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REVIEW

WHAT IS IBS TODAY AND HOW DO WE TREAT IT? CURRENT GUIDELINES AND POSSIBLE FUTURE NON-PHARMACOLOGICAL TREATMENS STRATEGIES A SYSTEMATIC REVIEW

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Abstract: Irritable Bowel Syndrome (IBS) is a prevalent Disorder of Gut-Brain Interaction (DGBI) defined by recurrent abdominal pain and bowel dysfunction. Despite its high prevalence, its complex pathophysiology remains poorly understood, with clinical outcomes often exacerbated by psychological distress and perceived systemic healthcare failures. The absence of diagnostic biomarkers frequently results in exhaustive, inconclusive testing, leading to mutual frustration for patients and clinicians. Given that conventional interventions often yield suboptimal response rates, recent evidence emphasizes the efficacy of integrated biopsychosocial models - specifically those combining structured dietary protocols with psychological support. Furthermore, adjuncts such as curcumin and group therapies show very good results in symptom management. This study evaluates current therapeutic approaches and their limitations and investigates integrative strategies proven to be safe and efficient for patients navigating healthcare systems that lack coordinated, multidisciplinary care.

Keywords: IBS, brain-gut axis, FODMAP, non-pharmacological treatment, psychological interventions,

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Introduction

Clinical Characterization and Classification of IBS as a DGBI

In the last 50 to 70 years, medical and dietary approaches have undergone a fundamental shift from a disease-centric, exclusionary model to one focused on pathophysiology, the gut-brain axis, and the ecosystem of the human microbiome [1] [2]. Now called Disorders of Gut-Brain Interaction (DGBI), are characterized by persistent gastrointestinal symptoms that cannot be objectively confirmed through standard diagnostic tools like imaging or endoscopy [3]. This shift acknowledges that

these conditions aren't merely "unexplained," but are rooted in the complex, two-way communication between the central and enteric nervous systems. By moving away from the term "functional," the medical community aims to eliminate the stigma that these symptoms are "all in the head" or purely psychological. These criteria organize functional gastrointestinal disorders by anatomical location, trying to offer precise definitions for each condition based on patient-reported symptoms. They are called functional because symptoms are not caused by organic alterations [4].

Irritable bowel syndrome (IBS) is defined as the most prevalent chronic disorder of gut-brain interaction characterized by recurrent abdominal pain associated with defecation or changes in stool frequency [5]. The transition from the Rome III to the Rome IV criteria represented a strategic evolution in the clinical definition of the disorder. Mainly the fact that pathogenesis of IBS is now associated with the gut-brain interaction. Another critical modification was the removal of the term "discomfort," which was found to be semantically ambiguous across different cultural and care settings. Consequently, the Rome IV criteria focus strictly on "recurrent abdominal pain," while increasing the frequency threshold to at least one day per week [6]

Prevalence varies a lot between countries because of the cultural differences in designs, populations, food, diagnosis and the way people see the condition. Lately, it is estimated that 14-17% of the global population suffer from IBS under Rome IV diagnostic standards. When narrowing the focus to studies using probabilistic sampling, prevalence rates dropped to approximately 13% [7]. The data also showed a higher frequency of cases in women, which is consistent with established literature and first-world countries like the UK, China, and Japan had the highest prevalence. Also, stress, anxiety and depression are known to be significantly more prevalent in IBS patients [8] [9]. Although the Rome IV criteria serve as the current gold standard for diagnosing Disorders of Gut-Brain Interaction (DGBIs), they arguably oversimplify the intricate psychobiological pathophysiology of visceral pain. Furthermore, the criteria overlook the microorganic and psychological drivers and triggers of these conditions. Consequently, while Rome IV remains an excellent tool for standardized research and clinical trials, its practical utility in diverse clinical settings requires further refinement [10].

The most significant social fact is that IBS imposes a profound burden on health-related institutions, quality of life and healthcare resources [11] [12]. As the underlying mechanism of IBS involves a breakdown in communication between the gut and the brain, this dysfunction clarifies why the condition is so frequently linked to psychological disorders and underscores the necessity of an integrated, multi-specialty treatment strategy [13].

