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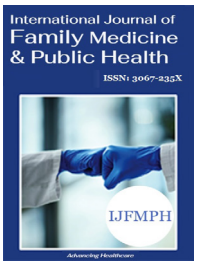

Integrative Perspectives on Irritable Bowel Syndrome (IBS): Pathophysiology and Therapeutic Approaches in Western and Unani Medicine

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ABSTRACT

Irritable Bowel Syndrome (IBS) is a chronic functional gastrointestinal disorder characterized by recurrent abdominal pain, bloating, and altered bowel habits, occurring in the absence of any identifiable structural abnormalities. Despite extensive research, the exact pathophysiology of IBS remains unclear, and current treatment approaches in modern medicine are primarily focused on symptomatic relief. IBS is among the most prevalent functional gastrointestinal disorders and is attributed to a complex interplay of gut-brain axis dysfunction, visceral hypersensitivity, dysbiosis of gut microbiota, and psychosocial stressors.

In contrast, Unani medicine conceptualizes IBS within the framework of humoral imbalance, emphasizing disturbances in digestive temperament and dysfunctions of the liver and intestines. Symptoms resembling IBS are elaborated in Unani literature under various conditions affecting the sub-faculties of *Quwa-e-Tabi'iyah* (natural faculties), including entities such as *Ishaal-e-Dimāghī*, *Ishāl-e-Idwārī*, *Zarb-wa-Khulfa*, *Asbi Dast*, and disorders involving *Balgham* and *Safrā'*. Other contributing factors described include altered *Harkat-e-Dūdiyah* (peristaltic movements), increased activity of *Urūq-e-Jāzibah* (absorptive vessels), and disturbances in *Asbāb-e-Sitta Zarūriyya* (six essential factors), as well as various forms of *Qaulanj* (colic).

Unani scholars advocate for a holistic treatment approach involving dietary regulation (*Ilāj bil Ghidhā*), herbal formulations (*Ilāj bil Dawa*), and regimental therapies (*Ilāj bil Tadbīr*) such as cupping (*Hijāmah*) and massage to restore gastrointestinal balance and overall health.

Introduction

Irritable Bowel Syndrome (IBS) is a common functional gastrointestinal disorder that affects millions of people worldwide, significantly impacting their quality of life and contributing to increased healthcare costs. It is characterized by chronic abdominal pain, bloating, and altered bowel habits, which can vary considerably among individuals and are not attributable to any detectable structural or biochemical abnormality [1,2,15]. IBS falls under the category of Functional Gastrointestinal Disorders (FGIDs) [3]. The condition is further classified into subtypes based on predominant symptoms: IBS with constipation (IBS-C), IBS with diarrhea (IBS-D), mixed type (IBS-M), and unclassified (IBS-U). Although IBS does not involve structural damage to the gastrointestinal tract, its pathophysiology is increasingly recognized as a multifactorial process. Key contributing mechanisms include dysfunction of the gut-brain axis, visceral hypersensitivity, alterations in the gut microbiota, and the influence of psychological stressors. These complex interactions underlie the heterogeneous nature of IBS and the variability in clinical presentation among patients [4].

Diagnostic criteria for IBS subtypes (Table 1) Predominant bowel habits are based on stool form on days with at least one abnormal bowel movement [4].

IBS Subtype	Diagnostic Criteria (Bristol Stool Types)	Clinical Description
IBS with Predominant Constipation (IBS-C)	> 25% bowel movements are Type 1 or 2 < 25% bowel movements are Type 6 or 7	Patient reports constipation-like stools (hard, lumpy stools) corresponding to Types 1 or 2
IBS with Predominant Diarrhoea (IBS-D)	> 25% bowel movements are Type 6 or 7 < 25% bowel movements are Type 1 or 2	Patient reports diarrhoea-like stools (loose, watery stools) corresponding to Types 6 or 7
IBS with Mixed Bowel Habits (IBS-M)	> 25% bowel movements are Type 1 or 2 > 25% bowel movements are Type 6 or 7	Patient reports both constipation and diarrhoea, with frequent alternating stool types
IBS Unclassified (IBS-U)	Does not fit IBS-C, IBS-D, or IBS-M patterns	Patient reports rare or inconsistent abnormal stools, cannot be categorized

