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Original Research Article

Clinical Feature and Etiology of Constipation in Children: A Hospital-Based Study

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Abstract: ***Background*:** Constipation is a prevalent gastrointestinal disorder affecting children, with a significant impact on physical, social, and emotional well-being. The condition varies in presentation based on age, socioeconomic status, and dietary habits. This study aims to evaluate the clinical features, etiological factors, and demographic distribution of pediatric constipation in Bangladesh. ***Methods:*** A cross-sectional study was conducted at the Outdoor Patient Department of Pediatrics, Bangladesh Shishu Hospital and Institute, from January 2024 to December 2024. A total of 228 children with constipation (both functional and organic) were enrolled based on the ROME IV criteria. Clinical history, dietary habits, physical examination, and digital rectal examination were assessed. Data were analyzed using SPSS Statistics 26.0, with significance set at $P < 0.05$. ***Results:*** Among 228 participants, presentation of constipation in boys and girls (61.1% vs. 38.9% in functional and 54.5% vs.45.5% in organic). Functional constipation was the most common type (85.5%) primarily affecting children above five years (57.4%). Organic constipation (14.5%) was more prevalent in children < 2yrs of age with Hirschsprung's disease being the leading cause (6.1%). Key clinical symptoms included fecal impaction (68.85%), abdominal pain (49.12%), painful defecation (34.64%), and rectal bleeding (15.35%). Dietary analysis revealed a high intake of dairy products (77.43%), low fiber consumption (48.71%), and frequent junk food intake (43.08%). ***Conclusion:*** Functional constipation is the predominant type of pediatric constipation in Bangladesh with fecal impaction and abdominal pain being the most common symptoms. Dietary habits, particularly high consumption of dairy products, low fiber intake, and frequent junk food consumption, play a significant role in the occurrence of constipation.

Keywords: Pediatric Constipation, Functional Constipation, Organic Constipation, Fecal Impaction, Dietary Habits, Hirschsprung's Disease, ROME IV Criteria, Gastrointestinal Disorders, Childhood Nutrition.

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Introduction

Constipation is a common gastrointestinal disorder characterized by infrequent bowel movements, difficulty in stool passage, or a sensation of incomplete evacuation. It affects individuals across all age groups, with a prevalence ranging from 2% to 27% globally, depending on the criteria used for diagnosis and population studies.[1] While

occasional constipation can result from dietary changes, stress, or temporary lifestyle factors, chronic constipation often indicates underlying physiological, neurological, or psychological factors, requiring medical attention.[2] Constipation in children is a very common disorder faced by pediatrician in day-to-day practice. The reason for the significant increase is not well known but may be due to changing patterns in toilet training, diminished dietary fiber intake or greater access to health care services.[3-4] Although it is not a disease but a symptom complex which varies from child to child. Constipation symptoms may include painful or infrequent defecation causing significant distress. Any delay or difficulty in defecation present for two or more weeks and sufficient to cause fecal incontinence, painful defecation, and change in posture withholding behavior is regarded as constipation. This can be anatomical or functional. Constipation has a significant impact on the use and cost of medical services.[5] Childhood constipation is a family issue that negatively affects children's physical, social, emotional and school functioning.[6] As normal bowel habits differ with age, features of constipation are expected to differ between age groups. Prevalence and symptoms of constipation are often different in very young children than in older children.[7] It peaks at the age of toilet training. A longer duration of constipation before diagnosis has been associated with complications like fecal incontinence and poorer long-term outcomes like persistent of symptoms and continuous need for laxatives.[8] The clinical profile of childhood constipation has been well described in developed countries, but new reports indicate that pattern of constipation is not limited to developed countries only. It seems to be more prevalent with lesser education and lower socio-economic status.[9-10] In Bangladesh, rapid urbanization and lifestyle changes are altering traditional dietary patterns, increasing the risk of functional gastrointestinal disorders such as constipation. Despite its potential to impair quality of life and productivity, public health awareness and medical interventions for constipation remain limited. Addressing this issue requires an understanding of its epidemiology, socio-demographic factors, and healthcare challenges unique to the Bangladeshi context. This study aims to bridge the knowledge gap by evaluate the etiology and clinical characteristics of patients with constipation in Bangladesh.

