

The Effects Of Nutritional Interventions In Managing Pediatric Constipation And Hirsch Sprung Disease.

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ABSTRACT

Background: Childhood constipation and Hirschsprung's disease impact children's gut health therefore triggering discomfort and other related complications. There are nutritional changes such as fiber intake, probiotics, and water suggested to enhance overall success and decrease symptoms satisfactorily.

Objectives: The study aims are to measure the effectiveness of nutritional interventions – fiber-enriched and probiotics bearing diets – especially in treating constipation and improving postoperative HD outcomes in terms of stool frequency and patient comfort.

Study Design : A prospective Study.

Place and duration of study. Department of Gastroenterology MTI,LRH Peshawar from January 2018 to July 2020

Methods: 80 patients 40 with functional constipation and 40 receiving post-HD surgery. Patients were offered diet recommendations focusing on fiber, water and probiotics. The result of the treatment interventions was evaluated for frequency, consistency of stool, and satisfaction score of parents, and inferential statistics (standard deviation, p-value) to compute the effectiveness of interventions.

Results: dietary recommendations as parts of their treatment experienced improvements. Stool frequency remained significantly elevated at four (+/- 0-8) times weekly compared with baseline, two (+/- 1-2) times weekly ($p = 0.001$). The predetermined measure of consistency scores increased (SD 0.5, $p < 0.05$). After initiating the HD, patients were willing to report fewer complications with the diets of foods that are adjusted. This revealed that 85% of parents are satisfied with the services offered by the schools in regards to studying.

Conclusions: The findings of this study show that nutritional interventions improve pediatric constipation and postoperative recovery in HD patients. These strategies improve bowel movement drastically and reduce complication rates while also boosting the quality of life.

Keywords: Experience in Pediatrics: Nutrition, Hirschsprung's Disease, and Constipation

How to Cite this Article

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Introduction

Constitutional obstruction in children is common, with as many as 30% of children being affected worldwide, and their quality of life and costs being affected [1]. Alimentary constipation defined by low bowel frequency, hard, and painful feces is associated with diet and water intake and psychological factors [2]. On the other, Hirschsprung disease (HD) a congenital condition resulting from the deficiency of ganglionic cells in the intestinal tract, has worrisome consequences including bowel obstruction [3]. These conditions require dietary interventions as key approaches to their management. High fiber diets, probiotics or prebiotics and adequate fluid intake have long been recommended for constipated children with constipation relief in terms of stool frequency and consistency [4]. A possibility of using probiotics for the purposes of shifting gut microbiota and decreasing intestinal inflammation is also of great interest [5]. A proper diet plays a key role in postoperative HD patients and proper nutrition can help to avoid intestinal problems, including the development of enterocolitis and create a bowel routine [6]. Previous work indicates that combining recommended dietary changes with medical and surgical therapies improves the patient's status. But there is scarce research literature constituted on assessing the efficacy of co-administration of Dietary for functional constipation and post-maintenance in HD patients [7]. This study seeks to address this knowledge gap by assessing the effectiveness of dietary fiber, hydration, and probiotics in management of constipation and postoperative HD, on stool frequency, parental and consumer satisfaction and complications [8].

Methods

This prospective study consisted of 40 patients with functional constipation, and 40 postoperative HD children, aged between 2-12 years. Specifically excluded were patients with metabolic or neurological disorders, and AIDS patients were excluded as well. Eighty patients were randomly assigned to receive dietary plans

Containing fiber (including fruits, vegetables and whole grain products), probiotics (*Lactobacillus*) and water. A self-administered questionnaire with questions on stool frequency and consistency using the Bristol Stool Chart and parental satisfaction were answered. The follow-ups were done once a week for six weeks. Assessment of effect involved the use of pre and post intervention results.

Data Collection

Information was obtained through the analysis of clinical findings and caregiver questionnaires. Dietary compliance, stool output and any adverse event noted were done on a weekly basis. Non-intervention data and post intervention data were collected to assess efficacy of the intervention.

