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Original Research Article

Factors Associated with Pediatric Constipation- A Single Center Study

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Abstract: ***Introduction*:** Constipation or difficulty in bowel movement is a common problem in children. It is often results from without any previous illness or previous painful bowel movements. Dietary influences such as low fiber intake and inadequate hydration play a role too. Many factors have been associated with the occurrence of constipation. ***Aim of the study*:** The aim of this study was to investigate the factors associated with pediatric constipation and its management. ***Methods*:** This cross-sectional study was conducted in out-patient Department of Pediatrics surgery in Enam Medical College and Hospital, Savar, Dhaka, Bangladesh, during the period from July to December 2022. Total 180 patients with constipation were included in this study. ***Result*:** Our study of 180 children, average age was 2.4 years and slightly more in females, investigated factors relating to constipation. Most of the children had constipation for 6-12 months and more; and some children had constipation for 3-4 years, with symptoms such as large hard stool (95.0%), painful defecation (88.3%), and abdominal pain or crying (71.1%). Some children had per rectal bleeding and perianal mass or growth that is sentinel piles. A large number of clinical and therapeutic factors were associated with chronic constipation. ***Conclusion*:** The findings of this study highlighted the prominence of symptoms like large, hard, and painful defecation of children. With notable findings such as inadequate fluid and fiber intake and change in dietary habit during weaning period and lack of toilet training play an important role in producing constipation.

Keywords: Factors, and Pediatric Constipation.

INTRODUCTION

Constipation is characterized as having trouble in defecation and or infrequent bowel movements [1]. Constipation is a common condition that can affect children of all ages. The worldwide prevalence of pediatric constipation varies widely. Multiple factors associated with pediatric constipation [2]. It is essential for early recognition, effective management and prevention of chronic constipation and related complications. Although constipation can be a symptom of an underlying medical condition, it is often idiopathic or functional in nature, especially in the pediatric population. Diet and fluid intake are often implicated in constipation. Low fiber intake and inadequate fluid consumption can lead to hard dry stool that are difficult to pass. Study showed a direct correlation between low dietary fiber and fluid intake and the occurrence of constipation in children [3]. Another important element is toilet training. Children may resist toilet training for various reasons, such as fear, refusal or lack of readiness, leading to withholding behaviors, which can precipitate constipation [4, 5]. Medical conditions and certain medications can also contribute to constipation. Hypothyroidism, Hirschsprung's disease, diabetes, and neurological disorders like spina bifida and cerebral palsy are also some conditions that can result in constipation [6]. Moreover, medications such as opoids, antacids and certain types of antidepressants can disrupt normal bowel function, leading to constipation [7]. Fecal impaction and fecal soiling, which affect 1-3% of children might result from untreated constipation [8, 9]. Pediatric constipation is a complex condition with multifaceted etiologies. The current study was conducted to investigate the factors associated with pediatric constipation. Functional constipation is the most common form of constipation in children [10-12]. During the first year of life, a lack of bowel movement at least every other day warrants an evaluation. In the neonatal period, any delay of passage of muconium should raise a suspicion of underlying pathology and should result in vigorous investigative efforts. Usually

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100% full term neonate and 98.8% of preterm normal babies pass muconium within the first 48 hours. Constipation due to fissure in ano is very common in toddlers due to dietary change. The diagnosis is made through the history of blood streaking on the stool, the child crying during bowel movements and afraid to sit in toilet. Diagnosis made on demonstration of a split or tear in the skin of the anus. Sometimes there is growth called a Sentinel Piles with or without anal fissure.

Objective of the Study

To investigate the factors associated with pediatric constipation and proper management accordingly.

METHODOLOGY & MATERIALS

This cross-sectional study was conducted in Department of Pediatric Surgery of out-patient department, Enam Medical College and Hospital, Savar, Dhaka, Bangladesh, during the period from July to December 2022. Total 180 patients with constipation were included in this study. Consent of the guardians of the patients were taken before collecting data. After collection of data, all data were checked and cleaned. The study was approved by Ethical Review Committee of Enam Medical College and Hospital, Savar, Dhaka, Bangladesh. After cleaning, the data were entered into computer and statistical analysis of the results being obtained by using windows-based computer software devised with Statistical Packages for Social Sciences version 22. After compilation, data were presented in the form of tables, figures and charts, as necessary. Numerical variables were expressed as mean and standard deviation, whereas categorical variables were count with percentage.

