

Review Article

The critical role of diet and nutrition in managing inflammatory bowel disease

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ABSTRACT

The persistent inflammation during inflammatory bowel disease (IBD) can severely harm the GI tract. There are several symptoms of IBD, which produce discomfort, frequent bowel movements, blood in stools, loss of weight, and tiredness, which have an impact on the lives of patients and their nutritional health. Managing IBD involves paying attention to diet and nutrition. It is important to identify trigger foods for each individual using methods like keeping food diaries or following plans recommended by dietitians that are low in residue or FODMAPs. Nutritional deficiencies, common in IBD, require attention to prevent malnutrition, muscle wasting, and complications. Having a proper dietary plan and accounting for disease characteristics and patient preferences is essential. Also, medication interactions are important during dietary monitoring. Dehydration, affecting many IBD patients, underscores the importance of maintaining fluid intake. An approach to managing IBD requires teamwork among healthcare professionals, dietitians, and patients. It involves customizing plans and combining them with medical treatments to achieve the best possible control over the disease.

Keywords: IBD, Crohn's disease, Ulcerative colitis, Diet and nutrition, Dietary plan

INTRODUCTION

Inflammatory bowel disease (IBD) refers to a condition encompassing two disorders called Crohn's disease and ulcerative colitis.¹ Individuals with bowel disease (IBD) may experience symptoms like stomach pain trips, to the restroom bleeding from the rectum, unintentional weight loss, and ongoing fatigue.² These symptoms can

significantly affect their being and nutritional status. Consequently, managing IBD and preventing complications involves paying attention to diet and nutrition. The connection between diet and nutrition in relation to bowel disease (IBD) is complex. Has many different aspects.^{3,4} Firstly, certain foods or food groups might. Trigger symptoms for some individuals with IBD. These specific foods can differ from person to person. It

may even change over time. For example, certain individuals may discover that their symptoms are exacerbated by foods, dairy items, foods high in fiber, or beverages containing caffeine.⁵ On the other hand, some people can consume these without experiencing any effects. It is crucial for each individual with IBD in order to identify and avoid the foods that cause difficulties for them. One way to accomplish this is by maintaining a food diary, gradually eliminating triggers, or following a residue or low FODMAP diet with the guidance of a dietitian diet and nutrition play a role in reducing inflammation and promoting healing in the tract. Certain foods and nutrients possess inflammatory properties that could be beneficial for individuals with IBD. Study shown that, omega-3 fatty acids found in fish oil, flaxseed oil and specific nuts and seeds can be reducing inflammation and improving the relief of symptoms.^{6,7} Additionally, probiotics. Which are bacteria residing in the gut. It may aid in restoring the balance of the gut microbiome and regulating the system. On the other side, prebiotics are fibers that act as nourishment for probiotics. It could improve gut health. Nonetheless, further research is needed to confirm the effectiveness and safety of these supplements for people with IBD.^{8,9} Moreover, maintaining a diet and ensuring nutrition can play a crucial role in preventing or addressing malnutrition and dehydration in individuals with IBD. Notably, malnutrition is a complication experienced by 85% of individuals with Crohn's disease and 65% of those with colitis. Malnutrition can occur due to reduced food intake caused by symptoms, impaired nutrient absorption due to inflammation or surgery, increased losses from diarrhea or bleeding, or heightened nutrient requirements due to inflammation or infection. Malnutrition can cause health issues such, as weight loss, muscle deterioration, anemia weakened bones (osteoporosis) stunted growth in children as well as increased susceptibility to infections and complications.^{10,11} It is very important to know that, IBD can be maintained by a balanced diet. This involves consuming meals that include foods and considering high protein or high calorie supplements if recommended by a healthcare professional or dietitian. In cases enteral or parenteral nutrition may be considered. There is research which also indicated that dehydration can be a complication for individuals with Crohn's disease (75% of patients) and ulcerative colitis (60% of individuals).¹² Dehydration can occur due to factors, like diarrhea, vomiting, fever or excessive sweating. This may result in symptoms such as mouth, thirst, headache, dizziness, weakness, confusion, kidney issues, and imbalances in levels. Henceforth, ensuring intake throughout the day is important to prevent dehydration. This can include consuming water, broth, juice, milk, or herbal tea and using oral rehydration solutions when necessary. Multiple studies have demonstrated the impact of diet and nutrition on bowel disease Avoiding trigger foods that exacerbate symptoms while incorporating inflammatory foods that aid in healing and preventing malnutrition and dehydration. All while seeking guidance from healthcare

