

THE ROLE OF LIFESTYLE-RELATED TREATMENTS FOR IRRITABLE BOWEL SYNDROME

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ABSTRACT

Introduction: The role of diet and lifestyle in Irritable Bowel Syndrome (IBS) mainly involves alleviating symptoms and improving the quality of life for patients. Diet plays a significant role through the identification and avoidance of trigger foods, the introduction of an appropriate amount of fiber, and adherence to specific guidelines. Lifestyle, including regular physical activity, stress reduction techniques, and healthy sleep habits, also contributes to the reduction of bowel discomfort.

Aim of the study: The aim of this study is to examine the relationship between diet and lifestyle, and the occurrence and course of Irritable Bowel Syndrome.

Material and Methods of Research: A literature review focused on keywords related to the topic was performed using databases such as PubMed and Google Scholar, as well as textbooks and articles on websites.

Results: Irritable Bowel Syndrome (IBS) is a chronic functional disorder of the gastrointestinal tract, primarily characterized by abdominal pain and changes in bowel habits. Dietary modifications, such as a lowFODMAP diet, and lifestyle factors, including physical activity levels, stress management, and meal regularity, significantly influence the course of the disease. There are gender differences in symptomatology and psychosocial impact as well as gender-specific responses to pharmaceutical treatments. Ongoing research is needed to better understand the mechanisms underlying IBS and to optimize therapeutic strategies.

Conclusion: The effectiveness of IBS therapy requires a comprehensive approach that includes dietary modifications, increased daily physical activity, learning to manage emotions, and regular collaboration with a doctor. Understanding and implementing these elements are crucial for effectively alleviating symptoms and improving the functioning of patients with Irritable Bowel Syndrome.

Keywords: irritable bowel syndrome, diet, IBS, lifestyle, stress

INTRODUCTION

Irritable bowel syndrome (IBS) is a chronic functional gastrointestinal disorder. The main symptoms, which are abdominal pain and altered defecation, do not have an organic or biochemical basis [1]. The pathogenesis of IBS involves many factors, but it is suspected that disturbances in the gut-brain interaction, primarily influenced by the gut microbiota, play a fundamental role [2]. The microbiota inhabiting the human gastrointestinal tract is a collection of microorganisms shaped by host factors such as genetics and nutrients. It includes diverse microorganisms (bacteria, viruses, eukaryotes, fungi). Differences in the bacterial composition of the gut in IBS patients and reduced diversity of fecal microbiota compared to healthy individuals suggest a potential role of these differences in the development and persistence of IBS. Besides disturbances in the gut microbiota, known as dysbiosis, the main pathogenic factors of IBS include: disturbances in intestinal motility and secretory function, visceral hypersensitivity, immunological dysfunctions of the intestinal mucosa, and a dominance of sympathetic over parasympathetic activity [3].

IBS is a significant public health issue due to its impact on quality of life and healthcare utilization. It is diagnosed about twice as often in women as in men, and half of the patients report their first symptoms before the age of 35 [4]. Globally, IBS affects about 10-15% of the population, with prevalence varying by region and diagnostic criteria. Based on a research study IBS was least common among respondents in Southeast Asia (7%) and most common in South America (21%). An average of 80 studies worldwide, excluding South America, showed an IBS incidence of 11.2%. In most European countries the prevalence was reported to be slightly lower, around 5–10% [5]. In Poland, specific large-scale studies are limited, but data generally align with broader European trends. A comprehensive study by Sperber et al. using the Rome IV criteria estimated IBS prevalence in Poland at 4.4% [6].

However, a 2018 study at the Woodstock Rock festival in Poland reported a higher prevalence of 11%, suggesting that prevalence may vary depending on the population and methods used. The study identified that the most common subtypes among the participants were IBS with diarrhea as the dominant symptom and IBS with a mix of diarrhea and constipation. IBS was more common in women, but no significant relationship was found between IBS and age or education level, nor between IBS subtypes and these factors. The study contrasted its findings with previous research, noting that the Rome IV criteria have generally reduced IBS prevalence estimates compared to earlier Rome criteria [7]. Also in other studies implementation of the Rome IV diagnostic criteria has significantly reduced the reported prevalence of IBS [8, 9].

There is the necessity of ongoing, large-scale, and methodologically consistent research to better understand the epidemiology and etiology of IBS, especially considering factors like gender, education, and social status. This would help in identifying high-risk groups and guide public health strategies. Developing targeted lifestyle programs addressing stress, exercise, and sleep may help manage or reduce IBS prevalence [10]. Increasing awareness among the general population and healthcare professionals in Poland could lead to earlier diagnoses and improved management. [11]. Additionally, exploring the impact of diet, genetic factors, and psychosocial stress on IBS could lead to more personalized treatment approaches [12, 13].

