

Irritable Bowel Syndrome (IBS) and its relation with anxiety and depression: A literature review

 Urwah Ishaque*¹

 Shakeela Parveen²

 Mamoon Yousaf³

 Zainab Riaz⁴

 Muhammad Tayyab⁵

 Mehwish Sultana⁶

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Abstract

A condition known as irritable bowel syndrome (IBS) affects both the stomach and intestines. Many different symptoms vary from individual to person. Along with digestive issues like stomach pain, bloating, diarrhea, and/or constipation, IBS is also linked to several mental illnesses like wrath, sadness, anxiety, and stress. Treatment entails both dietary and lifestyle modifications for mental disorders. IBS has three subtypes: IBS with constipation (IBS-C), IBS with diarrhea (IBS-D), and IBS with a combination of both constipation and diarrhea (IBS-C/D) (IBS-M). Because the brain-gut axis is so important in psychiatric illnesses in IBS patients, cognitive-behavioural treatment methods are advised. IBS is the second most common cause of job abandonment after depression and anxiety, which affect people throughout their lives. In order to examine the relationship between irritable bowel syndrome and depression and anxiety using keywords, data from search databases and many papers published between 2003-2023 were gathered.

Keywords: Gastrointestinal disease, Brain-Gut axis, Neurological disorders, Bowel movement

¹Government Sadiq College Women University, Bahawalpur, Punjab, Pakistan

*Corresponding author: urwahishaque444@gmail.com

²Government Sadiq College Women University, Bahawalpur, Punjab, Pakistan

³Shalamar Institute of health sciences, Lahore

⁴Government Sadiq College Women University, Bahawalpur, Punjab, Pakistan

⁵Government College University Faisalabad, Pakistan

⁶Government Sadiq College Women University, Bahawalpur, Punjab, Pakistan



1 Introduction

The IBS (Irritable bowel syndrome) is a gastrointestinal tract functional syndrome that is attributed to gastric pain or irritation, changes in defecation behaviour (it can be constipation, diarrhea, or maybe both), and other clinical manifestations, including abdominal distension and maybe sensations of bloating, inadequate elimination and urgency (Yu et al., [2019](#); Muscatello et al., [2010](#)). IBS patients have several gastrointestinal problems, with the same signs such as pain in the head, pain or difficulty urination, neurological disorder fibromyalgia, depression, anxiety, and extreme tiredness (El-Salhy, et al., [2012](#)).

The severity of complications varies and may have specific effects on patients' standard of living and also boost healthcare costs. IBS pathology is not commonly understood; IBS treatment is still primarily aimed at symptoms (Modabbernia, et al., [2012](#)). The detection is built on clinical outcomes (Soares, et al., [2015](#)). Several observational trials and reviews by multiple researchers have found that most of the patients receiving medical treatment for IBS can be having psychological concurrent diseases, most generally disturbances in an emotional state; the co-occurrence of anxiety disorders and somatization disorder has sparked controversy about the effectiveness of IBS identification (El-Salhy, et al., [2012](#)). Psychiatric disorders, including depression and anxiety, affect IBS patients and psychological and social factors play a significant role in the disorder's growth, as well as its result and diagnosis (Qureshi et al., [2016](#); AlButaysh, et al., [2020](#)).

It is divided into three main categories based on enduring bowel habits: IBS-C (with the prevailing symptom of constipation); IBS-D (with the prevailing symptom of diarrhea); and IBS-M (with the prevailing symptom of both constipation and diarrhea (AlButaysh, et al., [2020](#)). The causes and origins of IBS disorder are complex and still unclear, although it may be caused by a wide range of factors such as gut vulnerability, irregular bowel movement, and psychological and social factors (Chen et al., [2021](#)). As attention to the relationship between the gastrocolic and central nervous systems has increased, the likelihood that IBS is related to the highly sensitive biochemical signalling that occurs between the GI tract and the CNS, sometimes known as the brain-gut axis, has increased (AlButaysh, et al., [2020](#)). According to predictions, IBS will affect between 10 and 15 percent of people worldwide, primarily women (Lee et al., [2015](#)). However, local results in Pakistan have revealed a slightly higher prevalence of IBS in one survey: in one, 34% of the individuals were affected, while in another, 45% of adults were found to have IBS (AlAmeel, et al., [2020](#)). The primary objective of this paper is to look into the interrelation of Irritable bowel syndrome with both depression and anxiety.