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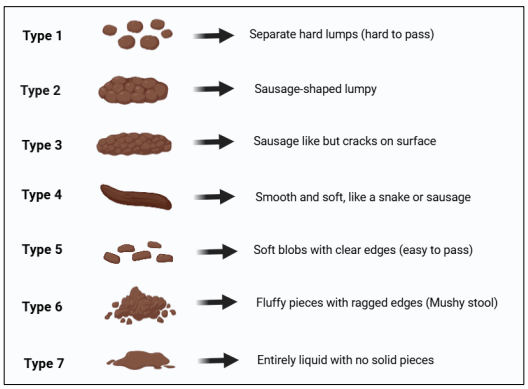

Figure 1: The Bristol Stool form Scale [4].

Modern gastroenterology identifies IBS as a disorder of gut-brain interaction, with patients exhibiting increased visceral sensitivity and dysregulated motility. The gut microbiome has also been implicated, with studies showing altered bacterial compositions in IBS patients, contributing to inflammation and immune activation. Psychological factors such as anxiety and depression are commonly associated with IBS, further complicating its management. Diagnosis is typically based on symptomatology, using the Rome IV criteria (Table 2), and exclusion of organic diseases through investigations like colonoscopy and stool tests [5].

Table 2: The criteria used for diagnosis of irritable bowel syndrome [4]

Rome III (2006)	Rome IV (2016)
At least 2 days per month in past 12 weeks of continuous or recurrent abdominal pain or discomfort. With at least 2 of the following: • Relief with defecation • Altered stool frequency • Altered stool form Onset of symptoms more than 6 months before diagnosis	Recurrent abdominal pain, on average, at least 1 day a week in the last 3 months, associated with two or more of the following criteria: • Related to defecation • Associated with a change in a frequency of stool • Associated with a change in form (appearance) of stool Criteria fulfilled for the last 3 months with symptom onset at least 6 months before diagnosis.

In Unani System of medicine, IBS is understood within the framework of humoral theory, where an imbalance in *Akhlat* (Humours), particularly an excess of phlegm (*Balgham*) or black bile (*Sauda*), disrupts digestion. Weakness in digestive power (*Quwwat-e-Hazima*), liver dysfunction, and psychological disturbances are key contributors to the disease. The Unani system emphasizes dietary modifications, herbal formulations, and regimental therapies (*Ilaj bil Tadbeer*) such as cupping therapy (*Hijama*), massage (*Dalak*), and hydrotherapy (*Hammam*) to restore balance and improve gut health.

Material and Methods

This study was conducted as a review to explore the pathophysiology and therapeutic approaches in Irritable Bowel Syndrome (IBS) from both Unani and modern medical perspectives. Classical Unani texts were reviewed to identify descriptions and treatments analogous to IBS. Contemporary literature was sourced from databases such as PubMed, Google Scholar, and ScienceDirect, focusing on articles published between 2000 and 2024. Keywords used included "IBS," "Irritable Bowel Syndrome," "Unani medicine," "pathophysiology," and "treatment." Relevant data were analyzed to highlight conceptual overlaps and differences in disease understanding and management between the two systems of medicine.

Prevalence

Irritable Bowel Syndrome (IBS) is a prevalent functional gastrointestinal disorder characterized by symptoms such as abdominal pain, bloating, and altered bowel habits.prevalence of IBS in children and adolescents is high. Various studies have reported prevalence to be approximately 8 to 12% in children, and 5 to 17% in adolescents. [6,7,8] Globally, the prevalence of IBS is estimated to be around 11.2%, with variations across different regions. For instance, prevalence rates range from 7% in South Asia to 21% in South America. [1]

Epidemiology

Approximately 11% of the global population is affected by Irritable Bowel Syndrome (IBS) [1][9]. The lowest prevalence has been reported in Southeast Asia (7.0%), while the highest is observed in South America (21.0%) [9]. In Asia, the prevalence of IBS ranges from 6.8% to 33.3%, with a higher occurrence among females (10.2%) compared to males (8.8%). However, studies from Western countries indicate an equal distribution between genders [10,11].

