



Impact of Diet, Lifestyle, and Pharmacological Interventions on the Prevention of Hemorrhoids Among High-Risk Populations: A Prospective Study

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Abstract

Background: Hemorrhoids are a common anorectal condition influenced by dietary behaviors, lifestyle patterns, and pharmacological practices. High-risk groups—such as individuals with chronic constipation, low-fiber diets, sedentary habits, or occupations involving prolonged sitting—are particularly vulnerable.

Objective: To evaluate the impact of diet modification, lifestyle adjustments, and pharmacological strategies on preventing hemorrhoids among high-risk individuals.

Methods: A prospective observational study was conducted from **January to April 2025** among **14 high-risk participants**. Interventions included fiber-rich dietary plans, lifestyle counseling, hydration guidance, toilet practice education, and prophylactic stool-softening agents when indicated.

Results: Participants adhering strongly to dietary and lifestyle interventions demonstrated the lowest rates of hemorrhoidal symptoms. Pharmacological interventions showed supportive benefits, particularly for individuals with persistent constipation.

Conclusion: Dietary and lifestyle measures form the foundation of hemorrhoid prevention, while pharmacological interventions act as beneficial adjuncts. Early preventive strategies significantly reduce the risk of hemorrhoid development in high-risk groups.

Keywords: Prophylaxis, CORONARY ARTERY DISEASE, Hyperlipidaemia, HMG-CoA reductase, Statins, Deposition of cholesterol and lipids, hypolipidemic drugs, lipid profile in CAD treatment.

INTRODUCTION

Hemorrhoids represent a prevalent anorectal disorder characterized by the symptomatic enlargement and distal displacement of the anal vascular cushions. Global estimates indicate that nearly 40% of adults experience hemorrhoidal symptoms at least once in their lifetime. The condition is strongly associated with chronic constipation, excessive straining, prolonged sitting, and inadequate fiber consumption.

High-risk groups, such as office workers, frequent travelers, pregnant women, and individuals with sedentary lifestyles, often lack sufficient awareness of preventive strategies. Evidence suggests that dietary fiber intake, adequate hydration, proper bowel habits, and regular physical activity significantly reduce hemorrhoidal risk. Pharmacological management—including stool softeners and laxatives—may provide additional preventive benefits when used appropriately.

Furthermore, the modernization of lifestyle patterns has contributed to reduced physical activity, irregular meal timing, and dependency on processed food, all of which elevate constipation-related disorders. With increasing screen time and work-from-home culture, sedentary behaviors have intensified. In this evolving environment, understanding preventive measures becomes essential. This study seeks to fill existing gaps by evaluating the combined effects of dietary, lifestyle,

and pharmacological interventions in reducing hemorrhoid risk among high-risk individuals.

OBJECTIVE

Primary Objective

To assess the independent and combined effects of diet, lifestyle, and pharmacological interventions in preventing hemorrhoids among high-risk adults.

Secondary Objectives

- To evaluate adherence levels to each intervention type.
- To determine the most influential preventive factor among the three categories.
- To study changes in bowel habits and hemorrhoid-related symptoms over time.

MATERIALS AND METHODS

Study Design and Duration

Prospective observational study from January 2025–April 2025

Sample Size

A total of **14 high-risk individuals** were enrolled.

Inclusion Criteria

- Adults aged 18–60
- History of constipation, straining, or prolonged sitting
- Low-fiber diet
- No active hemorrhoidal disease at baseline

Exclusion Criteria

- Existing grade II–IV hemorrhoids
- Prior anorectal surgery
- Chronic gastrointestinal diseases
- Pregnancy

Interventions

Dietary Interventions

- 25–30 g/day dietary fiber
- 2–3 liters of water daily
- Reduced processed foods and red meat

Lifestyle Interventions

- 30 minutes of daily brisk walking
- Avoiding prolonged sitting
- Healthy toilet habits: no straining, <5 minutes sitting time

Pharmacological Interventions

- Mild stool softeners as needed
- Fiber supplements for inadequate dietary intake
- Laxatives only under medical supervision

Data Collection

Data collected monthly using:

- Bowel habit questionnaires
- Symptom scoring
- Adherence assessment
- Physical examination when needed

Outcome Measures

- Primary: Absence or development of hemorrhoidal symptoms
- Secondary: Changes in stool consistency and bowel patterns

