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Integrating Dietary Strategies and Physical Activity in the Management of Irritable Bowel Syndrome (IBS)

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Abstract

Introduction

IBS is a chronic disorder of gut–brain interaction characterized by recurrent abdominal pain associated with altered bowel habits and substantial impairment in quality of life and psychosocial functioning. Pharmacological therapies often provide only partial symptom relief, prompting growing interest in non-pharmacological strategies such as diet modification and physical activity. This article aims to synthesize contemporary evidence on dietary approaches and physical activity in IBS and to propose a practical, lifestyle-oriented model of care.

Materials and methods

This narrative review examines recent research on IBS, focusing on diet and physical activity as treatment approach. Sources include articles from PubMed database, along with WHO guidelines.

Results

Evidence indicates that first-line general dietary advice, optimization of soluble fibre intake and selective use of probiotics can alleviate global IBS symptoms. Low-FODMAP diet programs, implemented in structured restriction, reintroduction and personalization phases, consistently reduce abdominal pain, bloating and stool irregularities, though long-term strict restriction may adversely affect nutritional adequacy and microbiota diversity. Emerging data suggest that regular, moderate-intensity aerobic exercise and mind–body activities such as yoga lead to clinically relevant reductions in symptom severity and improvements in quality of life, potentially via effects on gut motility, stress regulation and microbial composition, although existing studies are limited by small samples and heterogeneous protocols.

Key words: irritable bowel syndrome, low-FODMAP diet, physical activity, pathophysiology, supplementation

Introduction

Irritable bowel syndrome (IBS) is a chronic functional gastrointestinal disorder that is characterized by recurrent abdominal pain, at least once a week for three months with symptoms onset six months before, related to defecation and in association with changes in stool form or frequency in the absence of identifiable structural pathology. [1] The diagnosis of IBS is mostly based on exclusion and is suspected in the presence of specific, previously mentioned symptoms. [2]

According to Rome IV criteria, irritable bowel syndrome has four subtypes: IBS with predominant constipation, IBS with predominant diarrhea, IBS with mixed bowel habits and IBS unclassified.[5]

Worldwide prevalence of IBS is estimated at 5-10%. [3] Due to its recurrent and chronic nature it significantly affects the quality of life, psychosocial functioning and is associated with high direct and indirect costs. [4]

Although there are several pharmacological options for treating IBS, many patients report incomplete relief of their symptoms, leading clinicians to explore other, non-pharmacological strategies among which diet and physical activity occupy a central position. [6] Therefore, the aim of this article is to synthesize contemporary evidence on dietary and physical

activity strategies in managing IBS and to propose a practical and integrated approach for clinical and educational settings.

Pathophysiological background of IBS

The pathophysiology of irritable bowel syndrome is not yet fully comprehended, but it is believed to be multifactorial. Key mechanisms include psychological disturbances, altered gastrointestinal motility, food sensitivity, visceral hypersensitivity, [8] immune activation, genetics, dysbiosis of the gut microbiota, dysregulation of the gut-brain axis, which is a bidirectional communication pathway between the gut, microbiota and the central nervous system.[7]

Food intake directly affects gut motility, fermentation process and microbial metabolism. On the other hand, physical activity influences intestinal transit time, stress response and inflammatory responses. Therefore, diet and physical activity may modulate pathways leading to IBS, alleviate symptoms and influence disease course. [3]

Dietary strategies in managing IBS

General advice

Food has two roles in IBS, it acts as a trigger for symptoms but also a tool for therapy. [9] Patients often report food-related symptom exacerbation, and dietary triggers are frequently implicated in clinical consultations. Therefore, diet plays a central role in the pathophysiology and symptom modulation of IBS.

First-line approach for IBS consists of dietary and lifestyle changes. Guidelines recommend regular meals, smaller portions, limited intake of high-fat foods, caffeine, alcohol and carbonated drinks and reduced consumption of gas-producing foods. Another important recommendation is adjusting fiber intake, especially soluble fiber, which is well tolerated by patients and improves stool consistency. [1]

Low FODMAP diet

The low FODMAP diet is one of the most extensively studied therapeutic interventions in IBS. It was first introduced in 2005 and its concept is based on particular fermentable carbohydrates that were capable of eliciting gastrointestinal symptoms. [10]
Studies show that fermentable carbohydrates such as oligosaccharides, disaccharides, monosaccharides and polyols are poorly absorbed in the small intestine, leading to increased osmotic load and gas production, therefore contributing to symptoms in some patients.