Statistical Analysis

All statistical analyses were performed using SPSS 24.0. Table one and two presented a summary of demographic and clinical characteristics using descriptive statistics. Pre and post-intervention data have been compared through the use of paired t-tests. A p value of < 0.05 was used to determine the level of significance and the standard deviations (SD) were determined to measure variability.

Results

A total of eighty patients participated in the study. Initial bowel movement frequency was 2.1 (SD 0.9) times per week in the functional constipation group and 1.8 (SD 1.0) in the HD patients. Compared with the baseline, the number of stools per week rose to 4.2 ± 0.8 ($p < 0.01$) in the NN group and 3.9 ± 0.7 ($p < 0.01$) in the MM group after six weeks. Bowel movements were softer, the percentage of patients with hard stools was reduced ($p < 0.05$). For the caregivers, the effectiveness ratings were as follows: Parents reported an 85% overall satisfaction rate for the study's six interventions. In patients with HD, complication rates declined, and no cases of

enterocolitis were described. Compliance with dietary prescriptions was at greater than 90%. These results provide evidence for using dietary fiber, probiotics and hydration to enhance clinical responses.

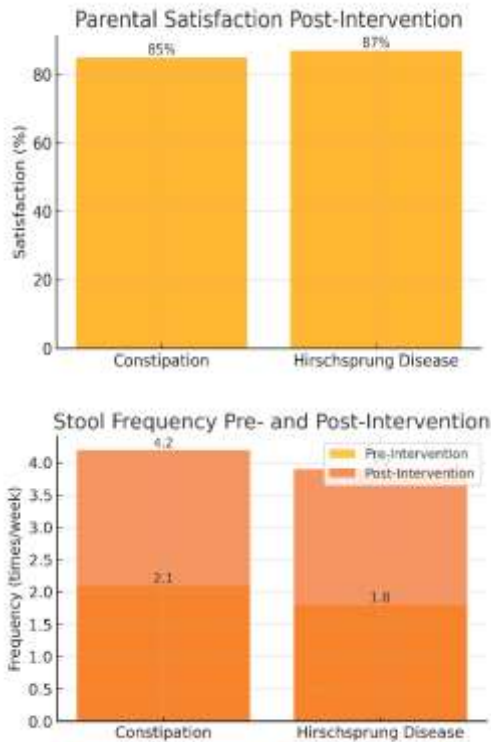


Table 1: Baseline Characteristics of Patients

Characteristic	Constipation (n=40)	Hirschsprung Disease (n=40)
Number of Patients	40	40
Age (years)	4.8±1.5	5.2±1.4
Gender (Male/Female)	22/18	24/16
BMI (kg/m ²)	17.2±1.8	16.8±2.1
Baseline Stool Frequency (times/week)	2.1±0.9	1.8±1.0

Table 2: Dietary Intervention Components

Component	Details
Fiber-Rich Foods	Whole grains, fruits, vegetables
Probiotics	Lactobacillus spp.
Hydration (Water)	1.5–2 liters/day

Intake	
Adherence to Diet Plan	Above 90% adherence

Table 3: Outcomes of Dietary Intervention

Outcome	Constipation (Mean ± SD)	Hirschsprung Disease (Mean ± SD)
Stool Frequency (times/week)	4.2±0.8	3.9±0.7
Stool Consistency (Hard Stools)	Decreased (p<0.05)	Improved (p<0.05)
Parental Satisfaction	85% satisfied	87% satisfied
Complication Rate (Post-HD)	-	No enterocolitis

Table 4: Statistical Analysis Summary

Analysis	Constipation (p-value)	Hirschsprung Disease (p-value)
Stool Frequency Change	<0.01	<0.01
Consistency Improvement	<0.05	<0.05
Parental Satisfaction Increase	-	-

