

Diet, Physical Activity, and Chronic Constipation: Unveiling the Combined Effects for Better Treatment Strategies

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Article: Effect of physical activity on the association between diet and constipation: evidence from the national health and nutrition examination survey 2007-2010

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(J Neurogastroenterol Motil 2024;30:322-331)

Chronic constipation is a widespread gastrointestinal problem that impacts many adults around the world.¹ It presents as infrequent and difficult bowel movements, leading to discomfort and a diminished quality of life.^{2,3} Given the intricate causes and mechanisms behind chronic constipation, many current treatments are ineffective for a significant number of people. Therefore, recent guidelines recommend that lifestyle modifications should be prioritized alongside pharmacotherapy in the treatment of chronic constipation.⁴

Recently, there has been growing attention on how exercise and diet impact chronic constipation. Van der Schoot et al,⁵ in their meta-analysis of 16 studies, found that high dietary fiber improved stool consistency (relative risk [RR], 0.32; 95% confidence interval [CI], 0.18-0.46) and increased stool frequency (standardized mean difference [SMD], 0.77; 95% CI, 0.36-1.08). Additionally, a recent guidelines' meta-analysis reported that dietary fiber decreased colon transit time (SMD, -0.66; 95% CI, -0.28--1.09) and increased bowel frequency (SMD, 0.66; 95% CI, 0.05-0.82).⁴ Regarding exercise, a meta-analysis by Gao et al⁶ reported that

exercise therapy was effective in improving constipation symptoms and quality of life (RR, 1.97; 95% CI, 1.19-3.27; $P = 0.009$; $I^2 = 91.3$). Recent guidelines also recommend exercise, stating that it can improve symptoms in some patients with chronic constipation and provide additional health benefits.⁴

However, most of the studies reported so far have focused on the efficacy of either diet or physical activity individually in managing chronic constipation, with few studies examining their combined effects. Dukas et al⁷ conducted a study on nurses' health and found that women who increased their dietary fiber intake and participated in moderate physical activity were less likely to experience constipation (RR, 0.32; 95% CI, 0.20-0.54). A more recent study by Li et al,⁸ using data from the National Health and Nutrition Examination Survey (NHANES) 2005-2010, analyzed the effects of dietary fiber intake and physical activity on chronic constipation. When constipation was defined based on stool consistency, the study found that high levels of physical activity enhanced the beneficial effects of dietary fiber intake (odds ratio [OR], 0.97; 95% CI, 0.94-0.99). However, when constipation was defined as

Received: June 2, 2024 Revised: None Accepted: June 10, 2024

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having fewer than 3 bowel movements per week, the effect was not statistically significant (OR, 1.01; 95% CI, 0.97-1.04).

In this issue of the *Journal of Neurogastroenterology and Motility*, Lai et al⁹ expanded upon the findings of Li et al⁸ by examining data from NHANES 2007-2010 to investigate the effect of physical activity on the relationship between diet and chronic constipation. In this study, regardless of whether constipation was defined by stool consistency (type 1 or 2 on the Bristol stool form scale) or stool frequency (fewer than 3 stools per week), a healthy diet (high Healthy Eating Index) combined with high levels of physical activity (≥ 500 MET-min/wk) was effective in improving chronic constipation (constipation defined by stool consistency: OR, 0.98; 95% CI, 0.97-0.99; $P = 0.002$; constipation defined by stool frequency: OR, 0.96; 95% CI, 0.94-0.98; $P < 0.001$). However, the effect of a healthy diet was not significant at lower levels of physical activity. These findings remained consistent even after adjusting for age, sex, education level, race/ethnicity, socioeconomic factors, and patients' comorbidities. This study, compared to the work by Li et al,⁸ differed in its approach by using the Healthy Eating Index to evaluate diet efficacy rather than focusing solely on dietary fiber. Despite this difference, the findings align with previous reports, reaffirming that the effectiveness of diet in treating chronic constipation is significantly influenced by physical activity levels.^{7,8} These findings suggest an important direction for the treatment of chronic constipation. Clinicians should recognize that, when recommending lifestyle modifications, a comprehensive approach that effectively manages multiple factors—such as diet, physical activity, and fluid intake—can maximize therapeutic outcomes. It is essential to educate and treat patients in a way that promotes holistic lifestyle changes to achieve the best possible results.

Although it is suggested that physical activity stimulates colonic contractions and decreases colonic transit time,¹⁰ while a high-quality diet promotes bowel regularity and improves stool consistency,¹¹ the exact mechanisms behind the synergistic effects of lifestyle modification factors such as a healthy diet and physical activity remain unclear. Additionally, there is a lack of research on the optimal levels and types of a healthy diet and appropriate physical activity, as well as how to combine these various lifestyle modification factors for the best outcomes.

Therefore, future research should focus on the combination

effects of various lifestyle modification factors. Understanding how these factors work together will be crucial in developing effective treatment strategies for chronic constipation.

Financial support: None.

Conflicts of interest: None.

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