professionals such as doctors or dietitians People who have IBD can enhance their health outcomes. The primary objective of this research is to review how diet and nutrition affect bowel disease.

LITERATURE RESEARCH

This review study is based on existing literature, and it was conducted on October 21, 2023. The databases used for searching the literature are Medline and PubMed. The search involved using medical subject headings and a combination of keywords according to the database specifications. The search terms included "diet," "nutrition," "IBD," "Crohn's disease," and "ulcerative colitis." The search was totally focus on studies involving humans and published in English. Studies older than 2008 were excluded.

DISCUSSION

IBD is a condition that leads to inflammation, in the body and affects individual's everyday routines. Managing IBD involves taking into account diet and nutrition as they play a role in influencing symptoms, potential complications, growth, interactions with medications, and mental well-being.¹³ Each person diagnosed with IBD needs a plan that considers their type of illness, where it is located in the digestive system its current activity level, nutritional status, dietary tolerances and the medications they are prescribed.

Clinical manifestation

IBD which encompasses Crohn's disease and ulcerative colitis as its representatives, presents a diverse clinical picture. The impact of IBD on individuals is significant, with an array of symptoms and complications. It is crucial to understand the manifestations of IBD. It becomes apparent that diet and nutrition play an essential role in managing this challenging condition. Gastrointestinal symptoms are often the signs of IBD. Abdominal pain, which is a defining symptom, can range from discomfort to cramp-like pain. The correct location of the pain corresponds to the area in the tract.^{14,15} While Crohn's disease can cause pain along the tract, ulcerative colitis typically localizes it to the lower abdomen. Chronic diarrhea that is often bloody is a feature of IBD, prevalent in Ulcerative colitis cases. Also, frequent bowel movements can lead to dehydration and difficulties, with absorption highlighting the importance of nutritional management. In ulcerative colitis cases, inflammation primarily affects the rectum and colon, causing bleeding. This symptom can result in anemia, underscoring the need for dietary planning to address iron deficiencies. Unintentional weight loss is commonly observed in both Crohn's disease and ulcerative colitis. Chronic inflammation, diarrhea, and loss of appetite contribute to malnutrition, emphasizing the importance of support and nutrient supplementation. Nutritional deficiencies are common in individuals with IBD. The ongoing

