

The Irritable Bowel Syndrome (IBS): Understanding its types, prevalence, and treatment options

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Abstract

Irritable Bowel Syndrome (IBS) is a chronic functional disorder of the human digestive system that affects a significant portion of the population globally. Its complex nature includes numerous kinds of extra-intestinal and gastrointestinal symptoms, making diagnosis and therapy more difficult. IBS is categorised into four types based on bowel movement patterns, i.e. IBS with constipation (IBS-C), IBS with diarrhea (IBS-D), IBS with mixed bowel habits (IBS-M) and unclassified IBS (IBS-U). The global prevalence of IBS is estimated to be around 4%, with about 30% of individuals suffering symptoms seeking medical assistance. This disorder is more common in women and younger adults, with a female predominance and a higher prevalence in those under 50 years old. Medication, Complementary and Alternative Medicine (CAM) are all available forms of treatment for IBS. Depending on the most common symptoms, doctors may give medications, including laxatives, smooth muscle relaxants, antidiarrheal medications, and low-dose antidepressants. Cognitive behavioural therapy, particularly, is a useful tool for managing the emotional tension and anxiety that come with IBS. Alternative therapies like hypnotherapy, acupuncture, and therapeutic massage have also shown promise in managing IBS symptoms. However, the results of treatment might differ greatly from person to person, emphasising the significance of patient-centred care and ongoing research to discover the underlying pathophysiology and develop new therapeutic approaches. The objective of the current study is to review the various types, prevalence rates, and available treatment options for Irritable bowel syndrome.

Keywords: Irritable Bowel Syndrome; Constipation; Diarrhea; Laxative; Anxiety

1. Introduction

One of the most common functional gastrointestinal disorders is called irritable bowel syndrome (IBS). It is defined as a group of symptoms that can have a major negative effect on a person's quality of life [1]. This mysterious illness affects the large intestine and can cause a variety of extra-intestinal and gastrointestinal symptoms [2]. Despite its prevalence and severity, the pathophysiology of IBS is still complicated and multifaceted, involving variables like visceral hypersensitivity, altered motility, dysfunction of the gut-brain axis, and the complex interaction of genetic predisposition and environmental triggers [3].

IBS symptoms include abdominal pain or discomfort, bloating, and irregular bowel movements. Changes in the frequency and consistency of stools are frequently associated with these symptoms, which might present as constipation, diarrhea, or a pattern of alternating symptoms [4]. Because of this symptomatology's frequent variability, diagnosis and treatment are difficult tasks. Medical organisations such as the Rome Foundation have developed diagnostic criteria to help with clinical comprehension and diagnosis. These criteria consider the frequency and duration of symptoms in addition to figuring out other underlying conditions [5].

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The complex pathophysiology of irritable bowel syndrome is at the core of the disease's etiology [3,6]. Changes in the coordinated muscular contractions of the intestines can result in irregular bowel movements and changed transit times, and one of the main factors contributing to IBS is decreased gastrointestinal motility [7]. Visceral hypersensitivity increases the sense of pain and discomfort in response to typical gastrointestinal stimulation. Furthermore, IBS frequently results in disruptions to the gut-brain axis, which involves the bidirectional connection between the central nervous system and the gastrointestinal tract. This complex brain network can make symptoms worse due to stress and emotional factors [7,8].

The treatment and appearance of IBS are further complicated by a wide variety of triggers. Diet is crucial, as particular foods may set off symptoms in people who are sensitive to them [8]. Meals strong in gas-producing ingredients, dairy products, artificial sweeteners, and fatty meals are some of the dietary culprits that exacerbate symptoms [9,10]. It has been shown that the low FODMAPS (fermentable oligosaccharides, disaccharides, monosaccharides, and polyols) diet is beneficial in the treatment of IBS [11]. Psychological variables like anxiety can have a big impact on how severe symptoms are, emphasising the complex relationship between the mind and the stomach [8,12].

