Sciences and Research, Greater Noida, Uttar Pradesh, India
Corresponding author: Dr. Amrit Pal Singh, Department of Psychiatry, School of Medical Sciences and Research, Greater Noida, Uttar Pradesh, India

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Abstract

Background: Irritable Bowel Syndrome (IBS) is a functional gastrointestinal disorder frequently associated with psychological comorbidities such as anxiety and depression. These factors may contribute to symptom severity, impaired quality of life, and increased healthcare utilization.

Aim: To assess the prevalence of anxiety and depression among patients with IBS compared to healthy controls and to examine the relationship of psychological symptoms with IBS severity.

Material and Methods: This cross-sectional study enrolled 120 adult participants, including 60 patients diagnosed with IBS based on Rome IV criteria and 60 healthy controls matched for age and sex. Anxiety and depression were assessed using the Hamilton Anxiety Rating Scale (HAM-A) and the Hamilton Depression Rating Scale (HAM-D). IBS patients were further classified into

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moderate and severe categories based on symptom severity. Data were analyzed using descriptive statistics, Chi-square tests, and ANOVA, with $p<0.05$ considered statistically significant.

Results: IBS patients exhibited significantly higher mean HAM-A scores (17.82 ± 7.94), and HAM-D scores (15.92 ± 8.03) compared to controls (HAM-A: 5.26 ± 5.87; HAM-D: 4.81 ± 5.11; $p<0.001$). Within the IBS group, severe cases had markedly elevated anxiety and depression scores compared to moderate cases (HAM-A: 20.46 ± 8.92 vs. 10.54 ± 3.87, $p<0.001$; HAM-D: 18.11 ± 7.04 vs. 13.22 ± 8.45, $p=0.018$).

Conclusion: Anxiety and depression are highly prevalent among IBS patients, particularly those with severe symptoms. These findings underscore the need for integrated care approaches that address both gastrointestinal and psychological dimensions to improve patient outcomes.

Keywords: Irritable Bowel Syndrome, Anxiety, Depression, Gut-Brain Axis

Introduction

Irritable Bowel Syndrome (IBS) is a common functional gastrointestinal disorder characterized by chronic or recurrent abdominal pain associated with altered bowel habits, in the absence of identifiable structural or biochemical abnormalities [1]. The global prevalence of IBS is estimated at around 10–15%, with substantial variations across regions and populations [2]. Despite its non-lethal nature, IBS imposes a considerable burden on patients' quality of life, daily functioning, and psychological wellbeing [3].

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Over the past two decades, a growing body of literature has highlighted the strong bidirectional connection between the gut and the brain, often referred to as the "gut-brain axis" [4]. Dysregulation within this complex communication network is increasingly implicated in the pathophysiology of IBS, and psychological factors such as anxiety and depression play a central role in symptom generation and exacerbation [5]. Emerging evidence suggests that patients with IBS are more likely to exhibit clinically significant levels of anxiety and depressive symptoms compared to healthy controls, with some studies estimating the prevalence of anxiety disorders in IBS patients to exceed 40% [6].

The association between IBS and psychiatric comorbidities is believed to be multifactorial. Proposed mechanisms include alterations in central pain processing, heightened visceral sensitivity, dysregulation of the hypothalamic-pituitary-adrenal (HPA) axis, and disruptions in gut microbiota composition [7]. Neuroimaging studies have demonstrated that IBS patients frequently exhibit abnormal activation in brain regions involved in emotional processing and pain modulation, supporting the neurobiological basis for these comorbidities [8]. Additionally, chronic gastrointestinal symptoms and the unpredictability of symptom flares can perpetuate anxiety and depression, creating a vicious cycle of symptom amplification and psychological distress [9].