PURPOSE OF THE STUDY

The aim of this study is to analyze current research on the role of diet and lifestyle in alleviating symptoms and improving the functioning of patients with IBS. The results and observations presented in the article indicate that dietary modifications, such as a low FODMAP diet and lifestyle changes, including regular physical activity, stress management, and maintaining regular eating habits, can significantly influence the course of the disease. Presented results and conclusions will be a valuable contribution to the further development of knowledge about IBS and clinical practices related to its treatment.

MATERIALS AND METHODOLOGY

The literature was gathered through searches on PubMed and Google Scholar, supplemented by references from the initially retrieved articles. The search included various combinations of key words such as "irritable bowel syndrome," "lifestyle," and "diet", as well as textbooks and articles on websites.

DIAGNOSTICS

Currently applicable diagnostic criteria for the described condition are the Rome IV Criteria, which define IBS as recurrent abdominal pain that first appeared at least 6 months ago, persists on average for at least one day per week over the past three months, and meets at least two of the following criteria: related to defecation, or associated with a change in the frequency or form of stool. Abdominal pain is typically located in the lower abdomen. Additionally, symptoms may include bloating, nausea, back pain, urinary symptoms, a feeling of rectal pressure, an urgent need for bowel movements, or a feeling of incomplete evacuation.

There are four main subtypes of IBS: IBS with constipation predominance, IBS with diarrhea predominance, IBS with mixed bowel habits, and unclassified IBS [4].

The diagnosis of irritable bowel syndrome is made by exclusion. In addition to the basic laboratory tests such as a complete blood count, serum C-reactive protein (CRP), thyroid-stimulating hormone (TSH), and abdominal ultrasound, serology for celiac disease is recommended, and if results suggest this condition, an endoscopy with duodenal biopsy is performed. For IBS with diarrhea predominance, fecal calprotectin levels are measured. If elevated, a colonoscopy should be performed to diagnose inflammatory bowel disease. Colonoscopy should also be conducted in individuals over 50 years of age or if alarm symptoms are present, such as fever, blood in the stool, unexplained anemia, a family history of colorectal cancer, or weight loss [2]. Due to the similarity of symptoms, differential diagnosis should also consider small intestinal bacterial overgrowth (SIBO) and perform a breath test to diagnose this condition. Additionally, these two conditions may overlap. It has been shown that more than one-third of IBS patients tested positive for SIBO, which increased the likelihood of this disorder by nearly five times [14].

MEDICATION THERAPY

The primary approach to managing IBS takes into account comorbid conditions. Effective management involves collaboration with the patient and individualized therapy, including dietary changes, pharmacological treatments, and psychological support [15]. Before initiating pharmacological treatment, it is essential to address mental health, including sleep, stress reduction, physical activity, and diet, as discussed previously. Pharmacological treatment should be considered if dietary modifications and psychological techniques do not yield satisfactory results.

In all forms of IBS, antispasmodic medications are used to relieve smooth muscle contractions in the gastrointestinal tract. These include substances such as hyoscine, drotaverine, mebeverine, alverine, and trimetazidine. Antispasmodic drugs represent a large group of medications with varying mechanisms of action, effectiveness, and safety [4]. It has been demonstrated that drotaverine hydrochloride, at a dose of 80 mg taken three times a day, significantly reduces abdominal pain in IBS [16]. There is also evidence that intermittent use of antispasmodic drugs, rather than continuous use, improves the quality of life for IBS patients [17]. Peppermint oil has also been shown to positively impact IBS symptoms when used in doses of 180–225 mg twice daily for periods ranging from 2 weeks to 3 months [18].

Given the significant role of gut microbiota in the pathogenesis of IBS, modifying its composition can be beneficial. This can be achieved through appropriate diet, probiotics, or eubiotics. The effectiveness of probiotics is considered strain-dependent, meaning the specific effect is related to the bacterial strain used in supplementation. Research has focused on strains such as *Saccharomyces boulardii*, *Bifidobacterium infantis* and particularly *Lactobacillus plantarum* 299v. Studies have confirmed that *Lactobacillus plantarum* 299v positively affects gut microbiota, reduces abdominal pain, and alleviates bloating and incomplete evacuation [19, 20].

Since emotional disorders are frequently observed in IBS patients, centrally acting medications are popular. Most research focuses on tricyclic antidepressants (TCAs) and selective serotonin reuptake inhibitors (SSRIs). The Polish Gastroenterological Society (PTG) recommends using these medications at the lowest effective doses for 4–12 weeks. The optimal approach is to use drugs that have been studied and shown effective for this indication, such as amitriptyline, doxepin, desipramine, fluoxetine, imipramine, paroxetine, and trimipramine.

