



Irritable bowel syndrome and mental health: An overview

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Abstract

Irritable bowel syndrome (IBS) is the most common condition of gut-brain connections, affecting 10-15% of the general population globally. IBS is classified as a functional gastrointestinal disorder and results from dysregulation of central and enteric nervous system interactions. Furthermore, recent studies indicate that psychological distress may alter systemic and gut immunity, which is increasingly recognized as a pathophysiologic feature of IBS. The diagnosis is currently limited to recurrent abdominal pain associated with altered bowel habits, but the majority of patients also experience non-painful abdominal discomfort, linked to psychiatric conditions (anxiety and depression), along with additional symptoms associated with visceral and somatic pain. Due to the varied nature of the illness and the range of medicines available, clinicians may struggle to determine the best method for managing individuals with IBS. Psychosocial factors are closely related to their gut physiology, associated cognitions, symptom manifestations, and illness behavior. As a result, although symptoms may improve with pharmacologic treatment, to provide the best care, the physician must be aware of the psychosocial problems that IBS patients experience and establish positive patient-physician relationships.

Keywords: Irritable bowel syndrome; Gut-brain connection; Psychosocial factors; Psychiatric conditions.

1. Introduction

Irritable bowel syndrome (IBS) is a frequently incapacitating gastrointestinal (GI) illness marked by abdominal pain coupled with altered bowel habits and often bloating⁽¹⁾. Given that its symptoms are unrelated to any structural or biochemical abnormalities in the gut, it is categorized as a functional gastrointestinal disorder⁽²⁾. IBS is presently estimated to affect 15% of the world's population. The prevalence of IBS is significantly more common in women than in men⁽³⁾. IBS is not linked to higher death rates but is associated with physical distress, often co-occurring with other conditions such as fibromyalgia, sleep problems, urogenital problems, and chronic fatigue syndrome. In addition, IBS individuals have negative emotional and socioeconomic effects as a result of the illness⁽⁴⁾. IBS patients reflect significant rates of psychopathology, poor quality of life, and increased suicide ideation. Previous research on chronic pain has provided theories that line with present studies, indicating that both physical pain symptoms and emotional distress impact daily performance. However, the impact of IBS on daily functioning is little understood⁽⁵⁾.

One of the most studied features of IBS is the "brain-gut axis" (BGA), which includes the enteric nervous system, the autonomic nervous system, and/or the central nervous system, is a collective term defining linkages relating physiological systems that have been seen to be changed in individuals with IBS^(6,7). The microbiome modulates gastrointestinal function and has evolved into an essential part of gut-brain communication due to its effects on endocrine, neurological, and immunological pathways⁽⁸⁾.

Although the etiology and pathophysiology of IBS are heterogeneous, changes in bowel habits are probably related to changes in the autonomic regulation of gut motility, whereas symptoms of abdominal pain and discomfort are thought

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to involve changes in the perception of visceral events as a result of visceral hyperalgesia. Altered motility, visceral hyperalgesia, disturbance of brain-gut interaction, hormonal events, genetic and environmental factors, and immune activation, are variably involved in the pathogenesis of IBS, depending on the individual^(9,10).

To date, symptom-based diagnostic criteria, biomarkers, and psychological markers are modest in predicting IBS. However, the complex and multifactorial etiology of IBS may mean that no single biomarker can be found that can diagnose IBS with the accuracy required for a clinically useful test. IBS is diagnosed using symptom-based criteria. The current gold standard for diagnosing IBS is the most recent version, the ROME IV diagnostic criteria.

IBS patients are often divided into subgroups based on the primary bowel habit they have associated with changes in the appearance and frequency of stools.

- IBS with predominant constipation (IBS-C): hard or lumpy stools in 25% of bowel movements.
- IBS with predominant diarrhea (IBS-D): loose (mushy) and watery stools in 25% of bowel movements.
- IBS with mixed bowel habits (IBS-M): hard or lumpy stools 25% and loose (mushy) and/or watery stools 25% of bowel movements.
- Unclassified IBS (IBS-U): insufficient abnormality of stool consistency to meet criteria for IBS-C, D, or M⁽¹¹⁻¹³⁾.
- The severity and type of symptoms dictate the course of treatment. Physicians have a variety of treatments at their disposal, but the most common and advised ones include pharmaceutical therapies, psychological interventions, and lifestyle & nutritional management⁽¹⁴⁾.