1. What is IBS today?

1.1. A diagnosis without having a “smoking gun”.

Pinning down an IBS diagnosis is notoriously difficult, as the condition often behaves like an evasive set of symptoms that shift and change over time [6]. The diagnostic process is further complicated by symptomatic overlap with malabsorption syndromes, such as lactose or fructose intolerance. As a result, first-line clinical interventions often fail to achieve the expected therapeutic relief [12] [14]. Perhaps the most draining part of this journey is the lack of clear conclusive evidence - there is no single biomarker or scan to prove what patients are feeling. This creates a cycle of diagnostic fatigue where patients may wait, on average, four years and discuss symptoms with a doctor more than ten times before reaching a definitive answer [14] [15]. Patients naturally keep searching for a tangible cause through testing, but when standard results come back "normal" despite very real pain and discomfort, it often leaves everyone involved feeling unheard and exhausted [16].

To break this cycle, modern clinical guidelines advocate for a positive diagnostic strategy based on patient history and physical examination rather than a strategy of exclusion [12] [13]. Clinicians use the Rome IV criteria to confirm IBS based on a specific pattern of recurrent abdominal pain associated with changes in stool form or frequency over at least six months. This approach prioritizes a detailed clinical history and is limited, adding high-yield testing such as C-reactive protein (CRP), fecal calprotectin, and celiac disease serology to rule out organic inflammation while providing the validation and tailored management plans patients need to move forward [17].

1.2. Pathophysiology - How did we get here?

Understanding the pathophysiology of IBS is like untangling a complex web where the gut and brain are in constant, sometimes chaotic, conversation [18]. It isn’t caused by a single "broken" part, but rather a multifactorial "perfect storm" of small imbalances working together. At the heart of this is the gut-brain axis, a bidirectional highway where signals about stress, mood, and digestion can get amplified or misunderstood [17] [19]. For example, a person with high levels of anxiety may have an exaggerated stress response, manifested by a hyper-reactive HPA axis, which increases the likelihood that an acute gastrointestinal infection will lead to persistent changes in motility and visceral sensitivity, thereby establishing post-infectious IBS [9].

Often, this cycle starts with gut dysbiosis, an imbalance in bacteria that can compromise the intestinal barrier. This "leaky gut" allows triggers to slip through, sparking low-grade inflammation and keeping the immune system on high alert. This constant background noise makes the gut’s nervous system - our "second brain" - extremely sensitive [20]. As a result, normal movements like gas or digestion are felt

by the brain as intense pain, a phenomenon known as visceral hypersensitivity. Ultimately, IBS is a disorder of interaction, where the body's internal signalling simply loses its rhythm. This vicious cycle leads to worsening symptoms, a reduced quality of life, and, in most cases, increased resistance to conventional treatments [21]. In the context of patients with IBS, anxiety symptoms frequently manifest as heightened awareness of bodily sensations, catastrophizing of pain, and fear of symptoms, leading to avoidance behaviours and hypochondria [22].

2. How do we treat this complex syndrome? Standard treatment strategies and their results based on ACG (2021), BSG (2021) and Seoul consensus (2025)

The management of irritable bowel syndrome (IBS) has evolved significantly, with recent guidelines from the American College of Gastroenterology (ACG) [22], the British Society of Gastroenterology (BSG) [23], and the 2025 Seoul Consensus [13] is providing a structured, evidence-based framework for treatment. While all three guidelines emphasize a positive diagnostic strategy to initiate therapy promptly, they offer a tiered approach to treatment based on symptom predominance and severity. For the standard approach, lifestyle and dietary changes are universally recommended as a foundational step in IBS management. We analysed the main recommendations for treatments and came up with four categories: the first two are gut-related while the last two target the brain.