Methods

The study was conducted in the Department of Pediatric Gastroenterology, Hepatology & Nutrition from January 2024 to December 2024. Patients with constipation, both functional and organic, were enrolled for the study. Constipation was defined as difficulty in defecation or infrequent bowel movements for two or more weeks and sufficient to cause significant distress.[11] The exclusion criteria were patients with constipation for less than 2 weeks. Detailed history was taken from the patient/caretaker including presenting complaints such as age, sex, duration of constipation, bowel motion frequency, bowel motion consistency, pain during defecation, stool withholding behavior, presence of blood with stool, fecal incontinence, and the presence of fecal impaction or abdominal mass associated symptoms in the 1st visit. Physical examination, including digital per rectal examination, was done on the same day. Functional constipation was diagnosed based on ROME IV criteria.

Children up to 4 Years.[12]
At least 2 of the following symptoms must occur for at least 1 month:
≤2 defecations per week
≥1 episode per week of incontinence after the acquisition of toileting skills
History of excessive stool retention
History of painful or hard bowel movements
Presence of a large fecal mass in the rectum and
History of large-diameter stools that may obstruct the toilet.

Children above 4 Years and Adolescents.[13]
Symptoms must occur at least once per week for at least 2 months and include 2 or more of the following in a child with a developmental age of >4 years with insufficient criteria of irritable bowel syndrome:
Two or fewer defections in the toilet per week
At least 1 episode of fecal incontinence per week
History of retentive posturing or excessive volitional stool retention
History of painful or hard bowel movements
Presence of a large fecal mass in the rectum

History of large-diameter stools that may obstruct the toilet.

For the analysis purpose, the patients were divided into three age groups: <2 years, 2-5 years and > 5 years. Categorical data were expressed absolute count and percentages.

Results

This study analyzed 228 participants, presentation of constipation in boys and girls (61.1% vs. 38.9% in functional and 54.5% vs.45.5% in organic). Functional constipation was significantly more prevalent (85.5%) compared to organic constipation (14.5%). Age-wise, functional constipation was most commonly observed in children older than five years (57.4%), while its occurrence was lowest in children under two years of age (9.7%). Conversely, organic constipation was more frequent among children < 2yrs of age with 17(51.5%). Regarding residence, a slightly higher proportion of participants Functional constipation (54.5%) and organic (51.5%) were from urban areas, while Functional constipation (45.1%) and organic (48.5%) resided in rural settings. This suggests that both urban and rural populations are nearly equally affected by constipation (Table 1). Functional constipation was the predominant cause, affecting 85.5% of cases. Among organic causes, Hirschsprung's disease was the most frequently diagnosed condition, present in 6.1% of the study subjects. Other organic causes included anal fissure (4.38%), rectal stenosis with an anteriorly placed anal canal (2.19%), and rectal prolapse (1.75%). These findings highlight that while functional constipation is the primary concern, a subset of children suffers from anatomical or pathological conditions that contribute to constipation (Table 2). The most commonly reported clinical manifestation was fecal impaction, observed in 68.85% of children with functional constipation. Other frequently encountered symptoms included abdominal pain (49.12%), painful defecation (34.64%), and rectal bleeding (15.35%). Additionally, 10.08% of children experienced fecal incontinence, while 14.91% exhibited withholding behavior, which is commonly associated with chronic constipation. Urinary symptoms (9.21%) and abdominal distension (8.77%) were also reported, suggesting that prolonged constipation can lead to secondary complications affecting other organ systems. Straining during defecation was noted in 17.98% of cases, indicating the severity of the condition in some children (Table 3). Dietary habits play a crucial role in the development and persistence of constipation. 77.43% of children with functional constipation regularly consumed milk and milk products, which could contribute to constipation in some individuals. A diet low in fiber was observed in 48.71% of the participants, reinforcing the well-established link between inadequate fiber intake and constipation. Additionally, 43.08% of children had a high intake of junk food, further exacerbating constipation due to low fiber and high fat content in such diets. Notably, 18.46% of children did not have regular meals with their parents, which may indicate irregular eating patterns and poor dietary habits. Interestingly, only 21.54% of participants followed a balanced diet, highlighting the need for improved nutritional awareness and interventions (Table 4).