2 Methodology

Data from search databases such as Google Scholar, PubMed, Science Direct, Springer, Europe PMC, several research journals, and numerous publications published between 2003-2023 were acquired for this purpose by using the keywords such as IBS, depression, anxiety, bowel movement, cognitive factors, and gut-brain axis.

2.1 Cognitive factors

IBS is a complicated disorder with an unexplained aetiology and many pathogens, including abnormal movability, congenital hypersensitivity, swelling, autonomic dysfunction, and central nervous system control. In addition to these physiological variables, social variables also play a part in IBS (Bengtson, et al., [2015](#)). Irritable bowel syndrome (IBS) is correlated to a poor standard of living, greater use of medical care, and high medical expenses. The linkages between IBS, anxiety, and depression are affected by genetic and intrauterine causes (Bengtson, et al., [2015](#)).

The three key goals of the logical-physiological therapy strategy (Figure 1) are to assist clients in rethinking their IBS encounter from feeling depressed to ingenuity and determination, to assist

clients with making sense of the links between their emotions, beliefs, behaviors, climate, and IBS symptoms, to empower patients to study and follow more effective IBS management strategies in order to improve the standard of living (Sugaya et al., [2008](#)).

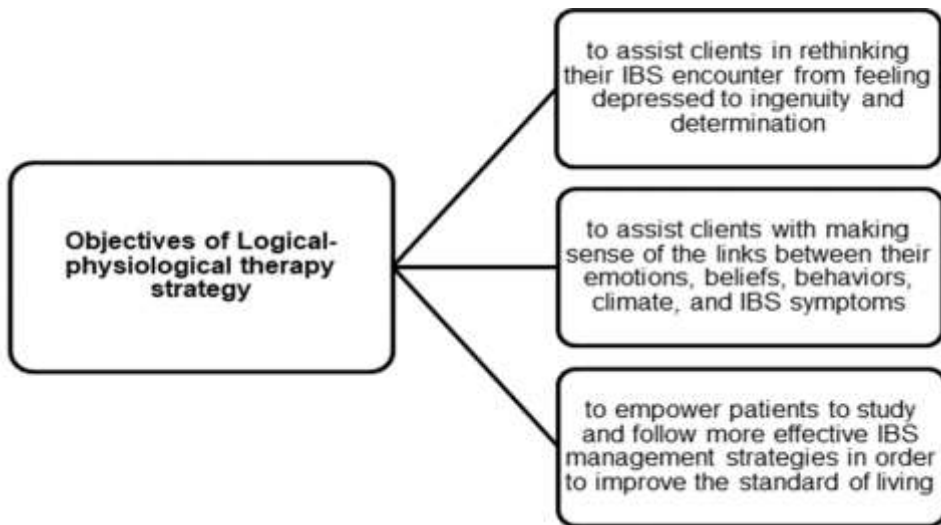


Figure 1 Objectives of the cognitive-behavioral therapy strategy.

2.2 Brain to Gut Axis and its effect on the gut

It's critical to comprehend IBS because the "brain-gut axis" is a conceptual theory that depicts the bidirectional neurological connections that link the brain's physiological and behavioural centres to the immune system, enteric nervous system, and neuroendocrine centres in the body (Soares, et al., [2015](#)).

The brain-gut axis, a crucial link in the pathological processes of functional gastrointestinal disorders (FGID), is the term for the biochemical connection between the neurological system and the gastrointestinal tract.(Bengtson et al., [2015](#)) In the autonomic nervous system, mental health issues, depression, and anxiety can have a variety of effects on the stomach, including a decrease in parasympathetic rhythm and an increase in sympathetic rhythm, regulation of the hypothalamic-pituitary-adrenal (HPA) axis, including the release of corticotrophin-releasing factor (CRF) and cortisol, as well as diverging nervous and endocrine circuits that frequently promote the irregular elevation of digestive problems.(Keightley, et al., [2015](#); Deidda, et al., [2021](#)).

2.3 Bowel movement

Intestinal motility activities can be emotionally activated, and IBS patients have been reported with intensified bowel contractions after dreadful accidents, an amplified autonomic reflex of the intestine, varied stomach evacuating, and enhanced small intestinal movement (Deidda, et al., [2021](#)). The suggested reason for this disadvantage is that patients with IBS may have a lower tolerance for dealing with traumatic situations and unpleasant feelings (Liu et al., [2014](#); Yang et al., [2022](#)).