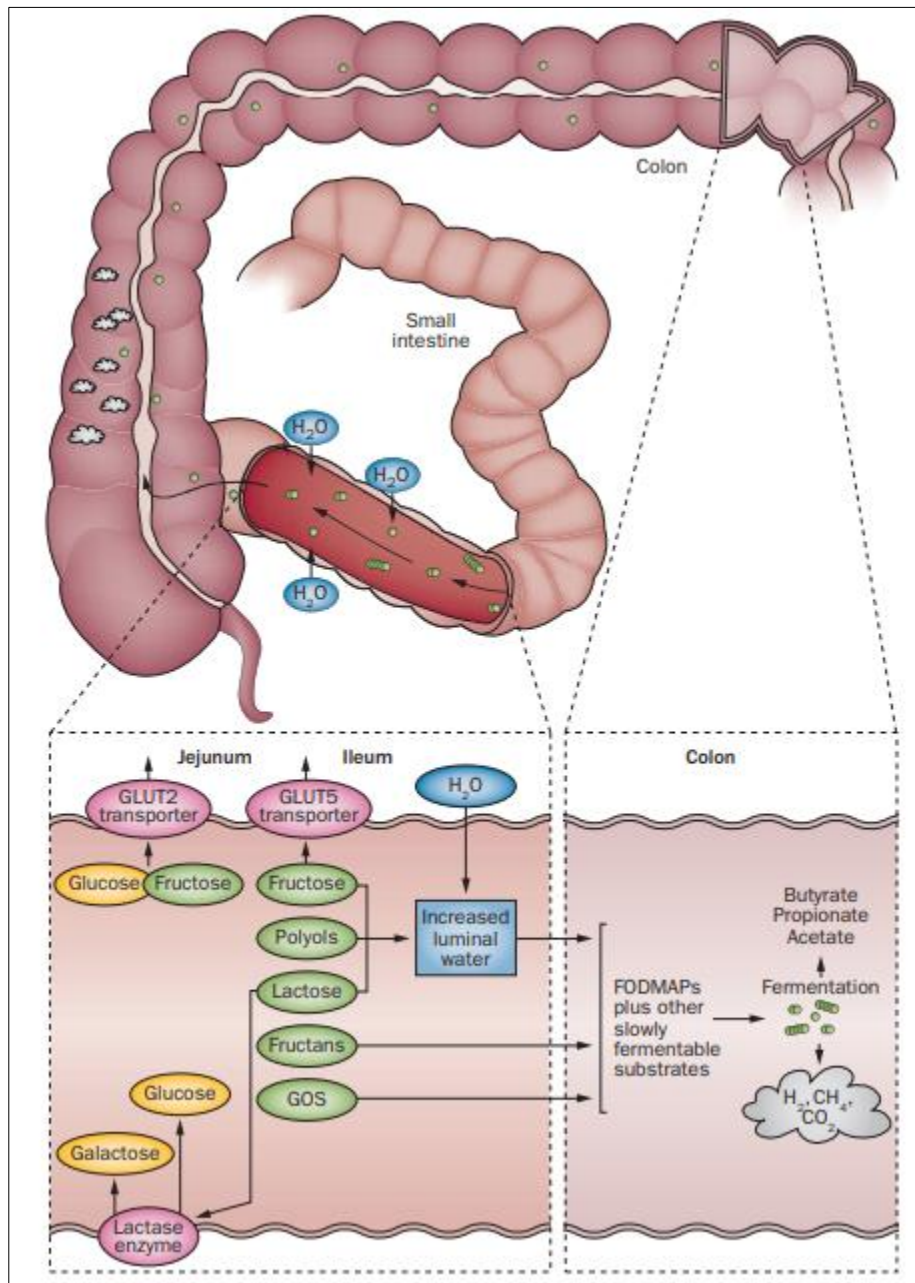


Figure 1 Poorly Absorbed fibres and carbohydrates [13]