In India, IBS affects between 4.2% and 7.5% of the population, with a relatively higher prevalence reported in men [12]. Community-based studies within the country have shown a broader prevalence range, from 0.4% to 4.2%, which may be due to variations in study design, diagnostic criteria, and the demographic characteristics of the populations studied [13].

Risk Factors

Several factors have been identified as potential contributors to the development of Irritable Bowel Syndrome (IBS). These include female gender, epidemiological studies suggest that females are approximately twice as likely to be affected as males, with a female-to-male ratio of about 2:1 [1]. Psychological factors also play a significant role, as individuals experiencing mental stress, anxiety, or depression have a higher risk of developing IBS. Additionally, a positive family history of IBS may indicate a genetic or environmental predisposition to the condition. Furthermore, a personal history of sexual abuse has been associated with an increased likelihood of developing IBS, possibly due to the long-term effects of trauma on gut-brain axis regulation [1].

Etiology and Pathophysiology

The exact cause of Irritable Bowel Syndrome (IBS) is still unclear; however, it is widely regarded to have a multifactorial etiology. In modern medicine, several interrelated mechanisms have been proposed, including visceral hypersensitivity, imbalance of gut microbiota, dysfunction of the brain-gut axis [14], dysregulation of serotonin, genetic predisposition, immune system alterations, and environmental influences [15].

A central element in the pathophysiology of IBS is the dysfunction of the gut-brain axis, which disrupts normal communication between the central nervous system and the enteric nervous system. This leads to increased intestinal permeability, visceral hypersensitivity, and abnormal gastrointestinal motility. Neurotransmitters like serotonin play a crucial role in modulating gut motility and pain perception, and abnormalities in serotonin signaling have been documented in IBS patients [16].

Recent MRI studies have revealed changes in the white matter of the brain in IBS patients, indicating that stress-induced alterations in brain activity can affect the hypothalamic-pituitary-adrenal (HPA) axis, thereby contributing to the onset and exacerbation of IBS. Furthermore, low-grade inflammation and immune activation, evidenced by elevated levels of pro-inflammatory cytokines also contribute to the disease process. Alterations in the gut microbiome further support the use of probiotics, which have shown therapeutic benefits in managing symptoms [1].

In Unani medicine, IBS-like symptoms are attributed to disturbances in the balance of humors, particularly an excess of *Balgham* (phlegm), which leads to slow digestion and bloating. The liver's central role in metabolism and detoxification is emphasized; hepatic dysfunction is believed to exacerbate digestive disturbances by impairing the elimination of waste products. Psychological factors (*Asbab Nafsiya*) such as anxiety, grief, and emotional stress are also considered significant contributors, as they influence digestion and gut motility.

From the Unani viewpoint, the disturbance in gastrointestinal function stems from dysfunction in the *Quwa-e-Tabi'yah* (Natural Faculties), particularly:

- *Quwwat-e-Hazimah* (digestive faculty)
- *Quwwat-e-Masikah* (retentive faculty)
- *Quwwat-e-Dafiah* (expulsive faculty)
- *Quwwat-e-Jazibah* (absorptive faculty)

A general term used for impaired gut function is *Zof-e-Meda* (weakness of the stomach), but the actual dysfunction may lie in one or more of these faculties, leading to symptoms like constipation or diarrhea.

Sabit Ibn Qurrah described a condition resembling IBS under the term *Ishal-e-Dimaghi*, which he attributed to *Zof-e-Dimagh* (weakness of the

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brain). He proposed that waste matter from the brain descends to the intestines, altering its *mizaj* (temperament) and impairing the *Quwwat-e-Hazimah* and *Quwwat-e-Masikah*, resulting in irregular bowel habits [17,18].