inflammation associated with this condition can hinder the absorption of vitamins and minerals like vitamin D, vitamin B12, and iron.^{16,17} As a result, patients often experience symptoms such as fatigue, weakness, and bone health problems. To address these deficiencies, dietary adjustments and supplements are often necessary. Protein malnutrition is another concern that may arise from diarrhea and gut inflammation in IBD patients. It can potentially cause muscle loss and compromise the system's efficiency. Therefore, ensuring an adequate protein intake becomes crucial for maintaining health in individuals with IBD. In addition to symptoms, IBD can also cause intestinal symptoms that are influenced by diet and nutrition. Joint pain and arthritis can affect individuals with IBD; however, specific dietary choices can help manage these symptoms by reducing inflammation. Omega-3 fatty acids are found in fish. Some oils have been discovered to have effects in this regard. There are skin conditions, such as erythema nodosum and pyoderma gangrenosum which're examples of symptoms related to IBD. These conditions can be alleviated by choosing options that reduce inflammation and promote skin health (18,19). Additionally, IBD is also associated with complications, like uveitis and episcleritis. Consuming a diet that's abundant in antioxidants and foods with inflammatory properties can potentially alleviate the ocular symptoms associated with these conditions. In the situation of Crohn's disease there is a chance that complications may arise in the area, such, as fistulas and abscesses. These complications can lead to discomfort. Have an effect, on an individual's overall well-being. Dietary adjustments, including avoiding trigger foods that worsen symptoms, can help manage these complications and reduce the risk of exacerbation. In Crohn's disease, some patients experience structuring disease, characterized by intestinal narrowing due to inflammation and scarring. Others have penetrating disease, leading to complications like abscesses and fistulas. Nutritional management is pivotal in alleviating symptoms and preventing complications in these cases. Growth impairment is a significant clinical manifestation in children with IBD, especially Crohn's disease. Malnutrition, delayed puberty, and inadequate weight gain are often attributed to the chronic inflammation and nutritional deficits associated with IBD. Supporting nutrition and implementing diet changes are crucial for promoting growth and development. When managing IBD, it's important to be aware of any restrictions or interactions that may arise from the medications. For instance, individuals who are prescribed corticosteroids should be mindful of their calcium and vitamin D consumption to reduce the chances of experiencing bone loss. It is crucial to have an understanding of these connections and make dietary adjustments, for effective management of IBD. Apart from symptoms IBD can also have an impact on the well-being of patients. The restrictions on food choices, intolerances and the need for meal planning can result in feelings of unease, sadness and a decline, in quality of life.¹⁸ Nutritional counseling and psychological support are essential components of

IBD management to address these aspects. IBD is characterized by periods of disease activity (flares) and remission. During flares, symptoms intensify, and patients may struggle with dietary tolerance. In contrast, during remission, nutritional needs and tolerances may differ. Clinical management must adapt to these fluctuations, ensuring that patients receive appropriate nutrition during flares and maintain optimal nutrition during periods of remission. IBD can be quite intricate presenting a variety of symptoms that can affect the body leading to deficiencies, health problems and even psychological repercussions. Effectively managing these symptoms relies greatly on diet and nutrition. To overcome the challenges posed by IBD and improve the health and quality of life for those affected it is essential to create customized meal plans offer nutritional assistance and closely track progress.

Management

Managing IBD patients begins with the recognition of trigger foods, which can vary significantly from one individual to another. Common culprits often include high-fiber foods, spicy dishes, dairy products, and certain artificial additives. Maintaining a food diary becomes a valuable tool for tracking associations between specific foods and symptom flare-ups, enabling informed dietary adjustments. Healthcare professionals frequently recommend a low-residue diet during active disease phases or flares. This dietary approach restricts fiber intake, subsequently reducing the bulk and frequency of bowel movements. The diet aims to alleviate symptoms like diarrhea and abdominal pain by including digestible foods such as white bread, rice, pasta, and well-cooked vegetables. Additionally, individuals with IBD experiencing symptoms of irritable bowel syndrome (IBS) may find relief by following a low FODMAP diet. The guidance of a registered dietitian proves indispensable in guiding patients through this intricate dietary strategy, helping them identify and effectively manage trigger foods. Proper nutrition plays a role in managing IBD from a clinical perspective.¹⁹ It becomes essential to include foods like proteins, fruits, and vegetables in your diet to meet your dietary needs and maintain overall well-being. Adequate nutrition serves as a cornerstone for addressing potential deficiencies that may arise from malabsorption and persistent inflammation. In addition to dietary strategies, nutritional interventions are integral to IBD management. Exclusive enteral nutrition (EEN) is an approach in which patients consume a liquid diet for a specified period, bypassing solid foods. EEN has exhibited effectiveness in inducing remission, particularly among pediatric patients grappling with Crohn's disease. This effect may be attributed to the rest it provides the gastrointestinal tract and the alteration it brings to the gut microbiome.^{20,21} Although EEN is less frequently applied to adults, primarily due to its restrictive nature, there may still be specific cases in which it is considered. Probiotics are microorganisms that, when consumed, can provide health benefits. They