Foods high in indigestible and poorly absorbed short-chain carbohydrates, which are also called as FODMAPS, are known to cause symptoms to get worse in many patients with Irritable Bowel Syndrome (IBS). They may be found in a variety of foods, including fruits, vegetables, wheat, and legumes. These poorly absorbed short-chain carbohydrates, which include fructose, lactose, sugar alcohols, fructans and galactans, are only partially absorbed in the small intestine. When these carbohydrates reach the colon and distal small intestine, they exert their influence by acting as an osmotic agent, increasing the water content in the colon and providing a surface for bacterial fermentation. This microbial activity generates gas, which causes distension and pain in the abdomen. Bloating and flatulence are two symptoms that may arise from this fermentation-induced process, especially in people who are sensitive to FODMAPS or have been diagnosed with irritable bowel syndrome (IBS). Reducing the consumption of FODMAPS through diet is a commonly advised therapeutic technique for those with these kinds of gastrointestinal problems [14].

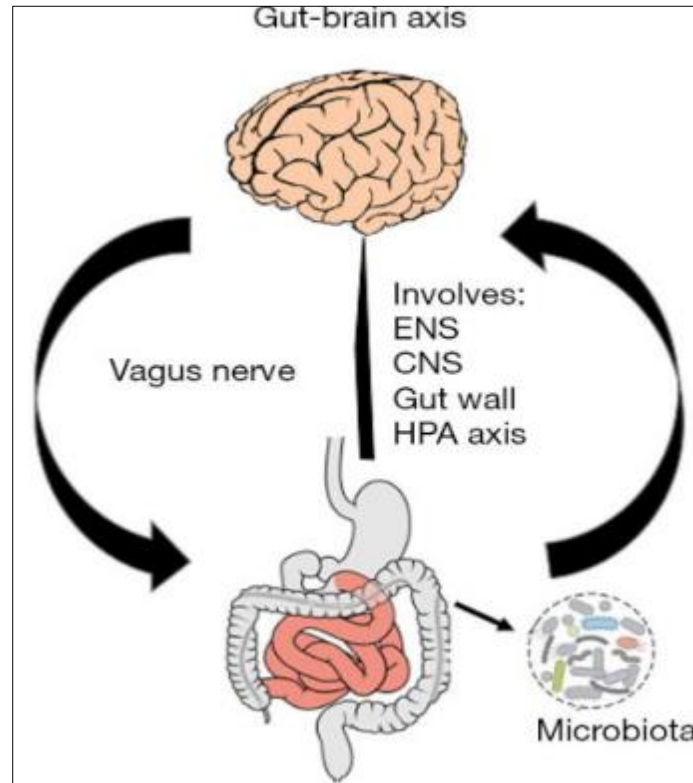


Figure 2 Gut-Brain Axis [15]

A bidirectional communication system that connects the brain and the stomach is known as the gut-brain axis. This axis plays a role for the onset and intensity of symptoms in irritable bowel syndrome (IBS). Interactions among the gut's enteric nervous system (ENS), gut microbiota, and central nervous system (CNS) are involved. Immune system abnormalities, visceral hypersensitivity, and altered gastrointestinal motility can all result from disruption of the gut-brain axis in IBS. This axis allows for the exacerbation of IBS symptoms by stress, anxiety, and depression, as well as the psychological distress caused by gastrointestinal problems. A disturbance in the gut-brain axis (GBA) homeostasis can result in a range of physical and psychological symptoms, such as increased sensitivity to ordinary sensations, such as the passage of food through the digestive tract, which would not normally be noticed or cause any discomfort. There are several things that might cause this malfunction, such as sleep, stress, traumatic experiences and stress in early life, anxiety and depression [16,17].