2. Casual association of IBS and mental health

Of all the disorders of the gut-brain axis, IBS is the most common. It is now known that a variety of peripheral mechanisms and centrally mediated processes involving visceral hypersensitivity and disturbances of gastrointestinal motor and sensory functioning can cause IBS symptoms⁽¹⁵⁾. A significant amount of research points to a causal relationship between gastrointestinal symptoms and psychosocial factors, at least in some subgroups of IBS sufferers. It has been established that stress, anxiety, and fear are related to gastrointestinal problems. Psychological stress has a significant impact on visceral sensitivity and motility⁽¹⁶⁾. The underlying mechanism is closely related to mucosal immune activation, and changes in the central nervous system, peripheral neurons, and gut microbiota. Neuroendocrine changes brought on by stress-immune mechanisms influence the microbiome-gut-brain axis or gut-brain axis, which might exacerbate IBS symptoms⁽¹⁷⁾.

Multiple factors are responsible for instigating and perpetuating IBS, and there is overlap in pathways common to both mental health disorders and IBS. The association of IBS and mood disorders has long been documented; the associated inflammation brought on by changes in gut microbes and elevated cytokines causes oxidative stress, which in turn damages brain regions like the hippocampus and amygdala that are involved in the etiology of depression and other mental health disorders. Cytokines alter glutamate levels that modify neuroplasticity and neurogenesis by exerting an excitotoxic effect. Cytokines induce a protracted inflammatory response that exacerbates depression by promoting CRF-related dysregulation of the HPA axis and altered glucocorticoid action. The central function of the inflammatory background state modifies the metabolism and transport of neurotransmitters involved in mood regulation; these hormones include serotonin and glutamate. Furthermore, serotonin, histamine, and other inflammatory mediators produced by mast cells are released variably in response to an alteration in GIT microorganisms. Immune system dysfunction is linked to alterations in the microbe characteristics and permeability of the gastrointestinal tract and is found in both depression and IBS⁽¹⁸⁻²¹⁾.

The growing evidence suggests that persistent CRF activity may play a role in key gut-brain interactions in IBS and other functional GI disorders. CRF may play a role in pain perception in IBS. The analgesic effect of CRF in acute inflammatory paradigms has been well described, and the available evidence suggests that, like CNS, ENS neurons can be permanently sensitized to various stimuli by either stress or noxious stimulation^(22,23).

Psychological disturbance, especially in referred patients, includes psychiatric disorders (panic disorder, generalized anxiety disorder, mood disorder, and post-traumatic stress disorder), sleep disturbance, and dysfunctional coping. ^(9,18) Psychological disorders don't cause IBS directly, but they affect the feeling of pain, duration, and influence of suffering IBS. Some evidence suggests that anxiety may be more prominent in the early course of IBS, whereas depression, as a psychological disorder, is one of the common comorbid diseases in patients with chronic IBS symptoms⁽²⁴⁾.

High comorbidity among IBS and PD has been recognized in the literature. Several symptoms are common to both conditions, and the prevalence of IBS symptoms in PD patients ranges from 25 to 44%. Many of the findings from recent research point to the hypothalamic-pituitary-adrenal (HPA) axis dysregulation as a possible common mechanism that may result in stress vulnerability^(25,26).

Anxiety that is particular to the digestive system appears to exacerbate IBS symptoms by disrupting the autonomic, pain-facilitation, and cognitive mechanisms. The primary causes of impaired performance are anticipated anxieties and avoidance behavior. ⁽¹⁵⁾ Irritable bowel syndrome (IBS) is a common co-morbid condition with anxiety disorders, and patients often report a fear of incontinence in public places.

A number of investigations have reliably shown a connection between IBS and a history of different forms of abuse. Most studies have reported an increased risk of developing IBS as a result of sexual abuse, which has been the focus of much research⁽²⁷⁾.

The findings referring to alcohol abuse and IBS are contradictory. IBS symptoms in women are not affected by binge drinking, but rather by mild to moderate drinking. Alcohol's role in IBS may be limited to people with IBS-diarrhea⁽²⁸⁾. A study investigated the relationship between IBS and alcohol abuse or alcohol use disorders and concluded that individuals with alcohol use disorders may trigger or aggravate IBS-related symptoms⁽²⁹⁾.

3. Management of IBS and mental health

Combining medical and psychosocial treatments for IBS has been proven to produce the best and most long-lasting outcomes⁽³⁰⁾. The main aims of treatment for IBS are symptom management and an attempt to improve QOL and well-being because it is a benign illness without a good biomarker for its symptoms. The complexity of individuals, the lack of drugs for the complete spectrum of symptoms, and the ambiguous pathogenesis make managing IBS difficult⁽³¹⁾.