2.1. Gut-related and non-pharmacological treatments for IBS

Gut-related treatments primarily focus on modulating intestinal motility, fluid secretion, the gut microbiome, and local sensory signals within the gastrointestinal tract. They are considered to be safe and without major adverse effects properly used. All three guidelines recommend a limited trial of a low FODMAP diet to improve global symptoms, particularly bloating and abdominal pain. The BSG and Seoul Consensus specify this as a second-line dietary therapy, ideally supervised by a trained dietitian or high-quality teaching materials. Correct implementation of this dietary protocol is arguably the most relevant treatment for most IBS patients, showing positive results in both short-term relief and long-term healthcare savings. Success depends on strictly following the three essential phases: elimination, reintroduction, and personalization [24] [25] [26]. Fiber is also recommended and all guidelines distinguish between fibre types. Soluble fibre (e.g., ispaghula/psyllium) is strongly recommended for improving global symptoms across all IBS subtypes. In contrast, insoluble fibre is generally discouraged as it may exacerbate symptoms like bloating and pain. It is very important to begin with a low dose (3-4g/day) and gradually increase to avoid bloating. Both the BSG and Seoul Consensus explicitly recommend regular, low-intensity exercise (e.g., walking, yoga, cycling) to improve

global symptoms and quality of life. Peppermint Oil is the natural alternative to antispasmodics and all three guidelines suggest peppermint oil as an effective treatment for global symptoms and abdominal pain. Large meta-analysis shows peppermint oil to be a safe and effective therapy for pain and global symptoms in adults with IBS [27]. Overall, the general advice that BSG and Seoul Consensus suggest, is starting with traditional healthy eating patterns like regular meals, adequate hydration, and limiting caffeine, alcohol, and spicy foods before moving to more restrictive diets and pharmacological treatments.

2.2. Gut-related and pharmacological treatments

For patients whose symptoms are not adequately controlled by lifestyle and dietary changes, first-line medications target specific predominant symptoms. Second-line therapies are typically reserved for patients with moderate-to-severe symptoms or those who have failed first-line options. This is usually a trial-and-error process however. Antispasmodics are used a lot over-the-counter for IBS, both the BSG and Seoul Consensus suggest that certain antispasmodics can be effective for short-term relief of abdominal pain but they usually come with side effects like dry mouth, dizziness and blurred vision. However, the ACG recommends against the antispasmodics currently available in the U.S. due to poor quality of evidence and potential side effects. Laxatives for IBS with constipation (IBS-C), Polyethylene Glycol (PEG) and Guanylate Cyclase-C Agonist are recommended to improve stool frequency and consistency. However, all guidelines note that PEG does not effectively treat abdominal pain. Also, Chloride Channel Activators are recommended for treating global symptoms and abdominal pain in women with IBS-C.

We can see the same pattern with antidiarrheals for IBS with diarrhea (IBS-D); loperamide and rifaximin are recommended to reduce stool frequency and improve consistency, though it does not improve global symptoms or abdominal pain. Also 5-HT3 Receptor Antagonists are recommended as a widely available alternative to improve stool consistency and urgency.

2.3. Brain targeted treatments with Neuromodulators:

These therapies target the bidirectional gut-brain axis, focusing on how the brain perceives visceral pain and the psychological factors that drive symptom severity. Tricyclic Antidepressants (TCAs) are strongly recommended by all guidelines as effective for treating global symptoms and abdominal pain. They are particularly useful for IBS-D due to their side effect of slowing transit. Also, the BSG and Seoul Consensus suggest SSRIs may be effective, particularly for patients with coexisting anxiety and depression or those with IBS-C.

2.4. Gut-Directed Psychological Therapies:

Psychological interventions are recommended for patients whose symptoms are refractory to pharmacological treatments, typically after a 12-month period. IBS-specific Cognitive Behavioral Therapy (CBT) is highlighted by all guidelines as an effective treatment for global symptoms. Some studies even place CBT interventions as superior to usual treatment in refractory IBS because they remain significant even after long-term follow-up periods [28] [29] [30]. Similarly, Gut-Directed Hypnotherapy (GDH) is recommended for its ability to modulate the gut-brain axis and improve global symptoms in refractory cases.