When it comes to management, a comprehensive plan is essential, including stress-reduction strategies like mindfulness and relaxation exercises [18]. Dietary interventions can assist in identifying trigger foods and guiding the adoption of suitable dietary modifications when directed by a healthcare provider. Probiotics have been investigated as a possible treatment for Irritable Bowel Syndrome (IBS) symptoms. Probiotics are living microorganisms that have the potential to improve digestion and reduce bloating and gas by encouraging a healthy balance of gut flora [3,4]. Patients with persistent and severe symptoms are treated with a variety of pharmaceutical and non-pharmacological therapies [19-21]. The use of antispasmodics, laxatives, and antidiarrheal drugs depends upon the current symptoms [20,22]. Additionally, some people have reported that low-dose tricyclic antidepressants have improved their bowel patterns, which has helped them manage discomfort and diarrhea [23-25].

1.1. Subtypes of IBS

Irritable Bowel Syndrome (IBS) is a complex abdominal disorder that presents with a wide range of symptoms, leading to its classification into distinct subtypes based on predominant bowel habits [3,4,25]. These subtypes act as vital diagnostic tools assisting healthcare professionals in adjusting treatment plans to the specific requirements of affected people [26]. The Irritable bowel syndrome subtypes are diarrhoea-predominant IBS (IBS-D), Constipation-predominant IBS (IBS-C), Mixed-Type IBS (IBS-M), and Unsubtyped IBS (IBS-U) [18]. Each of them presents particular barriers to diagnosis and treatment. For each subtype, the Rome III criteria are used to classify IBS, which evaluates symptom frequency and duration while considering alternative probable explanations, which are recognised standards that must be followed when determining if a person has IBS. Although patient experiences with IBS might differ greatly, the Rome III criteria assist doctors in classifying patients' symptoms and directing treatment options accordingly. The development of different subtypes highlights the complexity of the condition, requiring specialised treatment plans that cater to the particular requirements of each patient [27,28]. Although the root causes of IBS remain unknown and not entirely clear due to ongoing research and debate, many different factors have been linked to its development, and several interrelated pathways are considered to contribute to its pathogenesis [29].

1] Diarrhea Predominant IBS (IBS-D): IBS-D is characterised by frequent episodes of diarrhea and loose, watery stools. Individuals with this subtype often experience urgency in bowel movements and may need to use the restroom shortly after eating [3,6,29]. Abdominal pain or discomfort, which is typically alleviated by passing stools, is a common accompaniment. This subtype's underlying mechanisms involve complex interactions between altered gastrointestinal motility, heightened intestinal sensitivity, and the gut-brain axis [19]. Abnormalities in muscle contractions of the intestines lead to swift transit times, contributing to diarrhea. Furthermore, an intricate network connecting the gut and the central nervous system can worsen symptoms through increased pain perception and urgency [2,3]. Despite advances in the diagnosis and treatment of IBS, the underlying etiology and pathophysiology are not completely understood [30]. Dietary choices, stress, and emotional factors are known to intensify IBS-D symptoms [4,31]. Medications, including anti-diarrheal and antispasmodics, may be prescribed to regulate bowel movements and relieve discomfort [6]. Conventional medicine usually prescribes Imodium, which contains loperamide, to treat irritable bowel syndrome with diarrhea (IBS-D). This medication reduces bowel motions and slows down the activity of the gut, which helps to relieve symptoms. In contrast, an Ayurvedic treatment for IBS-D known as GutBio capsules has a combination of good bacteria such as *Lactobacillus* species, *Bifidobacterium* species, and *Bacillus* species. With the ability to improve gastrointestinal health and balance gut microbial equilibrium, these probiotics reduce symptoms associated with IBS-D [32]. Management of IBS-D entails a holistic approach, incorporating lifestyle modifications like stress reduction techniques and regular exercise, as well as dietary adjustments to identify trigger foods [25,32].