IBS is clinically heterogeneous and categorized into several subtypes—diarrhea-predominant (IBS-D), constipation-predominant (IBS-C), mixed (IBS-M), and unclassified—based on the predominant stool pattern [10]. Emerging data indicate that different IBS subtypes may exhibit

distinct psychological profiles. For example, patients with IBS-D often report higher levels of anxiety, possibly due to fear of incontinence, while those with IBS-C may be more prone to depressive symptoms linked to chronic discomfort and bloating [11]. However, findings remain inconsistent, and further research is needed to elucidate these subtype-specific relationships [12].

Assessing the prevalence and severity of anxiety and depression in IBS patients is essential not only for understanding the disorder's biopsychosocial dimensions but also for guiding comprehensive treatment strategies. Integrating psychological screening and intervention into IBS management may improve patient outcomes, symptom control, and overall wellbeing [13]. Despite the growing interest in this field, studies comparing anxiety and depression across IBS subtypes and matched healthy controls remain limited in many populations [14].

The present study aims to assess the prevalence of anxiety and depression in patients diagnosed with IBS in comparison to healthy controls and to explore the association of psychological symptoms with specific IBS subtypes. This research seeks to contribute to a more nuanced understanding of the gut-brain interplay in IBS and inform multidisciplinary approaches to care.

Material and Methods

This comparative, cross-sectional study was conducted over a defined period at a tertiary care hospital. A total of 120 adult participants were enrolled, comprising 60 patients diagnosed with Irritable Bowel Syndrome (IBS) and 60 healthy controls matched for age and sex.

IBS Patients

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Patients diagnosed with IBS were included if they were aged between 18 and 65 years and met the Rome IV diagnostic criteria for IBS as confirmed by a gastroenterologist. Patients with severe systemic illnesses, history of psychiatric disorders requiring treatment, current use of psychotropic medications, pregnancy, lactation, or substance abuse were excluded. Each IBS patient was further classified into subtypes—diarrhea-predominant (IBS-D), constipation-predominant (IBS-C), mixed (IBS-M), or unclassified—based on predominant bowel habits reported over the preceding three months.

Controls

Healthy controls were selected from the general population without any history of gastrointestinal symptoms, chronic medical illness, or psychiatric conditions. Inclusion criteria included age between 18 and 65 years and willingness to participate in the study. Exclusion criteria were the same as those applied to IBS patients.

Assessment Tools

All participants underwent a detailed clinical assessment, including demographic data collection and medical history. Anxiety and depression were evaluated using the Hospital Anxiety and Depression Scale (HADS), which includes 14 items: 7 assessing anxiety and 7 assessing depression. Each item is scored between 0 and 3, with subscale scores interpreted as follows: 0–7 (normal), 8–10 (borderline abnormal), and ≥11 (indicative of clinical anxiety or depression).

Procedure

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The study objectives were explained to all participants, and written informed consent was obtained. The HADS questionnaire was administered in the participant's preferred language in a quiet setting to ensure privacy. IBS patients also completed a detailed proforma recording symptom duration, frequency, and IBS subtype classification.

Data Analysis

Data were compiled systematically and entered into a spreadsheet for analysis. Descriptive statistics were calculated for all variables. Continuous variables were expressed as mean ± standard deviation, and categorical variables as frequencies and percentages. The prevalence of anxiety and depression was compared between IBS patients and healthy controls using the Chi-square test. Associations between IBS subtypes and the severity of anxiety and depression were analyzed using analysis of variance (ANOVA) with post hoc testing where appropriate. A p-value of <0.05 was considered statistically significant.

Results

Table 1 shows the comparison of anxiety and depression scores between patients with Irritable Bowel Syndrome (IBS) and healthy controls. The mean Hamilton Anxiety Rating Scale (HAM-A) score among IBS patients was 17.82 ± 7.94, which was significantly higher than the control group (5.26 ± 5.87, $p<0.001$). Similarly, the mean Hamilton Depression Rating Scale (HAM-D) score in IBS patients was 15.92 ± 8.03, while controls had a much lower mean score (4.81 ± 5.11, $p<0.001$).

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These findings indicate a strong association between IBS and increased levels of anxiety and depression compared to individuals without IBS.