2.5. Treatments Not Recommended

The guidelines are also consistent in recommending against certain therapies due to lack of evidence or safety concerns. The ACG suggests against probiotics due to inconsistent results and lack of rigorous trials. However, the BSG and Seoul Consensus take a softer stance, suggesting they may be tried for up to 12 weeks based on current data. [31] [20]. All three guidelines currently recommend against Fecal Microbiota Transplant (FMT) for global IBS symptoms outside of a research setting.

3. Other treatments that can be considered and deserve a closer look

3.1. Group therapies

Gut-directed therapies in individual sessions are already known to be effective in the treatment of IBS [32] but it seems that group sessions might have even better results. They can improve quality of life, and show a long-term effect even in refractory IBS [33] [34] [35] [36]. Nonetheless, a meta-analysis from 2020 analysed many methods of therapy and concluded that no therapy is actually superior to another [37].

3.2. The Keto case (KD)

KD is a low carb, high fat eating pattern that has roots in treating severe epilepsy in children [38] and other neurological disorders like autism and Alzheimer [39]. Clinical research has explored the therapeutic utility of the ketogenic diet, particularly its potential to mitigate pathologies driven by chronic inflammation and oxidative damage. KD is already known to manage diabetes by improving glycemic control, lower BMI, triglycerides, HbA1c and blood pressure in short period trials [40] [41]. KD also seems to affect the intestinal microbiota and to improve symptoms and quality of life in IBS [42]. Furthermore, preclinical models in mice suggest that the ketogenic diet may play a protective role, mitigating the adverse effects of stress on the gut-brain axis - a pivotal element in IBS pathology [43]. Studies also emphasize a supplementation with prebiotics or probiotics to restore the balance of intestinal microbiota after a KD diet [44]. While the metabolic state of ketosis is hypothesized to benefit IBS in rat models by enhancing intestinal barrier function and

glucose transport, conclusive evidence in human populations remains pending [45] [46]. A recent study from 2024 analysed the low FODMAP diet and traditional IBS dietary advice versus a low carb diet and the result seems to be almost equal. All interventions reduce IBS symptom severity and dietary treatment had even better efficacy than with optimized medical treatment. Moreover, all three interventions improved quality of life, anxiety and depression and somatic symptoms [47]. This study emphasises that there are promising results using keto to treat IBS even though many aspects remain limited and some positive effects can be attributed to other factors or can be incidental because of the elimination of some trigger foods, including FODMAPs or gluten. Starting the KD requires careful medical oversight because of its impact on the body. Common, manageable issues like low blood sugar or stomach upset often appear at the start of treatment. However, because there are risks of more serious complications, including kidney stones and heart-related changes, having a professional nutritionist on the team is essential. It is also important to note that this diet is not safe for everyone; those with underlying liver issues, pancreatitis, or specific enzyme deficiencies should avoid it. [48].

3.3. Curcumin

The curcumin extract from turmeric is known to be a potent antioxidant, anti-inflammatory, antimutagenic and antimicrobial [49]. It also has greater improvement in digestive complaints and IBS and appears to be safe and very well-tolerated with no serious adverse reaction [50] [51] [52]. Preliminary studies also analysed the concomitant supplementation with Boswellia serrata and Curcuma longa in patients with IBS with small bowel dysbiosis which was successfully treated [53]. Other studies combined turmeric with fennel oil and obtained improvements both in quality of life and IBS severity, irrespectively of the subtype, suggesting a potential role that curcumin can have in treating IBS with supplements [54].

3.4. Other recommendations worth considering

Overall, a regular meal pattern with avoidance of meal skipping or large meals has shown promising results in improving symptoms and quality of life in IBS. While non-pharmacological approaches, including other herbal supplements and relaxation techniques are often considered, there is currently a lack of high-quality clinical evidence to definitively prove their effectiveness in treating IBS [55]. Furthermore, professionals emphasize that the best results are when an effective relationship is established between the doctor and the patient. Moreover, adjusting lifestyle and dietary changes can have an important impact on patients. Studies also show a better response to integrated multidisciplinary care instead of gastroenterology care only, in relation with all gut-brain symptoms, quality of life and even the overall cost of care [56].