have been studied as a treatment for IBD. While the findings of these studies are somewhat mixed, certain types of probiotics have the potential to balance the gut microbiota and reduce inflammation. It's important to note that the effectiveness of probiotics can vary from person to person, highlighting the importance of approaches. Prebiotics, which are digestible compounds that support the growth and specific activities of beneficial bacteria in the gut, may also offer advantages for specific individuals with IBD. Nevertheless, it is essential to recognize that prebiotics may exacerbate symptoms in particular individuals, underscoring the criticality of personalized treatment strategies. Moreover, addressing specific nutrient deficiencies that can emerge in IBD management is imperative. The ongoing inflammation commonly seen in IBD can make it difficult for the body to absorb vitamins and minerals, which includes vitamin D, vitamin B12, and iron. As a result, patients may encounter symptoms ranging from fatigue and weakness to bone health complications. In response, dietary modifications and supplementation may be necessary to rectify these nutritional deficits. The concern extends to protein malnutrition, a potential consequence of diarrhea and gut inflammation in IBD. This malnutrition can culminate in muscle wasting and a weakened immune system, thereby underscoring the essential nature of maintaining adequate protein intake to preserve overall health. As emphasized earlier, the application of personalized approaches becomes pivotal in the management of IBD. This personalization is warranted by the unique experiences of each patient and the distinct manner in which they respond to dietary and nutritional interventions. There are factors that play a role in the need, for care in this context. These factors include the location and type of disease, in the tract how active the disease is the nutritional status of the patient any food tolerances they may have and their current medication regimen. The type and location of the disease within the gastrointestinal tract carry significant implications for the dietary recommendations offered to patients. While Crohn's disease can potentially impact any part of the digestive tract, Ulcerative colitis predominantly confines its effects to the colon. Recognizing these specific characteristics of the disease is essential for the development of tailored dietary strategies. The activity level of the disease, whether in remission or during a flare, exerts a considerable influence over dietary tolerances and nutritional requirements. During periods of disease flare, patients may encounter difficulties when attempting to tolerate certain foods. As a result, dietary modifications may be deemed necessary to manage the intensification of symptoms effectively. The assessment of a patient's nutritional status proves critical in the effort to address potential deficiencies. Regular monitoring and collaboration with registered dietitians are indispensable to ensure that patients receive adequate nutrients and manage their nutritional needs effectively. Individual food tolerances and preferences vary widely among IBD patients. Consequently, some individuals may grapple with lactose intolerance, gluten sensitivity, or other

dietary restrictions. Personalized nutrition plans are responsible for accounting for these individual factors, ultimately enhancing adherence and overall well-being. The medications prescribed for the management of IBD can exhibit specific dietary interactions and restrictions. Patients and healthcare providers alike must remain vigilant regarding these interactions and adhere meticulously to the guidelines for using these medications. The clinical management of IBD through diet and nutrition is an intricate and multifaceted process. It encompasses identifying trigger foods, implementing precise dietary strategies, considering nutritional interventions, and adopting a personalized approach that is adjusted to meet the specific needs of individual patients. While it is important to acknowledge that diet and nutrition are not standalone treatments for IBD, they do assume a vital role in managing symptoms, promoting gut health, and mitigating potential deficiencies. Managing IBD effectively requires an effort involving healthcare providers, registered dietitians, and patients. Together, they navigate the complexities of this condition by combining treatments with dietary strategies. This collaborative approach enables individuals with IBD to gain control over their disease and experience a quality of life.

CONCLUSION

IBD is a condition that causes inflammation, in the body and affects well-being. It's important to consider diet and nutrition when dealing with IBD because they play a role in managing symptoms preventing complications supporting growth avoiding interactions with medications and promoting health. Each person with IBD needs a plan that takes into account their type of disease, where it is located in the body its level of activity nutritional requirements, food tolerances and medications. By combining treatments, with customized approaches, individuals living with IBD can effectively handle their condition and can enhance their quality of life.

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