2.4 Anxiety and its relation with IBS

According to the Diagnostic and Statistics Manual of Psychiatric Disorders, anxiety is characterized by a high frequency of a generalized anxiety disorder (GAD). Anxiety is the fear of controlling the components of the collective unconscious under which human primal life and man

is generally engaged in arranging his life based on rational planning (Fournier et al., [2020](#)). Symptoms of anxiety (Figure 2) include restlessness, quick tiredness, sleep disturbance, muscle stiffness, concentration trouble, and irritability (Jaber, et al., [2016](#)). IBS patients have psychiatric complications and depressive disorders; however, the majority of them have anxiety-related states that are heightened but not clinically significant (Banerjee, et al., [2017](#)).

Studies show that rage, panic, pain, and anxiety increase colon motor activity in both irritable bowel syndrome patients and healthy people. In contrast, IBS patients show higher colon functional activities to these emotions (Banerjee, et al., [2017](#)).

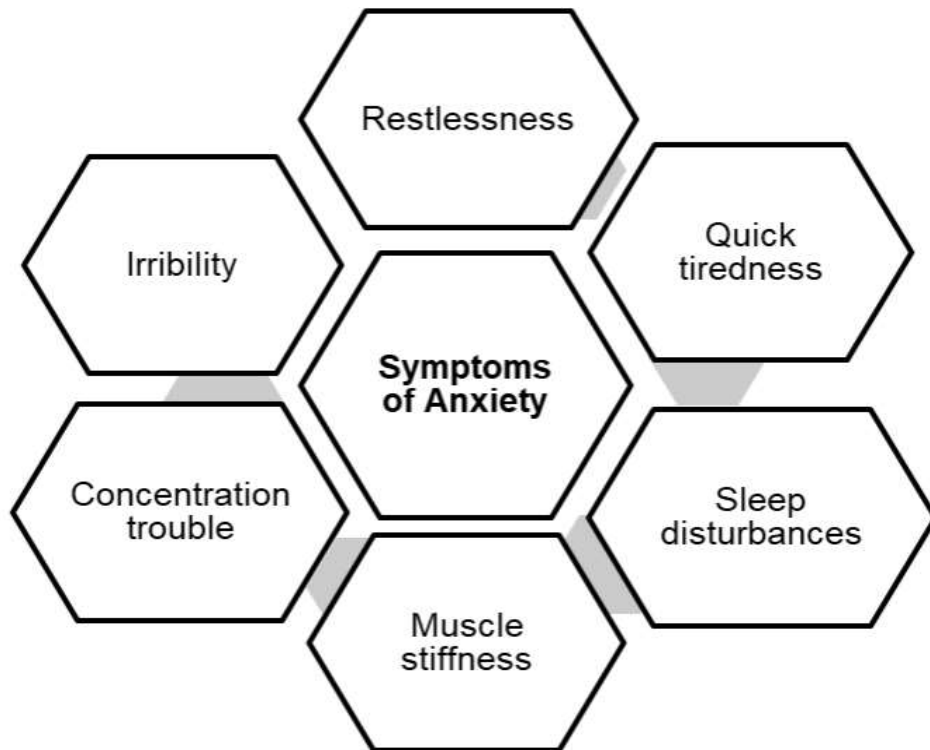


Figure 2 Symptoms of anxiety

2.5 Depression and its relation with IBS

An important factor in the global problem of disease that affects people from all backgrounds is depression (Pletikosić Tončić, et al., [2017](#)). According to (Banerjee, et al., [2017](#)) it may be assumed that IBS patients have premorbid physical characteristics that affect how they perceive and are affected by physical reactions, which can result in depression, outward displays of discomfort, and even more activity in search of medical care.

Additional signs (Figure 3) include at least two: loss of appetite or binge eating, tiredness or fatigue, lack of self-confidence, poor concentration or verdict failure, and feelings of inadequacy (Pletikosić Tončić, et al., [2017](#)). Women had a higher prevalence of possible depression, as well as a higher mean degree of symptoms of depression, than men, although it was not statistically important (Modabbernia, et al., [2012](#)).