2] Constipation Predominant IBS (IBS-C): Constipation Predominant IBS (IBS-C) is a distinct subtype characterised by difficult and irregular bowel motions, typically accompanied by pain in the abdomen [3,4,33,34]. IBS-C sufferers frequently feel a sense of unfinished evacuation, struggle with the process of passing faeces, and have a tendency to use force while going to the toilet. Individuals dealing with this specific subtype experience discomfort in the form of stomach bloating and distension [18,35]. The underlying mechanisms of IBS-C centre on disruptions in gastrointestinal motility, especially a slowing down of colonic transit, which results in the disruption of regularity [4]. An increased sensitivity to pain also influences the intensity of discomfort and pain perception. Symptoms can be aggravated by factors such as dietary preferences, stress, and emotional elements [4,36]. There are several formulations in the market for treating IBS-C, including both allopathic and Ayurvedic treatments. IBS-C symptoms can be significantly reduced by using Ayurvedic polyherbal remedies like Constac and Constac Plus, which include active substances including Hirada (*Terminalia chebula*), Behada (*Terminalia bellirica*), Amala (*Emblica officinalis*), Isabgol (*Plantago ovata*), and Sonamukhi (*Cassia senna*) and another ayurvedic treatment include probiotic known as Gutbio plus capsule which include the active ingredients of different bacterial species such as *Lactobacillus*, *Bifidobacterium*, and *Bacillus* [37-40]. Allopathic alternatives, such as Linzess and Amitiza, which include active substances such as Linaclotide and Lubiprostone, respectively, are also available [41,42]. IBS-C management requires a comprehensive approach that includes dietary changes intended to increase fibre intake and ensure sufficient hydration [34]. Adopting changes, such as getting regular exercise and using stress reduction techniques [18]. Laxatives, stool softeners, and medications targeting gastrointestinal motility might be prescribed under medical supervision [36].

3] Mixed-type IBS (IBS-M): Mixed-type irritable Bowel Syndrome (IBS-M) is an intricate and demanding form of IBS, characterised by multiple symptoms that combine elements of both the constipation-predominant (IBS-C) and diarrhea-predominant (IBS-D) categories [18]. IBS-M patients experience irregular and disruptive bowel habits, including cycles of loose, watery stools and intervals of constipation, along with changes in bowel habits, persistent abdominal pain and discomfort that vary in intensity [31]. IBS-M pathophysiology is defined by complicated interactions between altered gastrointestinal motility, increased sensitivity, and the intricate gut-brain axis [43]. The alternating episodes of diarrhea

and constipation are caused by dysregulation in muscular contractions [21,23]. It might be difficult to pinpoint triggers for IBS-M since both constipation and diarrhea must be taken into consideration [19]. The central nervous system and the intestines communicate with one another to increase pain perception and discomfort. Dietary choices, stress, and emotional issues all have the potential to trigger symptoms [20,21]. Irritable bowel syndrome with mixed patterns (IBS-M) is treated with dextropropofol [44]. This medication is designed to alleviate both diarrhea and constipation, which are major symptoms of IBS-M. Medication options that treat motility, irritation, and extra symptoms might be considered and tailored to the unique needs of each person [21]. IBS-M requires a well-rounded strategy that addresses both diarrhea and constipation. The foundation of this strategy rests on adopting a lifestyle transformation, which includes the individual's eating choices, frequent physical activity, and the adoption of efficient stress-reduction skills [44].

4] Unsubtyped IBS (IBS-U): Within the spectrum of IBS, Unsubtyped Irritable Bowel Syndrome (IBS-U) appears as another major categorisation, comprising cases that do not distinctly align with the predominant subtypes. This classification illustrates how varied and occasionally puzzling IBS symptomatology is. IBS-U patients experience a wide variety of gastrointestinal symptoms, some of which may not always fit the diagnostic criteria for the IBS-D or IBS-C subtypes (diarrhoea or constipation-predominant) [45]. Symptom patterns vary in frequency, severity, and duration, complicating the diagnostic and therapy procedures [43]. The intricate pathophysiology of IBS-U potentially arises from a blend of modified motility, disruptions in the gut-brain axis, heightened sensitivity, and other contributing factors. The lack of distinct symptom patterns complicates the challenge of identifying triggers and developing effective treatment techniques [43]. IBS-U treatment is often based on the individual's particular signs and symptoms. It necessitates a tailored approach that considers the various symptom presentations and personal factors. Changing one's routine of Existing, including stress management techniques, making dietary changes, and even using medication, can all help manage IBS-U's unique issues.