Table 1: Background characteristics of study subjects in relation to types of constipation

Characteristics	Functional	Organic
Types of constipation (%)	195 (85.5%)	33 (14.5%)
Age (%)		
<2 years	19 (9.7%)	17(51.5%)
2-5 years	64 (32.8%)	10(30.3%)
> 5 years	112 (57.4%)	6 (18.1%)
Sex (%)		
Male	119 (61.1%)	18 (54.5%)
Female	76 (38.9%)	15 (45.5%)
Living area (%)		
Rural	88 (45.1%)	16 (48.5%)
Urban	107 (54.9%)	17 (51.5%)

Table 2: Etiology of constipation in study subjects (N=228)

Etiology	Number (%)
Functional constipation	195 (85.5%)
Organic constipation	33 (14.5%)
Hirschsprung's disease	14 (6.1%)
Rectal stenosis with anteriorly placed anal canal	5 (2.19%)
Anal fissure	10 (4.38%)
Rectal prolapsed	4 (1.75%)

Table 3: Clinical profile of the patients with functional constipation

Symptoms	Number (%)
Fecal impaction	157 (68.85%)
Painful defecation	79 (34.64%)
Fecal incontinence	23 (10.08%)
Rectal bleeding	35 (15.35%)
Abdominal pain	112 (49.12%)
Abdominal distension	20 (8.77%)
Urinary symptom	21 (9.21%)
Withholding	34 (14.91%)
Straining	41 (17.98%)

Table 4: Dietary pattern of patients with functional constipation

Symptoms	Number (%)
Milk & Milk products	151 (77.43%)
Diet low in fibre	95(48.71%)
Not having regular meals with parents	36 (18.46%)
Consumption of junk foods	84 (43.08%)
Balanced diet	42 (21.54%)

Discussion

In this study, presentation of constipation in boys and girls (61.1% vs. 38.9% in functional and 54.5% vs.45.5% in organic). Chan *et al.* and Kajiwara *et al.* found an increased prevalence in girls, though Gannikou *et al*. and Khanna *et al*.[14-17] also found a male preponderance, which is similar to our study. We found in our study that functional constipation is more common in more than 5 years of age group (57.4%) which is quite similar to Kondapalli et al found, 57% of children had constipation in the 2- 4 years of age group. Some differences may be found due to the practices of toilet, attention given by the caregivers, and the regional differences of food. Our study result shows a slightly higher proportion of participant's Functional constipation (54.5%) and organic (51.5%) were from urban areas. Mazumder *et al*. also found 55.5% of children with constipation were living in urban areas, whereas 44.69% in rural areas which is similar to our study.[18] A study conducted by Khanna *et al.* 18.8% of children had abdominal pain while in our study subjects, we have found that 49.12% of children presented with abdominal pain which is higher than that study.[17] 26% of functional constipation had abdominal pain in Kokkonen *et al*. which is comparable to our study.[19] Low diet in fibre, has often been considered as an important determinant of constipation. Dietary fiber is known to have an extra beneficial effect on constipation due to its fecal bolus-mass incrementing effect, water retention properties, increasing colon bacteria, and gas production, with an acceleration of colon transit.[18] In our study, we found that constipated children had a lower consumption rate of vegetables and fruits 48.71% and a higher consumption of junk foods 43.08% which contains low fiber. Childhood constipation is much more frequent when dietary fibre intake is restricted. According to Araujo *et al.,* Ip *et al*. found that dietary fibre intake was insufficient in all children and even lower in those with constipation, similar to present study.[20, 21] Mazumder *et al* also found that constipated children had a lower consumption rate of vegetables and fruits 72.63% and higher consumption of junk foods 28.49% which are similar to our study.[18] Children predominant on milk or milk related products diet have highest incidence 77.43% of functional constipation. About 48.71% of children were consuming inadequate amount of green vegetables. Vishal et al also found that 77.6% children consuming milk and milk products having functional constipation.[22] Peppes *et al.* also found similar results, IP *et al*., Araujo *et al* , Kondepalli *et al*. have also the similar incidence of functional constipation in children whose dietary fiber intake is restricted.[20-32] This was a single centre study with limited sample size. So, the findings of the study are difficult to generalize for the whole country.

Conclusion

The findings of this study emphasize that functional constipation is the predominant type among pediatric patients, with fecal impaction and abdominal pain being the most common symptoms. Dietary habits, particularly high consumption of dairy products, low fiber intake, and frequent junk food consumption, play a significant role in the occurrence of constipation. These insights underscore the need for targeted dietary modifications, better hydration, and early interventions to prevent and manage constipation effectively in children.

Recommendations

Multi-ceentre study recommended for more accurate findings

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