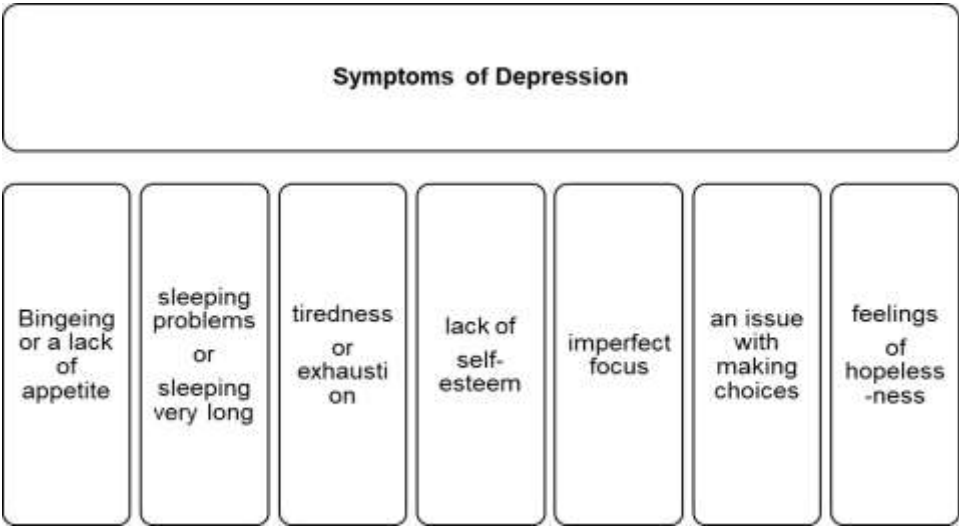


Figure 2 Symptoms of Depression

2.6 Subtypes of IBS and their relation with depression and anxiety

For IBS subtypes, stool consistency serves as a diagnostic indicator. According to Rome III recommendations, IBS is categorized into four subtypes: diarrhea-predominant Irritable Bowel Syndrome (D-IBS), constipation-predominant Irritable Bowel Syndrome (C-IBS), and un-subtyped Irritable Bowel Syndrome (U-IBS) (El-Salhy, et al., 2012). IBS subclasses differ in their effects on quality-of-life measures and their specific suggestive symptoms of depressive moods. In contrast to individuals with diarrhea-predominant IBS, those with constipation-predominant IBS appear to be more emotionally disturbed and exhibit distinct, diagnosable patterns of melancholy, anxiety, and frustration (Chen et al., 2022)

Variation in defects of serotonin: 5-hydroxytryptamine systems are characterized by Irritable bowel syndrome subtypes, with D-IBS participants displaying an elevated figure of enter endocrine cells and postprandial plasma serotonin levels relative to patients with Constipation-predominant Irritable bowel syndrome (Grad et al., 2020).

The elevated number of clinical chronicity, doctor consultations, and backgrounds of sexual assault in diarrhea-predominant Irritable bowel syndrome patients is observed in contrast to Constipation-predominant Irritable bowel syndrome patients who registered mild levels of psychiatric problems and a smaller number of sexual assaults in infants. A recent study looked at the impact of symptoms of depression on rectal vulnerability in subgroups of IBS patients (predominantly indigestion vs. alternate subgroups) (Grad et al., 2020).

Regarding the relationship between Irritable Bowel Syndrome subclasses and the frequency of clinical manifestations with anxiety attack, patients with diarrhea-predominant IBS exhibit more preventative behavior and agoraphobic symptoms than patients with other IBS subclasses (Banerjee, et al., 2017).

Table 1. Subtypes of IBS along with their predominant symptoms and most observed properties of these subtypes are listed in this table.

Subtypes of IBS [15]	Predominant Symptoms [15]	Observed properties
IBS-C	Diarrhea-predominant IBS	• More emotionally disturbed (El-Salhy, et al., 2012; Ford et al., 2017) Low number of enteroendocrine cells (Atkinson et al., 2016) • Decreased levels of postprandial plasma serotonin levels (Ford et al., 2017; Atkinson et al., 2016) • Mild degree of psychological problems and decreased proportions of sexual assault in infants (Chen et al., 2022) • Less preventative activity and agoraphobic symptoms (Sugaya et al., 2008)
IBS-D	Constipation-predominant IBS	• Less emotionally disturbed Elevated number of enteroendocrine cells • Elevated degree of postprandial plasma serotonin levels • Medical dissociative disorders, doctor appointments, and past of sexual harassment are all strong. • More preventative activity and agoraphobic symptoms
IBS-M	Mixed type IBS	• Depressive symptoms on rectal sensitivity • Less preventative activity and agoraphobic symptoms
IBS-U	Un-subtyped IBS	• Depressive symptoms on rectal sensitivity (Modabbernia, et al., 2012). • Less preventative activity and agoraphobic symptoms (Sugaya et al., 2008).