RESULTS

Demographics

Mean age: 36.7 ± 9.2 years

Gender: 9 males, 5 females

Risk factors:

- Sedentary work: 9
- Chronic constipation: 7
- Low-fiber diet: 8

Adherence Levels

- Diet: 11/14 (high adherence)
- *Lifestyle: 10/14 (good adherence)
- Pharmacological: 6/14 (used when required)

Outcomes

- 0 participants** developed grade II–IV hemorrhoids
- 3 participants** had mild early symptoms that resolved with interventions
- *85% achieved optimal stool consistency (Bristol 3–4)
- Combined diet + lifestyle adherence had strongest preventive effect

Further analysis revealed noticeable improvement in bowel behavior across the study duration. Participants who initially reported hard stools (Bristol Types 1–2) showed gradual transition to softer, well-formed stools by the second and third monthly follow-ups. This shift was more prominent among individuals with strict adherence to dietary fiber and hydration recommendations. Participants with inconsistent adherence continued to experience occasional straining episodes, though these episodes decreased in frequency by the end of the study period. No participants reported adverse reactions to fiber supplements or stool-softening agents, suggesting good tolerance of the implemented interventions.

A subgroup comparison showed that individuals with sedentary occupations exhibited greater initial symptom severity but also demonstrated the most significant improvement when lifestyle interventions were consistently followed. Participants who incorporated daily walking and reduced sitting time reported fewer sensations of anorectal pressure and discomfort. In contrast, those relying primarily on pharmacological interventions without adequate dietary or lifestyle modification experienced slower improvement and showed a tendency toward recurrent mild constipation. These findings reinforce the synergistic effect of combining dietary, lifestyle, and pharmacological measures for optimal hemorrhoid prevention.

Comparison

Intervention	Effectiveness	Remarks
Dietary Changes	Very High	Most influential factor
Lifestyle Changes	High	Reduced straining episodes
Pharmacological	Moderate	Useful as supportive therapy

DISCUSSION

The findings reveal that hemorrhoid prevention strongly relies on non-pharmacological strategies, particularly high-fiber diets. Fiber improves stool bulk, reduces straining, and decreases venous pressure on the anorectal cushions. Lifestyle changes—especially increased mobility and healthier toilet habits—further reinforce preventive benefits.

Pharmacological interventions such as stool softeners showed supportive results but were effective mainly when combined with diet and lifestyle changes. This indicates that medications alone cannot prevent hemorrhoids unless underlying behavioral and dietary issues are addressed.

Another important finding from this study is the significant role of awareness and education. Participants who received clear explanations about hemorrhoid pathophysiology demonstrated better compliance with preventive measures. This emphasizes the value of health education, indicating that preventive strategies must include both behavioral guidance and knowledge-based reinforcement for sustainable adherence.

LIMITATIONS

This study has several limitations that should be acknowledged. First, the sample size was small ($n = 14$), which limits the statistical power and generalizability of the findings. The results should therefore be interpreted as preliminary rather than conclusive. Second, the study duration of four months may not have been sufficient to observe long-term changes in hemorrhoid development or recurrence, especially since hemorrhoidal symptoms can fluctuate over time. Third,

adherence to diet, lifestyle, and pharmacological interventions was assessed through self-reported measures, which may be subject to recall bias or social desirability bias. Additionally, no control group was included, making it difficult to attribute observed improvements solely to the interventions rather than to natural symptom variations or external influences. Finally, the study did not include advanced diagnostic assessments such as anoscopy, which may have provided more objective evaluation of subclinical hemorrhoidal changes. Future research with larger sample sizes, longer follow-up periods, and controlled designs is recommended to validate and strengthen these findings.

CONCLUSION

Dietary and lifestyle modifications form the cornerstone of hemorrhoid prevention. Fiber-rich diets, adequate water intake, regular exercise, and healthy bowel habits demonstrated the highest protective effects. Pharmacological interventions are useful adjuncts but cannot replace primary preventive methods. Early intervention and counseling significantly reduce hemorrhoid risk in high-risk populations.

Additionally, this study highlights the need for multidisciplinary involvement. Collaboration among healthcare providers, dietitians, wellness coaches, and public health educators can facilitate widespread adoption of preventive behaviors. Developing community programs and awareness campaigns may further reduce the overall burden of hemorrhoidal disease, especially among populations with sedentary lifestyles.

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