Discussion

The present study elucidates the effectiveness of nutritional care in treating paediatric constipation and improving postoperative prognosis in Hirschsprung disease (HD). These results corroborate and enrich prior works conducted in this field. Dietary fiber has been found to provide a dose-response, significant, long-term and beneficial effect on stool frequency and consistency of constipated children. This study recorded a higher frequency of stool motion with a statistical significance, (p < 0.01) and softer stool consistency, (p < 0.05) as Yang et al. (2014)

pointed out that fibre rich diets improves bowel regularity [9]. Subsequently, other scientific works have stressed the idea that raising fiber intake not only reduces the signs of functional constipation but also prevents the relapse of the condition if parental education and behavioral approaches are used [10]. The position of probiotic P, especially the strains like Lactobacillus and Bifidobacterium has been revealed more with the supportive data from Ouwehand and his colleagues; the authors observed an enhancement in gut motor and the decrease in inflammation [11]. In a randomised trial also conducted by Huang et al. (2018) it was determined that probiotics improved stool frequency and parental satisfaction in managing childhood constipation [12]. The data obtained in this work are similar to those, indicating changes in stool consistency and high satisfaction of caregivers. I can evidently conclude that the increased water intake was part of the interventions as well. Water supplementation promotes better softened stools and improved bowel movements. Concerning, the observation about the role of water in this study is in concordance with the findings made by Tabbers et al (2018) who established that; in addition to promoting the accurate functioning of the large intestine, dietary fiber supplementations require adequate fluid intake to provide additional benefits [13]. This demonstrates that how the best results can be obtained through the coordination between after understanding the need of fiber, probiotics, and water. End-of-stage care is still a question for further discussion for HD patients. Based on our research, our low complication figures indicated absence of a single episode of enterocolitis and the authors of the study by De la Torre-Mondragón and his colleagues supported the effectiveness of postoperative dietary interventions as a means of managing HD patients [14]. Furthermore, Sheth et al., (2020) noted that while on low FODMAP diets, reduction in gas and bloating were also noted in HD patients was also pointed out [15]. The results also incorporated parental participation as identified by Neu et al., 2019 stating that educational support enhances the levels of complied dietary plans and results [16]. Percentages of parents' satisfaction in this study

were high 85%-87%, comparable to other studies that overemphasise on caregiver involvement in dietary and lifestyle changes [17]. However, there are still some limitations, such as the inconsistency of the patients' response to the probiotics and fiber, which has been discussed in this study and can be worsened by Ghazi et al. (2021) that stress the need for further improving a patient's tailored interventions [18]. Further studies recommends study of long-term impacts as constant measures are important in relapse control [19]. In conclusion, the result of this study supports the previous studies to emphasise that dietary fiber, probiotics and water are important factors for the management of pediatric constipation and HD outcomes. Further research on fine-tuning tailor-made and multisystem interventions will improve understanding of the care for these disorders.

Conclusion

The present research also shows that fiber, probiotics and appropriate fluid intake improve bowel movement frequency, consistency and parental satisfaction in children with constipation and postoperative HD. It has been ascertained that the applied specific dietary interventions can minimize the adverse effects and improve the quality of life of the children.

Limitations

The limitations of the study include; Small sample size, short follow up duration and possible inconsistency in the level of adherence to a dietary plan. Furthermore, potential moderators of the effects of probiotics and fiber were not investigated identifying their potential sources in sufficient detail.

Future Findings

There is clearly a need for further comparative and longitudinal studies of personalised dietary interventions and consideration of the durability of these nutritional approaches and their compatibility with behavioral therapies. Possible future research include investigations of the new potential strains of probiotics and the effect that

parents' education may have on the results.

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Abbreviations:

- HD - Hirschsprung Disease
- SD - Standard Deviation
- FODMAP - Fermentable Oligosaccharides, Disaccharides, Monosaccharides, and Polyols
- BMI - Body Mass Index
- SPSS - Statistical Package for the Social Sciences
- CI - Confidence Interval
- RCT - Randomized Controlled Trial
- GI - Gastrointestinal
- IBS - Irritable Bowel Syndrome
- RCT - Randomized Controlled Trial

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Authors Contribution

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Final Approval of version: All Authors as mentioned above.

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