Table 2 compares anxiety and depression scores within the IBS group based on symptom severity. Patients classified as having severe IBS had markedly higher HAM-A scores (20.46 ± 8.92) compared to those with moderate IBS (10.54 ± 3.87, p<0.001). Depression scores (HAM-D) were also higher in the severe IBS group (18.11 ± 7.04) compared to the moderate group (13.22 ± 8.45), with the difference reaching statistical significance (p=0.018). This demonstrates that symptom severity in IBS is closely linked to the intensity of anxiety and depressive symptoms.

Table 1: Difference Between IBS Cases and Healthy Controls in Terms of HAM-A and HAM-D Scores

Variable	IBS Patients (n=60)	Controls (n=60)	p-value
HAM-A	17.82 ± 7.94	5.26 ± 5.87	<0.001**
HAM-D	15.92 ± 8.03	4.81 ± 5.11	<0.001**

Table 2: The Difference Between Moderate and Severe IBS in Terms of Anxiety and Depression

Variable	Moderate IBS (n=22)	Severe IBS (n=38)	p-value
HAM-A	10.54 ± 3.87	20.46 ± 8.92	<0.001**
HAM-D	13.22 ± 8.45	18.11 ± 7.04	0.018*

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Discussion

This study demonstrates a significant association between irritable bowel syndrome (IBS) and elevated levels of anxiety and depression when compared to healthy controls. The findings are consistent with the well-established concept of the gut-brain axis, which posits bidirectional communication pathways linking emotional regulation centers of the brain to gastrointestinal function. Dysregulation of this axis is a prominent feature in IBS pathogenesis and likely contributes to the observed psychological comorbidity [11].

In our cohort, nearly all patients with severe IBS symptoms exhibited moderate to high levels of anxiety and depression scores. These observations are in line with recent research indicating that higher symptom burden is correlated with greater psychological distress and impaired quality of life [12]. The chronic and unpredictable nature of IBS symptoms, particularly in severe cases, often leads to maladaptive coping strategies, hypervigilance about bodily sensations, and social avoidance behaviors, all of which perpetuate anxiety and depressive symptoms [13].

Notably, our analysis revealed that patients with severe IBS had significantly higher HAM-A and HAM-D scores compared to those with moderate IBS. These results corroborate previous studies suggesting that symptom severity is not solely determined by gut motility disturbances but is closely intertwined with emotional and cognitive processes [14]. Moreover, brain imaging studies have shown that patients with severe IBS often have increased activation of limbic regions such

as the amygdala and anterior cingulate cortex, which are critical in processing pain and emotions [15].

The substantial difference in psychological symptom burden between IBS patients and healthy controls highlights the necessity of integrating routine mental health assessment into the management of IBS. Conventional pharmacologic treatments aimed solely at gastrointestinal symptoms may be inadequate if anxiety and depression are unaddressed. Multimodal treatment approaches, including psychotherapy (e.g., cognitive-behavioral therapy), gut-directed hypnotherapy, and pharmacologic interventions targeting central nervous system pathways, have demonstrated efficacy in improving both psychological outcomes and gastrointestinal symptoms [13,14].

The findings from this study further underscore the need to consider the heterogeneity of IBS when designing therapeutic strategies. Given that different subtypes and severity levels of IBS may have distinct psychological profiles, a personalized approach to care could optimize outcomes and improve patients' overall wellbeing [12]. Future research should focus on longitudinal assessment of psychological symptoms in IBS and evaluate how targeted interventions influence the trajectory of anxiety, depression, and gut symptom severity over time.

Conclusion

This study confirms that patients with IBS experience significantly higher levels of anxiety and depression compared to healthy controls, with the severity of psychological symptoms strongly

associated with the severity of IBS. These findings highlight the importance of early identification and integrated management of psychological comorbidity in IBS patients. Incorporating routine screening and multidisciplinary interventions addressing both gastrointestinal and mental health symptoms should be considered essential components of comprehensive IBS care.

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