The low FODMAP diet is divided into three phases: the first one is a period of restriction, which lasts between 4 to 6 weeks, the second phase is reintroduction of individual foods, which helps determine tolerance to each one, the last one is personalization, which allows to create a modified FODMAP-containing diet based on individual tolerance identified in the second phase. [11]

Clinical trials show that a low-FODMAP program may reduce global IBS symptoms, bloating, abdominal pain and stool irregularities in many patients, as opposed to traditional diets or usual care. [1]
However, strict low-FODMAP diet is not recommended for long periods of time, as it may cause adverse effects on diet quality, intake of micronutrients and gut microbial diversity. Therefore, the diet should be introduced in cooperation with a dietician, who can help establish a diet with the least restrictive and sustainable pattern that allows the patient to control symptoms of IBS. [12]

Other dietary approaches and supplementation

There are some reports of patients experiencing symptom improvement with a gluten-free diet, but it is often unclear if the benefits come from the exclusion of gluten itself or reduction of fructans and other FODMAPs present in wheat-based products. [13] However, it can only be introduced after ruling out celiac disease, and according to current publications, it should not be routinely recommended [14]

Mediterranean diet is also worth mentioning as it has anti-inflammatory effects and can modulate microbiota, which can be beneficial for IBS patients. However, but evidence is still very limited. [15]

Supplementation should be considered on an individual basis. Taking soluble fiber such as psyllium may help improve constipation and overall disease symptoms, whereas insoluble fibers are not recommended as they can exacerbate bloating, constipation and pain for patients with IBS. [16]

Some studies show promising results concerning the use of probiotics in treating IBS. Besides restoring intestinal microbiota dysbiosis, probiotics can improve stool frequency and consistency, but the effect on other symptoms varies among studies.[17] Overall, they seem to be well-tolerated, safe and inexpensive, which supports their use in the management of IBS. However, more studies are needed to determine which probiotic strain is especially useful in treating IBS. [9]

The role of physical activity in IBS

Physical activity is being increasingly recognized as a potentially beneficial non-pharmacological intervention for IBS. Recent studies suggest that regular, structured exercise may lead to clinically relevant reduction in symptom severity such as bloating, abdominal pain, altered bowel habits and therefore, improvements in quality of life. However, due to small sample sizes, short intervention durations and heterogeneity of exercise protocols, the certainty of the evidence is limited and further studies on the subject are needed.[18]

General guidelines recommend that adults, including patients with IBS, engage in at least 150 min per week of moderate-intensity aerobic activity and muscle strengthening exercises on two or more days. [19] As for IBS patients, an individual approach is advisable, starting with low- to moderate-intensity activities, such as walking, swimming or cycling and then progressing according to tolerance and preferences.[21] Incorporating yoga and other mind-body exercises in the routine may be especially beneficial for patients with prominent stress-related exacerbations of symptoms. [22]

Psychological factors also play a critical role in IBS and can influence the effectiveness of lifestyle interventions. Stress, anxiety, and depression are commonly associated with IBS and can exacerbate symptoms through the gut–brain axis. Physical activity has well-established benefits for mental health and may complement psychological therapies, therefore improving overall quality of life. [20]

Physical activity may exert its beneficial effects through various mechanisms, including modulation of autonomic nervous system, reduction of stress, depression and anxiety, changes in gastrointestinal motility and shifts in the gut microbiome. [6]

Integrating diet and physical activity

Diet and physical activity target overlapping yet distinct aspects of IBS pathophysiology. Combining exercise with other lifestyle modifications such as dietary changes, fibers and probiotics [23] may synergistically influence gut microbiota diversity, symptoms and overall psychological well-being. Furthermore, nutritional counseling may prove beneficial, helping patients create meal plans that support their exercise routines and gut health and avoid known IBS triggers in diet.[24] Moreover, allowing patients to take part in coordinating dietary and activity changes can enhance self-efficacy and strengthen their sense of control over symptoms, which is especially important in chronic conditions. [25]

Patients should be educated on the importance of consistency and long-term commitment to a physical activity routine and reminded that often significant improvements in gut health and symptom management are observed over an extended period of time.[24]

Conclusion

Dietary strategies and physical activity are complementary pillars of non-pharmacological management in irritable bowel syndrome. Evidence supports the use of dietary interventions including low-FODMAP diet and regular, appropriately matched exercise in reducing symptom severity and improving quality of life. As IBS is a disorder of gut-brain interaction, an integrated and multidisciplinary model of management, that combines tailored diet, progressive physical activity and patient-centered education is needed to achieve clinical goals. However, further

research is needed to identify the optimal combination of dietary and exercise interventions and to recognize which patients can benefit the most from specific lifestyle-based strategies.

Disclosure

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Declaration on the use of AI

In preparing this manuscript, the authors used ChatGPT for language improvement and enhancing readability. Following the use of this tool, all content was reviewed and edited by the authors, who take full responsibility for the accuracy and integrity of the final version.

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