Inclusion criteria

- Patient with constipation in out-patient department of pediatric surgery at Enam Medical College and Hospital Savar, Dhaka, Bangladesh.
- Age between birth to 14 years.

Exclusion criteria

- Patient with constipation over 14 years.
- Patients with other comorbidities.
- Patients not come for regular follow up.
- Patients transferred to another hospital

The diagnosis of constipation was defined by at least one of the following criteria: infrequent bowel movements (<3 per week), painful defecation and hard stool. Medical history was obtained and a complete examination was performed at diagnosis.

RESULT

In this study among the 180 children with constipation we found almost 95.55% of patient was functional constipation related and it's sequely. These are chronic constipation only 38.88% (70), chronic constipation with anal fissure 33.88% (61), chronic constipation and sentinel piles 7.77% (14), chronic constipation with sentinel piles with anal fissure 8.88% (16), chronic constipation due to Hirschsprung's disease 7.22% (13), chronic constipation due to anal stenosis (0.55%) 1, chronic constipation with rectal prolapse 1.11% (2) and chronic constipation with fecal impaction with fecal soiling 1.66% (3).

The presented patient has chronic constipation. Some patients have painful defecation and avoid to sit in toilet. Few patients presented with mass that is sentinel piles in the perianal area along with chronic constipation. Some patients have fecal impaction with urge to defecate but they cannot pass stool for several days and several weeks also. So we found that parents were worried about fecal impaction. There is also chronic rectal prolapse in few patients, who suffering from chronic constitution with malnutrition.

Our standard initial treatment of patients with chronic constipation consisted of toilet training, providing dietary advice like eating foods such as fruits and vegetable high in natural fiber was recommended and if necessary removal of impacted feces by repeated enemas and with oral laxative. The dose of laxative was adjusted according to age, body weight and the severity of constipation to prevent pain or soiling. The laxative dose was gradually decreased until the child produce daily stool and then finally stopped.

The parents should be understood the problem and its complications, so that a program is designed for their cooperation. Following steps are taken:

1. Through cleaning and decompression of overstretched colon and rectum is done by repeated oil and saline enema and if necessary by manual evacuation.
2. After evacuation, multimodal approach is planned which consist of

A. Change in diet: The diet should be rich in fibers.
B. Milk should be gradually reduced and replaced by solid food containing more fiber and vegetables.
C. Stool softener laxative may be used.
D. Toilet training: child should make to sit on toilet, Seat in the morning for at least 10-15 minutes every day.

Treatment of functional constipation is more complex. The rectum is emptied and stool reaccumulation is prevented. Management of constipation with fissure as stool softener agent like milk of magnesia or lactulose; regular sitz bath and application of local analgesic and anesthetic agent. This treatment may need several weeks to several months and it should be gradually withdrawn. This treatment regains the tone of rectal ampulla and sphincters.

Usually child becomes normal in 1-2 months or sometimes need several months. Our most of the patient respond to this treatment within 2-6 weeks times.

Table I: Demographic characteristics of the study subjects (N=180).

Characteristics		**n**	**%**
Age (years)	Average age	2.4	
	Range	1-14	
Sex	Male	86	47.74
	Female	94	52.22
Symptoms	Chronic constipation	70	38.88
	Constipation with anal fissure	61	33.88
	Chronic constipation with sentinel piles	14	7.77
	Chronic constipation with sentinel piles with anal fissure	16	8.88
	Chronic constipation due to Hirschsprung's disease	13	7.22
	Chronic constipation due to anal stenosis	1	0.55
	Chronic constipation with rectal prolapse	2	1.11
	Chronic constipation with fecal impaction with fecal soiling	3	1.66