Another condition described in Unani texts with clinical features similar to IBS is *Zalaqul Ama* (lienteric diarrhea), in which all four faculties of digestion are compromised. However, special emphasis is placed on the dysfunction of the *Quwwat-e-Masikah* (retentive faculty), considered pivotal in the manifestation of IBS-like symptoms.

Contributing factors to the dysfunction of the *Quwwat-e-Masikah* include:

1. Excessive mucilage (*Ratoobat-e-Lazij*): Coating the intestinal lining and preventing proper retention of food, leading to frequent defecation.
2. Abnormal *mizaj*: Either *sada* (non-substantial) or *maddi* (substantial) deviations in the temperament of the retentive faculty can impair its function.
3. Prolonged use of laxatives: This may lead to persistent evacuation of food before complete digestion.
4. Intense physical activity post-meals: Disrupts the digestive process and leads to early expulsion.
5. Increased internal heat (*Hararat*): Often caused by consumption of *haar* (hot-natured) foods, which disrupts the temperament of the alimentary tract and hinders the retentive faculty [17].

From a Unani psychological perspective, there is a significant correlation between IBS and *Mälankhüliyä Maräqé*, a condition associated with symptoms like fear, anxiety, depression, belching, bloating, and abdominal discomfort. This syndrome is attributed to abnormal vapors of *Sawdā'* (black bile) ascending from the abdomen to the brain, thus disrupting mental and gastrointestinal function. The shared gut-brain interaction in both conditions supports the efficacy of holistic Unani treatments, which parallel modern therapies such as probiotics and antidepressants, particularly in emotionally sensitive individuals. The historical overlap of *Mälankhüliyä Maräqé* with hypochondriasis further reinforces the integration of somatic and psychological dimensions in IBS management [19].

Therapeutic Approaches

Management of Irritable Bowel Syndrome (IBS) in modern medicine is largely symptomatic, involving a combination of dietary modifications, pharmacological treatments, and psychological therapies.

One of the most effective dietary approaches is the low FODMAP diet, which reduces the intake of fermentable carbohydrates known to trigger symptoms such as bloating, gas, and abdominal discomfort. Pharmacological interventions are usually tailored according to the IBS subtype. Antispasmodic agents like Mebeverine and Dicyclomine help alleviate abdominal cramping, while laxatives are used for constipation-predominant IBS (IBS-C), and anti-diarrheal medications are employed in diarrhea-predominant IBS (IBS-D). Neuromodulators such as selective serotonin reuptake inhibitors (SSRIs) and tricyclic antidepressants (TCAs) are also used to manage visceral hypersensitivity and improve pain perception. Additionally, modulation of the gut microbiota has become a target of therapy, with probiotics and non-absorbable antibiotics like Rifaximin showing beneficial effects in some patients [21,22].

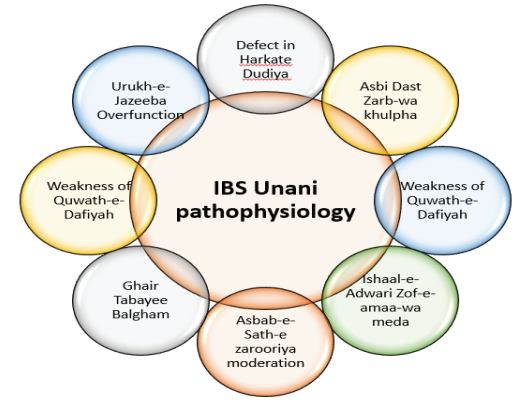

Figure 2: Varied and Complex pathophysiology of IBS according to Unani system of Medicine.