For IBS with diarrhea predominance and mixed forms, the use of rifaximin α for 14 days is recommended, with possible additional cycles every 4 weeks. Rifaximin α is the only known eubiotic that restores the normal composition of the gut microbiota without disrupting the overall bacterial flora [4]. Studies have shown that rifaximin treatment for two weeks significantly relieves IBS symptoms such as bloating, abdominal pain, and loose or watery stools, and retreatment is effective and well-tolerated [21, 22]. For patients with diarrhea predominance, loperamide can also be used, while polyethylene glycol preparations are helpful for constipation-dominant forms [23].

NON-PHARMACOLOGICAL MANAGEMENT

Referring to the previously discussed information, irritable bowel syndrome (IBS) is traditionally viewed as part of the "brain-gut axis disorders," where emotions can influence gut function and gastrointestinal stimuli can affect mental functions. IBS patients often exhibit abnormal levels of serotonin and dopamine, which can impact the clinical presentation of the disorder [24]. Environmental factors, such as psychosocial stress, infections, antibiotic use, diet, and food intolerances, also play a role in IBS pathogenesis. The connection between IBS and psychological disorders (anxiety and depression) is significant, as IBS symptoms are exacerbated by psychological stress, and changes in bowel habits can intensify symptoms of anxiety and depression [25]. Clinical observations confirm a clear relationship between stress and the onset and severity of IBS symptoms in 50–80% of patients [26]. Additionally, individuals with anxiety and/or depression are twice as likely to develop IBS [27]. Incorporating cognitive-behavioral therapy (CBT) has shown potential

for providing long-term benefits in IBS management [28]. The efficacy of hypnotherapy has also been evaluated, with hypnosis providing relief to approximately 50% of IBS patients, and group hypnotherapy proving to be as effective as individual sessions [29].

Daily poor lifestyle habits, such as an inappropriate diet, lack of physical activity, and insufficient sleep, can trigger symptoms in IBS patients [30]. Increased physical activity improves gastrointestinal symptoms in IBS. Patients who maintain an active lifestyle are less likely to experience symptom exacerbation compared to those who are physically inactive. In one study, despite a high dropout rate, IBS symptoms significantly improved in the group engaging in moderate physical activity [31]. Another analysis found that exercises like yoga, walking (including light treadmill training), and aerobics are effective methods for managing IBS [32].

Dietary modifications are among the most important therapeutic options. Patients often associate their symptoms, such as bloating and abdominal pain, with specific foods. Literature highlights the impact of diet on IBS symptoms. Individual tolerance to specific foods can vary, underscoring the importance of a personalized dietary strategy. The volume and frequency of meals and the methods of food preparation also matter. Symptoms are often exacerbated by foods such as onion and cabbage vegetables, lactose-containing products, legumes, raw fruits, spicy seasonings, fatty foods, sweets, highly processed foods, carbonated drinks, alcohol, strong tea, and coffee. Both caffeine and capsaicin (the main component of red pepper) stimulate colonic motility and can aggravate IBS symptoms. Increasing dietary fiber intake, especially soluble fiber found in psyllium and psyllium seed, can be an effective therapeutic option for constipation-predominant IBS. Insoluble fiber, such as bran, may worsen symptoms like bloating and abdominal pain. For diarrhea-predominant IBS, it is recommended to avoid sweeteners like xylitol, erythritol, or mannitol, which are often found in "sugar-free" sweets, "zero" beverages, and chewing gum. Increasing intake of binding foods like white rice, refined bread and pasta, semolina, and barley may also help. However, in some IBS patients, these products may exacerbate symptoms due to gluten intolerance unrelated to celiac disease. This effect may also result from the presence of poorly absorbable carbohydrates in the diet.

A crucial aspect of management involves adopting a low-FODMAP diet. FODMAPs are poorly absorbed fermentable carbohydrates found naturally in food. They can increase water secretion and gas production through fermentation in the intestines, leading to bloating and gastrointestinal symptoms in IBS patients. FODMAPs include fructans and fructooligosaccharides in garlic and wheat, galactooligosaccharides in legumes, lactose in dairy products, excess fructose in apples, and polyols in stone fruits and certain sweeteners. Recent studies indicate that the by-products of FODMAP-microbiota interactions affect intestinal stem cells, leading to improper differentiation into endocrine cells and abnormal density of these cells in the gut. These cells impact various gut functions, such as motility, secretion, absorption, and local immune defense, so disturbances in this area contribute to IBS symptoms [33, 34, 35]. Reducing FODMAPs in the diet can help alleviate bloating and provide relief for some IBS patients [15].

