

# Epidemiology, Demographic Profile and Clinical Variability of Functional Constipation: A Retrospective Study in North Bihar

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## ABSTRACT

**Introduction:** Constipation is a worldwide problem. Current research aimed to study the various determinants of functional constipation and clinical spectrum in north Bihar. Thus creating tangible evidence for the policy makers.

**Material and methods:** Retrospective hospital record based cross sectional study was conducted at tertiary care Darbhanga medical college and hospital (DMCH). Children between 2-12 years with chief presenting complaint of constipation in pediatric OPD and IPD during July 2013 to June 2014 were identified. Only those who fulfilled the ROME 3 criteria of functional constipation were included in the study. Children with any organic cause of functional constipation and children getting treatment for functional constipation were excluded from the study.

**Results:** Total 892 children were examined during the study period, of which 343 children were diagnosed to have constipation. Among them 315 (35.31%) children were qualified to have functional constipation as per ROME 3 criteria. 28 cases (3.14%) have organic cause of which 15(53.57%) had Hirschprung's disease Mean age of toilet training was 17.2 months. Females were more affected (61.58%) than males. Maximum cases were between 2-5 yrs (62.2%), lower socioeconomic status (56.19%) and rural background (50.15%). Lack of indoor toilets and dirty school toilets precipitates constipation particularly in girls.

**Conclusion:** Constipation causes physical, psychological morbidity and poor quality of life, hence early diagnosis and management is of utmost importance. Lack of indoor clean toilets, early toilet training, unhygienic school toilets, improper roughage intake should be taken care of by parents/ authority.

**Key words:** Functional constipation, Rome 3 criteria, outdoor toilets, toilet training, swachh bharat abhiyan

## INTRODUCTION

Constipation in children is a very frequently encountered disorder faced by pediatrician in day to day practice. Actually it is not a disease but a symptom complex which varies from child to child. 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, change in posture, withholding behavior is regarded as constipation.<sup>1-5</sup> This can be anatomical or functional.

The prevalence of functional constipation in childhood varies from 0.7% to 29.6%.<sup>6</sup> It comprises about 3% general pediatric outdoor visits and around 30% of pediatric gastroenterologist.<sup>7-9</sup> Although regarded as less significant problem but chronic constipation is more troublesome to

child as well as parents. As it is associated with both physical, psychological morbidity and poor quality of life, hence early diagnosis and management is of utmost importance for childhood constipation.

In developing countries like India constipation in children is a major public health issue due to its high prevalence, economic constraints, poor infrastructure and lesser number of available pediatricians. Further not much work has been done in India in this regard in comparison to developed or western countries.<sup>7-11</sup> In today's context this topic gains its relevance as government of India is also recognizing the hazards of open defecation and "Swachh Bharat mission" is going on in full swing.<sup>12</sup> Hence this work is undertaken with the aim to explore the various determinants which can cause constipation in children and thus by creating a tangible evidence for the policy makers. To conduct the study, Darbhanga district of Bihar was chosen as it is an important health destination for people living in north Bihar and Nepal owing to its proximity and presence of one of the premier institutes of medical science The Darbhanga Medical College and Hospital.

We aim to study the epidemiology of constipation in children with respect to overall incidence and to study the clinical spectrum. We understand this study will benefit the whole population from the new evidence thus by generated about constipation.

## MATERIAL AND METHODS

This is a retrospective hospital record based cross sectional study conducted at Darbhanga medical college and hospital (DMCH), Darbhanga of all cases with chief presenting complaint of constipation in pediatric OPD and IPD during July 2013 to June 2014. The study was cleared by institute ethical committee of DMCH

Children between 2-12 years of age groups attending opd and emergency of DMCH, which fulfilled the ROME 3

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Type of constipation	Number of cases	%
No Constipation	549	61.54%
Functional	315	35.31%
Organic	28	3.14%
Total	892	100%
Organic Constipation		
i. Hirschprung's Disease	15	53.57%
ii. Others	13	46.43%
Total	28	100

**Table-1: Incidence of Constipation in OPD/IPD**

Age group		1-5years	6-10 years	10-12 years	Total
	Sex				
	Male	73	36	12	121
	Female	123	45	26	194
		196(62.2%)	81(25.71%)	38(12.06%)	
Socioeconomic status		Lower	Middle	Upper	
	Male	70	37	14	121
	Female	107	67	20	194
		177(56.19%)	104(33.01%)	34(10.79%)	
Residential Type		Rural	Semi Urban	Urban	
	Male	70	20	31	121
	Female	88	40	66	194
		158(50.15%)	60(19.04%)	97(30.79%)	
Type of Family		Nuclear	Joint	Separate	
	Male	75	46	0	121
	Female	142	50	2	194
		217(68.88%)	96(30.47%)	2(0.63%)	
Location of Toilet		Outdoor	Indoor		
	Male	71	50		
	Female	90	104		
		161(51.11%)	154(48.88%)		

**Table-2: Socio- Demographic Profile of the Patients with Functional Constipation**

	Male	Female	Total
Milk and Milk Products	91	153	244
Green Vegetables	40	30	74
Fruits	35	25	60
Irregular Meal	19	40	59
Fast Foods	39	47	86
Balanced Diet	21	24	45

**Table-3: Predominant Dietary pattern of the Patients with Functional Constipation**

	Male	Female	Total
Fecal Impaction n=196	91	105	196
Fecal Incontinence n=92	47	45	92
Straining /With-holding n=135	73	62	135
Rectal Bleeding n=74	31	43	74
Pain Abdomen n=68	22	46	68
Abdominal Distension n=20	12	8	20
Painful Defecation n=74	34	40	74
Urinary Symptoms n=18	3	15	18
Total			315

**Table-4: Clinical Profile of the Patients with Functional Constipation, Stool type**

criteria of functional constipation were included in the study. Children with any organic cause of functional constipation

and children getting treatment for functional constipation were excluded from the study.