Quadrant Comparative Table: Etiology of IBS in Unani Medicine [20]

Category	Specific Causes	Mechanisms	Contributing Factors
Diarrhea-Predominant IBS (IBS-D)	**Ishaal-e-Dimaghee**: Brain stress/weakness leads to waste redistribution to GI tract. **Ishaal-e-Adwari**: Loss of Quwath-e-Tammah causes chyme deposition. **Zarb-wa-khulpha**: Weak Quwath-e-maasika, strong Quwath-e-Dafiyah; includes: - Soo-e-mizaj (Barid Rathab) - Malasat-wa-zahaq - Ghair-Tabayee-safra - Humuze - Nazli - Ghizayi - Zof-e-jegar khilat-e-injezab **Asbi Dast**: Nervous diarrhea from emotional triggers (common in females). **Ghair Tabayee Balgham**: Excess mucus causes mucorrhea. **Ghair Tabayee Safra**: Excess bile accumulation. **Nazli**: Fasid food particles due to Soo-e-mizaj (Sard/Garm Demaghee). **Zof-e-amaa-wa meda**: Weak Quwath-e-maasika.	-Abnormal digestion (Ghair Tabayee Hararat/Ruthubat). - Weak intestinal Quwath (Tammah, Maasika). - Enteric nervous system hypersensitivity. - Fasid substances (Balgham, Safra, Nazla) disrupt digestion.	-Stress/emotional disturbances. -Dietary imbalances (Ghizayi). -Temperamental changes (Soo-e-mizaj). - Liver weakness (Zof-e-jegar).
Constipation-Predominant IBS (IBS-C)	**- Defect in Harkate Dudiya:** Reduced peristalsis due to mental pressure or weak enteric nervous system. **- Urukh-e-Jazeeba Overfunction:** Excessive fluid absorption (Sudda), low Safra production. **- Asbab-e-Sath-e-zarooriya Disturbances:** - Hawa (poor air/environment) - Mashrubath-wa-Makulaat (low water, caffeine, oily foods, sakheel aqzeeya, khushk/tursh ashya) - Harkat-wa-sukun-e-badani/nafsani (sedentary lifestyle) - Nawm-wa-bedaar (sleep imbalances) **- Ahtebas-wa-istefragh (non-essential retention)**	- Weak Quwath-e-Dafiyah in Amaai Mustakhee. - Reduced peristaltic movement. - Excessive fluid absorption. - Imbalanced lifestyle factors.	- Mental pressure (professional stress). - Low fluid/fiber intake. - Sedentary behavior. - Weak enteric nervous system.

Abdominal Pain/Discomfort (Qaulanj)	- Carbonated beverages (e.g., sodas) causing gas. - Rapid chewing/ eating leading to swallowed air.	- Gas accumulation in the gut. - Mechanical irritation from air/carbonation.	- Dietary habits (carbonated drinks, fast eating). - More common in IBS-C than IBS-D.
Shared Pathophysiological Factors	Weakness in Quwath (Maasika, Dafiyah, Tammah). - Soo-e-mizaj (temperamental imbalances: Barid Rathab, Sard/Garm Demaghee). - Nervous system dysregulation (central/enteric). - Asbab-e-Sath-e-zarooriya imbalances.	- Impaired Quwath disrupts organ function. - Temperamental changes alter digestion. - Neuro-gut axis sensitivity. - Fasid substances (Balgham, Safra, Nazla).	-Stress and emotional factors. - Dietary/ lifestyle imbalances. - Environmental influences (Hawa). - Neurological sensitivity.

The LAPIBSS trial demonstrated that supplementation with *Lactobacillus acidophilus* (NCFM and LAFTI L10) significantly reduced abdominal pain after eight weeks of treatment [23]. Furthermore, clinical evidence supports the use of psyllium husk (derived from *Plantago ovata*) as the only fiber currently recommended by the American College of Gastroenterology for IBS management, as it helps normalize stool consistency and reduce pain in both IBS-C and IBS-D subtypes [29]. Peppermint oil (*Mentha piperita*), particularly in enteric-coated form, has shown efficacy in several controlled studies due to its smooth muscle-relaxing properties [23].