2.7 Prevalence of IBS

Many people suffer from irritable bowel syndrome. Age and gender are two variables that can affect the severity of IBS (Figure 4). (El-Salhy, et al., [2012](#)). The projected frequency of several psychiatric conditions that determine medical services seeking behaviours in the general population is therefore considerable, yet few of them sought medical care (Su et al., [2023](#)). Irritable bowel syndrome affects women more severely than it does men, but it is more common in women under the age of 45 (Occhipinti et al., [2012](#)). The frequency of depression is higher in people with

irritable bowel syndrome, and there is a strong correlation between these two characteristics. Past trauma is more likely to have occurred in IBS patients (Hagan et al., [2020](#)). IBS patients are more likely to experience anxiety-depressive issues based on the research population, study duration, specimen size, and testing techniques. Numerous researches have looked into the connection between irritable bowel syndrome and psychological illnesses. Neurosis, anxiety, sadness, and disordered cognition have been linked to greater rates in IBS patients (Kopczyńska et al., [2018](#)).

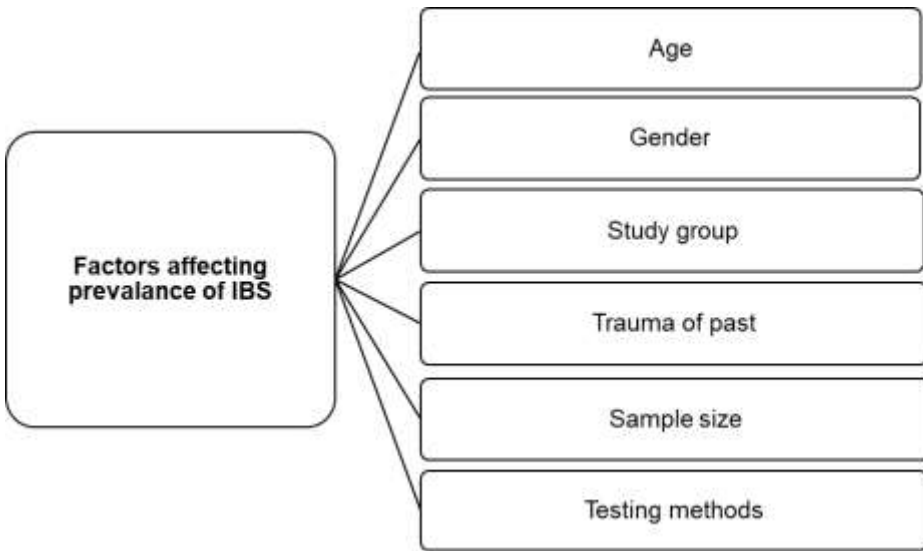


Figure 4 Factors affecting the prevalence of IBS

3 Conclusion

IBS is a chronic disease whose origin is primarily uncertain and whose episodes are sporadic and uncontrollable, with typical abdominal pain or discomfort. For IBS, misery is an important subject that has so far gained relatively little coverage. Many researchers have found in numerous observational studies and report that most people seeking psychiatric care for medical co-morbidity primarily temper disturbances, anxiety problems, and somatization irregularity may occur with IBS, and this coincidence has fueled debate about the efficacy of IBS prognosis. IBS subclasses can manifest depressed feelings in different ways and have different effects on quality-of-life measures. Depression, anxiety, and rage symptom patterns differed among IBS variants. Behavioral and cognitive signs are distinctive and central to the condition, and understanding the differences between IBS subclasses can have a significant effect on therapeutic interventions and medical outcomes. Individuals with Irritable bowel syndrome develop pre-morbid characteristics that impact how they interpret and are affected by psychiatric factors, contributing to depression, psychological distress, and enhanced patient's physical conditions. The risk of depression and anxiety disorders in people with Irritable bowel syndrome is extremely high. On that account, IBS patients' tests for anxiety and depression, improved therapies, and outcomes can be achieved. Psychiatric co-morbidities of IBS cases should be given special consideration by professionals.

Access to Data: Available Upon Request

Conflicts of Interest

All authors declare that, they have no conflict of interest.

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