1.2. Prevalence of IBS

Irritable Bowel Syndrome (IBS) is one of the most prevailing intestinal disorders, with a high incidence that has sparked great medical and societal interest [1,19]. This disorder affects a huge section of the worldwide population and causes symptoms such as stomach discomfort, bloating, and irregular bowel movements, and affects a significant portion of the global population [3,4,26]. The frequency of IBS varies among regions, age groups, and genders, highlighting the disorder's multiple characteristics [7]. The frequency of Irritable Bowel Syndrome (IBS) among Indians is a major source of growing concern and research. While exact figures vary due to underreporting and the complex nature of IBS symptoms, it is believed that a significant portion of the Indian population is affected by this gastrointestinal condition, indicating the disease's significant influence on public health [46,47]. In India, factors such as food choices, lifestyle changes, and socioeconomic effects may contribute to the variation in incidence rates between areas and demographics [33]. Furthermore, due to cultural and social factors, as well as barriers to obtaining medical assistance for gastrointestinal problems, IBS presents unique obstacles in India [6,24,25]. Improving awareness, accurate diagnosis, and appropriate care techniques are necessary for addressing the IBS burden in the varied and vast Indian population.

Statistics bring out the notable prevalence of irritable bowel syndrome (IBS) and its ensuing impact on people's well-being and healthcare systems [35,37]. Around 4% to 15% of the population worldwide are thought to be affected by IBS, making it a significant health issue [6,26,30,34,48]. Some people can choose not to seek medical care for their symptoms, while others might be given an inaccurate diagnosis of another digestive disorder [49,50].

Irritable Bowel Syndrome (IBS) occurrence shifts are a result of a variety of reasons. Age is a major key of demographics. According to research, IBS is more common in young adults and commonly presents with symptoms in late adolescence or the early stages of adulthood [3,51,52]. As people become older, this incidence tends to decrease, raising questions about possible contributing variables such as hormone changes, lifestyle modifications, or physiological changes that impact how the condition manifests. The occurrence of IBS is also noticeably influenced by gender, with women being diagnosed with the condition at a greater rate than males [6,53]. This gender-based differential raises questions about the complex interactions between hormonal processes, environmental influences, and innate biological predispositions in shaping IBS prevalence patterns.

1.3. Comprehensive Aim to Approach IBS

Irritable bowel syndrome (IBS) is a widespread alimentary disorder that is characterised by recurrent abdominal pain, erratic stool output, and varied amounts of gas and bloating without any identifiable anatomical abnormalities in the digestive tract [1,2]. While there isn't a single IBS treatment that works for everyone, management usually involves a multifaceted strategy that addresses symptoms and enhances the general quality of life [1]. This comprehensive therapy approach can be roughly divided into medication, psychological therapies, food adjustment, and lifestyle changes [54].

Medication can be prescribed to address specific symptoms associated with irritable bowel syndrome IBS [7]. Abdominal cramps can be treated with antispasmodic drugs like dicyclomine or hyoscyamine [10,18,55]. Healthcare professionals may suggest loperamide to patients with IBS who predominantly have diarrhea in order to slow down bowel motions. Laxatives such as polyethylene glycol can provide relief for people with IBS [6,18]. In some cases, tricyclic antidepressants or selective serotonin reuptake inhibitors (SSRIs) may be prescribed because they can treat both gastrointestinal symptoms and mood disturbances often linked to IBS [4,23]. The use of probiotics, which contain beneficial bacteria, is another consideration, though it's important to note that their efficacy can vary from person to person [3,4,6]. The shift towards herbal medicines has gained traction as they are increasingly recognized for potentially delivering improved outcomes, particularly in cases where conventional pharmaceuticals may fall short of providing comprehensive relief [56-58].