In Unani medicine, a holistic approach is adopted for the management of IBS like symptoms, integrating dietary regulations (*Ilaj bil Ghiza*), pharmacological therapy (*Ilaj bil Dawa*), and regimental practices (*Ilaj bil Tadbeer*). Dietary recommendations emphasize the avoidance of cold and moist foods that are believed to increase *Balgham* (phlegm), and encourage the use of digestive stimulants such as *Zanjabeel* (ginger), *Saunf* (fennel), and *Darchini* (cinnamon). Several herbs are traditionally used to regulate digestion and bowel function, including *Foeniculum vulgare* (fennel), *Cinnamomum zeylanicum* (cinnamon), *Aegle marmelos* (Baelgiri), *Plantago ovata* (Aspghol), *Oscimum sanctum* (Tukhm-e-Rehan), and *Aloe vera*, particularly in constipation-dominant cases [1,30]. Regimental therapies like *Hijama* (cupping), massage, and hydrotherapy are employed to improve circulation, facilitate detoxification, relieve stress, and enhance digestive functions [16].

Numerous individual herbal agents have demonstrated clinical benefits in IBS. *Curcuma longa* (turmeric) possesses anti-inflammatory and digestive-enhancing properties, while *Althaea officinalis* (Khatmi) is used for its soothing effects on the gastrointestinal tract [25,26]. Studies have shown that *Hypericum perforatum* (St. John's Wort) not only improves psychological well-being but also modulates autonomic nervous function, thereby reducing stress-related IBS symptoms [27,28].

Compound formulations such as *Qurs-e-Zaheer*, *Qurs-e-Habis*, *Jawarish Mastagi*, *Majoon Sang Dana Murgh*, and *Habb-e-Raal* are widely used in Unani practice[9].

The findings of a study on polyherbal formulation named Jawarish shahi indicates that it has a promising role in the management of Irritable Bowel Syndrome (IBS). A gradual but significant reduction in IBS Severity Scoring System (IBS-SSS) scores was observed over the treatment period, particularly on the 30th and 45th days [12].

In one documented regimen, a combination of *Tukhm-e-Rehan*, *Tukhm-e-Isapgol*, *Tukhm-e-Konch*, and *Tukhm-e-Bartang* (5 grams each, soaked in water for 2–3 hours and taken at bedtime) along with *Majoon Sang Dana Murgh* (7 grams twice daily after meals) was administered for 60 days, accompanied by a gluten-free diet. This regimen resulted in marked symptom relief and improved quality of life, with no reported adverse effects [9].

Other herbal remedies include *Carmint*, an Iranian preparation containing extracts of *Mentha spicata*, *Melissa officinalis*, and *Coriandrum sativum*, which has been shown to reduce the severity and frequency of abdominal pain in IBS patients [24].

Comparative Analysis of Modern and Unani Treatments

Modern medicine provides rapid symptom relief but often fails to address the root cause of IBS, leading to recurrent episodes. Pharmacological treatments can be effective but are often associated with side effects. In contrast, Unani medicine focuses on restoring gut balance through natural interventions, emphasizing long-term wellness. An integrative approach that combines the strengths of both systems may offer better patient outcomes. For instance, while modern dietary interventions such as the low FODMAP diet reduce symptoms, incorporating Unani herbal formulations may enhance digestive health and microbial balance.

Future Directions and Research Gaps

Despite advances in IBS management, gaps remain in understanding its pathophysiology and optimal treatment strategies. Future research should focus on clinical trials assessing the efficacy of Unani therapies for IBS, particularly herbal formulations and regimental therapies. Standardization of Unani treatments and their integration into modern clinical practice could provide a more holistic approach to IBS management. Further exploration of the gut microbiome's role in IBS and its modulation through Unani dietary practices is also warranted.

Conclusion

IBS is a complex disorder requiring a multifaceted treatment approach. While modern medicine excels in providing symptomatic relief, Unani medicine offers a holistic framework targeting root causes and overall digestive health. Integrating Unani principles with contemporary gastroenterology could lead to more effective and sustainable IBS management. Future research should focus on bridging traditional knowledge with evidence-based medicine to enhance treatment efficacy and patient well-being.

Conflict of Interest:

None declared.

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All authors have contributed equally to this project.

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