The effectiveness of a low-FODMAP diet is widely studied in contemporary science. Organizations such as the British Dietetic Association (BDA) and the National Institute for Health and Care Excellence (NICE) offer general guidelines for IBS patients, including regular meal times, avoiding overeating or skipping meals, consuming approximately 2 liters of fluids daily, limiting alcohol and carbonated beverages, and reducing intake of fats, insoluble fiber, caffeine, and foods that cause bloating, such as fresh fruits. A systematic review found that a low-FODMAP diet compared to a diet recommended by BDA and/or NICE for 3–6 weeks reduces abdominal pain, alleviates bloating, and limits abdominal circumference expansion. However, it did not show an impact on bowel movement frequency. Compared to a regular diet, a low-FODMAP diet was the most effective in these outcomes, justifying its recommendation [36]. The low-FODMAP diet is not recommended as a long-term solution. A restriction phase of at least 3–4 weeks is usually sufficient to achieve clinical response. Afterward, FODMAP-containing foods should be gradually reintroduced to determine the appropriate level of dietary restriction needed to effectively control symptoms. If there is no improvement after 4 weeks of strict adherence to the FODMAP diet, the intervention should be discontinued, and other therapeutic options should be considered [33].

RESULTS

Based on the comprehensive review of studies and findings related to IBS, several key highlights emerge:

1. LIFESTYLE MODIFICATIONS AS PRIMARY PREVENTION

The results of most studies (ranging from 60% to 80%) suggest that adopting a healthy lifestyle can reduce incidence of IBS. Core components of such a lifestyle include abstaining from smoking, ensuring optimal sleep, engaging in vigorous physical activity, maintaining a high-quality diet, and practicing moderate alcohol consumption. These factors collectively serve as effective primary prevention strategies for IBS [37, 38, 39].

2. GENDER DIFFERENCES IN SYMPTOMATOLOGY AND PSYCHOSOCIAL IMPACT

- **Symptom Severity:** Women with IBS tend to experience more severe psychosocial disorders, such as higher rates of anxiety (64.9% vs. 52.8%) and depression (35.6% vs. 19.7%), compared to men. They also report stronger pain sensations (17.8% vs. 12.4%) [40].
- **Treatment Sensitivity and Menstrual Cycle Influence:** Women more frequently report symptoms like nausea and paresthesia, along with increased sensitivity to treatments, including dietary adjustments. Approximately 40% of female patients observe a worsening of symptoms in relation to their menstrual cycle. However, no significant differences are evident between women of reproductive age and post-menopausal women, indicating that the menstrual cycle may not be the primary driver of these variations [41].

3. GENDER-SPECIFIC RESPONSES TO PHARMACEUTICAL TREATMENTS

Certain medications exhibit gender-specific efficacy. For instance, alosetron has shown significant improvement in women but not in men [42]. Ibodutant at a dose of 10 mg showed a twofold improvement in pain and stool consistency in women with IBS compared to placebo, but no meaningful recovery was observed in men [43]. Conversely, drugs like renzapride and neomycin demonstrate comparable positive effects across both genders [44, 45, 46]. These findings underscore the importance of considering gender when prescribing pharmaceutical treatments for IBS [47].

4. DIETARY ADJUSTMENTS AND SYMPTOM IMPROVEMENT

Women are more inclined to modify their diets in response to IBS symptoms, with 50.7% reporting dietary changes compared to 31.1% of men. This proactive approach correlates with a higher rate of gastrointestinal symptom improvement among women (39%) than men (24%) [48].

5. EFFICACY OF COGNITIVE-BEHAVIORAL THERAPY (CBT)

CBT, when at least 6 sessions are combined with antispasmodic treatment using mebeverine, leads to significant symptom improvement irrespective of gender. However, post-treatment assessments reveal that men experience more pronounced impairments in work and social functioning due to IBS symptoms compared to women [49].

6. NON-MEDICATION THERAPIES IN MANAGING IRRITABLE BOWEL SYNDROME (IBS)

Nutrition is crucial for IBS management, with the initial focus on balanced dietary recommendations. The Low FODMAP diet can be effective but should be supervised and not used long-term. Unconventional diets like lactose-free and gluten-free lack evidence and may negatively impact health. A personalized, balanced diet that includes all food groups and gradually reintroduces foods is vital to prevent deficiencies. In addition, regular physical activity is essential in supporting IBS therapy, as it enhances overall health and well-being while potentially reducing IBS symptoms [50].

CONCLUSION

Summing up, the management and prevention of IBS benefit from a comprehensive approach that integrates lifestyle modifications, gender-specific treatment considerations, and psychological therapies. Recognizing and addressing gender-specific experiences and responses, along with conducting further research into the prevalence and variations of IBS, can enhance treatment efficacy and improve the quality of life for those affected by the condition.

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CONFLICT OF INTEREST

The authors report no conflicts of interest.

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