4. Comparative analysis of non-pharmacological IBS interventions

Based on the clinical guidelines and other major meta-analyses mentioned in this review, we developed the following tables that provide a comparison of dietary and psychological interventions for IBS.

Table 1: Comparative analysis of the best non-pharmacological IBS interventions

Restricts fermentable carbs to reduce small bowel water volume, and colonic gas production	High response rates; 50% - 60% of patients show significant symptom reduction [23]	Implemented in 3 phases. Benefits often durable at 6–12 months in responders; long-term personalized maintenance is key [25]	**Potential for nutritional deficiencies and microbiome alterations if not supervised by a dietitian**
Absorbs water to normalize stool form; fermented by bacteria to produce short-chain fatty acids (SCFAs)	Associated with a relative risk (RR) of 0.83–0.87 for symptoms remaining. Strong recommendation for pain management [57] [22]	Suitable for long-term daily management	Safe; common side effects include initial bloating and flatulence if introduced too quickly
Provides calcium channel blockade to relax smooth muscle and has anti-inflammatory properties	Associated with an RR of 0.58–2.39 for overall symptom improvement. Meta-analyses show significant improvement over placebo [22]	Short-term efficacy is well-supported; long-term data on continuous multi-year use is limited	Well-tolerated; primary side effect is heartburn (reflux)

Enhances intestinal gas clearance, modulates the brain-gut axis, and increases gut microbial diversity	Significant improvement in global symptoms noted in meta-analyses. [13] One RCT found 43% of patients experienced clinical improvement [57]	Beneficial effects can be seen at 5 years post-intervention [23]	Generally safe; barriers include fear of flare-ups. Intense exercise may worsen symptoms by increasing gut permeability

Table 2: Comparative analysis of the best psychological IBS interventions

Mechanism of Action	Clinical Efficacy	Durability & Follow-up	Safety & Tolerability
Uses cognitive restructuring and relaxation to alter gut-brain dysregulation and unhelpful thought patterns	Reported an RR of 0.41- 0.48 failure to achieve an improvement. For refractory symptoms, it is superior to routine care [23] [58]	Long-term success; psychological therapy benefits shown to persist at 12 and 24 months [37]	High cost-efficiency; no serious adverse events reported. Primary barrier is therapist access
Addresses maladaptive cognitive and behavioral responses to GI symptoms to reduce distress and severity	Shown to be efficacious with an RR of 0.65 for failure to achieve improvement [58]	Efficacy is maintained at 6 months post-treatment according to follow-up networks [58]. Large effects on quality of life [59]	Very safe; side effects are considered unrelated to therapy
Uses imagery and relaxation to modulate visceral hypersensitivity and normalize gut-brain pain processing	Large clinical series show >75% of patients achieve a clinical response (reduction of IBS-SSS ≥50) [23]	6–12 sessions; effects are durable in the long-term.	Very safe; intervention leads to reduced healthcare utilization

5. Conclusions

It is worth considering that the treatment of IBS is most effective when it follows an interdisciplinary approach, bridging the gap between primary care, gastroenterology, and behavioral health. By combining non-pharmacological strategies and psychological approaches, clinicians can address the condition's complex biopsychosocial nature. Based on this analysis, our best bet would be a diet monitored by a nutritionist combined with a gut-directed therapy and daily physical activity as the first line of treatment in the early stages of the condition since it may very well stem from an inappropriate diet or psychological distress. We do acknowledge though that a pharmacological treatment might be necessary in some challenging cases and the right strategy should always be established with a professional. The rapport between the patient and the professional also seems to be a very important variable in this process. Complementary and alternative interventions should be more often explored as non-pharmacological options since their side effects are easily manageable.

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