The majority of IBS medications rely on easing specific symptoms, particularly those linked to irregular intestinal motility. These include laxatives, antidiarrheals, and probiotics. Patients with predominantly gastrointestinal symptoms should be treated with first-line medical therapy [laxatives such as PEG, Senna; antidiarrheal such as loperamide, ramosetron, and rifaximin; antispasmodics such as hyoscine or peppermint oil], followed by second-line therapy [secretagogues such as linaclotide or plecanatide and antidiarrheal]^(32,33).

A diet low in FODMAPs (fermentable oligo, di, monosaccharides, and polyols) reduces IBS symptoms as well as traditional IBS dietary advice. Combining components of these 2 approaches may help to further reduce symptoms of IBS. It involves complex dietary counseling consisting of 3 phases: phase 1- full FODMAP restriction, phase 2- FODMAP re-introduction, and phase 3- FODMAP personalization^(32,34,35). 'Psychobiotic' diets high in prebiotics, probiotics, and fermented foods have been created in response to growing interest in whole-diet therapies that can affect psychiatric outcomes, and they have had some effect on how healthy people experience stress⁽³⁶⁾. Standard dietary advice, based on empirical recommendations from the British Dietetic Association and the UK National Institute for Health and Care Excellence, is a reasonable first-line approach to improving symptoms of IBS.

The patients often show severe psychotic symptoms, such as anxiety, tension, depression, irritability, and insomnia; hence, this syndrome needs to be clarified as a psychosomatic illness. As a result, psychotropic drug use is effective for treating IBS. Tricyclic antidepressants (TCA), such as amitriptyline, imipramine, clomipramine, amoxapine, and nortriptyline; as well as tetracyclic antidepressants; SSRI and SNRI, sulpiride, benzodiazepine class anxiolytics, are among the antidepressant medications now being utilized. Low-dose TCAs can also be used for abdominal pain and global symptoms^(37,38). Theoretically, more recent therapeutic drugs, like CRF-receptor antagonists, which could directly counteract CRF effects in the CNS and ENS, would prove beneficial in both psychiatric disorders and IBS. However, their potential as novel treatments for IBS have to be determined⁽³⁹⁾.

Patients with mild psychological symptoms and/or gastrointestinal problems should be advised of ways to self-manage their symptoms through lifestyle changes and education. Those with moderate to severe gastrointestinal issues may benefit from psychological treatments to improve stress-management abilities and assist patients in coping with symptom-related distress. Psychological treatments targeting cognitive processes can influence the brain-gut axis and lead to symptom improvement. Behavioral interventions include gut-targeted cognitive behavioral therapy (CBT) and gut-targeted hypnotherapy to change the interaction between the gut and the brain^(32,38,40). While these brief, gastrointestinal-focused therapies help reduce anxiety and depressive symptoms, they are not the main goal of treatment. As a result, anxiety and avoidance-specific thoughts, feelings, and behaviors are addressed in the course of

treatment. CBT interventions emphasize modifying the mindsets, behaviors, and reactions to influence psychological symptoms that emerge from patients' daily interactions.

4. Conclusion

Irritable bowel syndrome is a functional gastrointestinal disorder that is characterized by altered bowel movement and abdominal pain. It is known that fear, anxiety, and stress may all cause gastrointestinal symptoms. Some evidence suggests that anxiety may be more prominent in the early course of IBS, whereas depression, as a psychological disorder, is one of the common comorbid diseases in patients with chronic IBS symptoms. Although they don't directly cause IBS, psychological illnesses can have an impact on how painful, long-lasting, and influential IBS symptoms are. Combining medical and psychosocial treatments for IBS has been proven to produce the best and most long-lasting outcomes. Psychological therapies and occasionally psychotropic drugs like antidepressants and anxiolytics are indicated for conditions like depression, anxiety, post-traumatic stress disorder, and substance abuse, and as an adjunct to IBS care. It is evident that there is a reciprocal and feedback connection between IBS symptoms and anxiety or depression. However, it is difficult to distinguish the cause from the effect in IBS patients with coexisting psychiatric diagnoses. Therefore, further studies are needed to evaluate the impact of early detection and management of comorbid psychological disorders on the long-term clinical outcome and disease course of IBS. The advancement of IBS research necessitates further investigation of psychoneuroimmune interactions in symptom expression so that therapy may be focused on beneficially modifying these reciprocal processes.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

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