Psychological therapies offer a valuable path to manage irritable bowel syndrome (IBS). These treatments focus on the intricate workings of the mind in order to treat the emotional components of IBS. Cognitive behavioral therapy (CBT), which helps patients reshape thinking patterns and reactions to stresses, may be beneficial to patients [4,18,20]. Additionally, mindfulness-based therapies help patients learn to stay focused in the present, which lowers anxiety and enhances their capacity to handle discomfort. Stress management techniques such as meditation, yoga, and deep breathing exercises can be quite effective in reducing the psychological stress that usually leads to IBS symptoms [12,18,59]. Regular physical exercise provides a twofold benefit by lowering stress and supporting improved bowel movement and digestive management [18]. It is necessary to avoid smoking and excessive alcohol intake since both have the ability to irritate the gastrointestinal system and promote IBS symptoms [60]. Another important component is maintaining a consistent sleep regimen and getting enough rest since both can help relieve these symptoms [61]. These individualised psychological strategies provide the mental control that is needed to manage IBS symptoms.

Food adjustment when it comes to effectively regulating the symptoms of Irritable Bowel Syndrome (IBS) and changing daily habits is essential [2]. A customised plan is necessary for navigating your diet. Keep close attention to how your body responds to various meals, and gradually introduce dietary modifications to find out which foods exacerbate your symptoms. Consider trying a low FODMAP diet, which eliminates specific carbohydrate types that may cause pain, but seek advice from a nutritionist or healthcare provider to ensure a balanced diet focused on a combination of soluble and insoluble fiber from foods like fruits, vegetables and whole grains to help control your bowel movements without raising your symptoms. Pay particular attention to your fiber consumption. Consider tailoring your meal selections to what works best for your particular IBS experience because there is no one-size-fits-all strategy [2-4,6,11]. Remember that there is no one solution that works for everyone, so customise your dietary choices to suit your particular IBS experience.

2. Conclusion

In conclusion, Irritable Bowel Syndrome (IBS) represents a multifaceted gastrointestinal disorder characterized by its variability in types, etiology, and the individuals it affects. The distinction among its types—IBS-D (diarrhea-predominant), IBS-C (constipation-predominant), IBS-M (mixed), and IBS-U (unclassified)—highlights the diverse clinical presentations and the necessity for tailored treatment approaches. Statistical analysis reveals a significant prevalence of IBS globally, indicating its impact on a substantial portion of the population and underscoring the importance of awareness and education about this condition. The etiology of IBS is complex, involving a combination of genetic, environmental, and psychological factors, along with alterations in gut microbiota and intestinal permeability. Understanding these causative factors is crucial for the development of effective treatments and management strategies. Current treatment perspectives for IBS focus on pharmacotherapy, Probiotics, laxatives, dietary modifications, psychological interventions, and lifestyle changes to manage symptoms and improve quality of life. The importance of a patient-centred approach in the management of IBS cannot be overstated, as individual responses to treatment can vary widely. Future research should aim to uncover the underlying pathophysiological mechanisms of IBS to pave the way for novel therapeutic targets. Over the past few years, people have become more aware and conscious about their health, which has led many to doubt the efficacy of commercially available traditional therapies for diseases like Irritable Bowel Syndrome (IBS). There has been a change in focus towards herbal medicines for better results due to the recognition that traditional pharmaceuticals may not always offer complete relief. The growing interest in and knowledge of herbal medicines is indicative of a desire for more holistic, natural solutions that suit personal preferences and may provide better outcomes with fewer negative effects. Herbal medicines for illnesses like IBS are becoming more and more popular as individuals look for solutions that are customized to their requirements and preferences. This indicates a larger trend towards more individualized and integrative healthcare methods. Despite there are several therapies available, not all of them may be effective for everyone with IBS. Due to this variation, some patients may discover that the remedies they have researched on the market either do not completely relieve their symptoms or cause them to experience side effects that outweigh the advantages.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

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