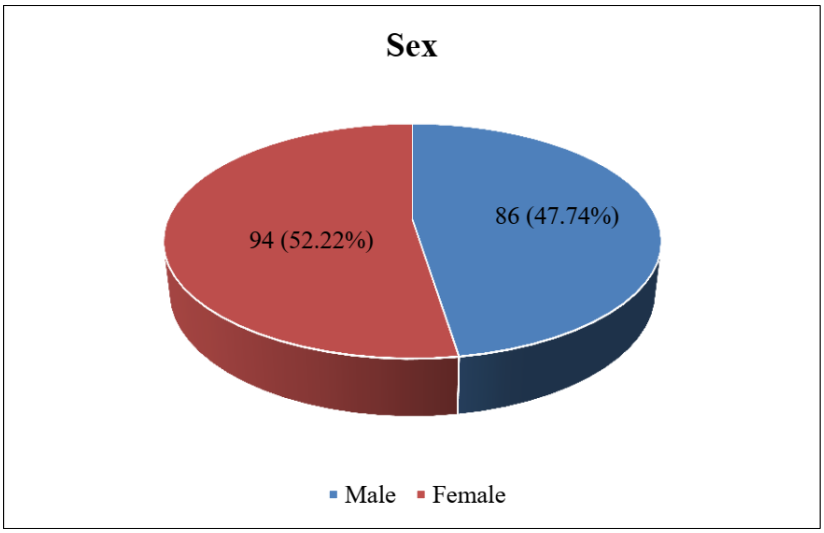

Figure 1: Sex distribution of the study subjects (N=180).

DISCUSSION

The current study was conducted to investigate the factors associated with pediatric constipation. The average age of the patient was 2.4 years with a slight female predominant and male female ratio 86 (47.77%):94 (52.22%). Most children experience constipation for 6 month to few years. The symptoms experienced by subjects, particularly large and hard stool (95.0%), painful defecation (88.3%), highlight the significant discomfort faced by constipated children and the need for proactive management strategies. Symptoms of constipation may include passage of small or infrequent hard stool, lack of an urge to defecate, difficulty in actually passing stool or passage of hard stool with pain and excessive straining. Less common symptoms may include a feeling of anal blockage, perianal pain or discomfort with or without bloating. (10.11) and often need digital evacuation [13-15]. Our study and other studies found similar sign and symptoms of pediatric constipation [16, 17]. Dietary habits were an interesting focus area. Fluid intake is an influential factor in bowel motility [18]. Fiber intake and avoiding fast food consumption alleviate the constipation [19]. The impact of dietary fiber on bowel movement and the correlation between fast food intake and constipation was closely related [20, 21]. Constipation is considered to be a common problem in diabetes [16], which may be related, in part, to autonomic neuropathy leading to increases in colonic transit time, as well as an absence of the gastro colonic reflex [22]. In our study we did not find any children with constipation and diabetes.

In our study we found most of the patient was functional constipation and it is about 95.55%, in some patient we found also constipation due to Hirschsprung's disease, anocutaneous fistula or anal stenosis, anal growth like sentinel piles along with or without anal fissures [26], which is correlated with our study. There was also some neurological disease like meningomyelocele, cerebral palsy etc with chronic constipation [27]. Our study also correlated with the above disease. There was also some medical diseases with constipation like hypothyroidism, lead poising etc

[27, 28]. We did not found any such patient and not correlated with our study. The general approach to management of a child with constipation includes providing parental counseling and education [23-25].

Dietary changes, particularly increased intake of fluids and fiber, too much milk is discouraged, oral laxative and sometimes fecal disimpaction may be needed. Usually most of the patient improved and passing stool daily within 4-8 weeks period. In some patient we need more than 6 months to improve which is correlated with our study.

Limitations of the Study

In our study, there was small sample size and absence of control for comparison. Study population was selected from one center in Dhaka city, so may not represent the actual patient (children) with constipation. The study was conducted at a short period of time.

CONCLUSION AND RECOMMENDATIONS

In Conclusion, although there are many causes of constipation, medication use must be overlooked in general practice. The present results may provide guidance as to which drug classes to consider for changing in the patient with constipation. Several factors have been thought to be involved in the development of persistence of chronic constipation. As it is single center base study, we need more study in multiple centers for further management of patient with chronic constipation and proper evaluation.

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