Following case definition for constipation was used.

In the present study Rome 3 diagnostic criteria for functional constipation in children was used

**For <4 years old children (at least 2 of the following)**

- Two or fewer bowel movements per week
- At least one episode of incontinence per week after the acquisition of toileting skills
- History of excessive stool retention
- History of painful or hard bowel movements
- Presence of large fecal mass in the rectum
- History of large diameter stools that may obstruct the toilet

**For >4 years old children, (at least 2 of the following)**

- Two or fewer bowel movements per week
- At least one episode of incontinence per week
- History of retentive posturing or excessive voluntary stool retention
- History of painful or hard bowel movements
- Presence of large fecal mass in the rectum
- History of large diameter stools that may obstruct the toilet

## RESULT

Total 892 children were examined during the study period, of which 343 children were diagnosed to have constipation. Among them 315 children were qualified to have functional constipation as per ROME 3 criteria. Children were evaluated with respect to age/sex /economic status /rural or urban background/dietary habits and various other aspects. Clinical profile of functional constipation, type of stool (according to Bristol stool chart), and frequency of stool were also recorded.

Toilet training before 2 years of age was found to have higher incidence of functional constipation. Mean age of toilet training was 17.2 months (table-1,2).

Children having functional constipation were found to have predominant milk/milk products. About 23.5% of children were consuming adequate amount of green vegetables/roughage (table-3). More than half of patient has type 3 Bristol stool pattern (51.8%) (table-4).

## DISCUSSION

Incidence of constipation in present study was found to be 38.45%, out of which 91.83% have functional type (Table1). In western studies incidence of constipation in children was found to be about 5-10%.<sup>9,13</sup> Lorenzo et al<sup>14</sup> found about 18% incidence in school going children in USA. In Indian scenario C.C Kondepalli et al<sup>5</sup> found the 30.88% incidence of functional constipation in children.

Females (61.58%) were found to be more affected in our study, which may be due to majority of them were using outdoor toilets, dirty unhygienic school toilets (Table 2). Ip et al<sup>15</sup> and kajiwara et al<sup>16</sup> also found increased prevalence in girls which is 32% and 24.2% respectively. Kokkonen et al<sup>17</sup> also found the increased incidence among girls. Kondepallics et al<sup>5</sup> found 54.4% incidence of functional constipation among females. Gannikan R et al<sup>18</sup> found increased incidence of functional constipation among male compared to females, similar result was found by khanna et al.<sup>4</sup> Present study reveals that maximum number of functional constipation was between 2-5 yrs of age (Table 2). Similar results were obtained by Kokkonen et al<sup>17</sup> (mean age 2.5 yrs), Lorenzo et al<sup>14</sup> (between 2-4 yrs) and Kondepalli et al<sup>5</sup> (57.4% in 2-4 yrs of age).

As far as socioeconomic status was concerned majority of children belong to lower socioeconomic group (56.19%) (Table 2). Kondepalli et al<sup>5</sup> also found higher incidence (48.5%) in lower socioeconomic group. Peppas et al<sup>19</sup> also had similar results.

Children with rural background were found to have increased number of functional constipation in this study (Table2). This may be due to poor dietary habits, outdoor toilets. Children belong to nuclear family have the highest percentage (68.8%) than those from joint (30.4%) or separated family (63%).

As far as clinical presentation was concerned the present study revealed that withholding behavior (42.85%) was present among constipated group. (Table3) Khanna et al<sup>4</sup> in the found withholding behavior in 27.4% while Kondapallics et al<sup>5</sup> noted higher incidence (58.4%). 21.58% of children

presented with abdominal pain in our study (Table3) which is quite closer in comparison to study done by khanna et al<sup>4</sup> (18.8%), kokkonen et al<sup>17</sup> (26%), kondepallics et al<sup>5</sup> (30.6%). Fecal impaction (62.2%) followed by fecal incontinence (29.2%) and rectal bleeding (23.5%) were the other presenting symptom in this study. (Table3) Khanna et al<sup>4</sup> found incidence of fecal impaction in the range of 40 -60% and fecal incontinence in 31% of children. Rectal bleeding was present in 10.89% of children with functional constipation by kondapalli cs et al.<sup>5</sup>

Children predominant on milk or related products diet have highest incidence (77.6%) of functional constipation. About 23.5% of children were consuming inadequate amount of green vegetables/roughage (Table 4). Peppas et al<sup>19</sup> found similar results, IP et al<sup>15</sup>, Araujo et al<sup>20</sup>, Kondepallics et al<sup>5</sup> have also found the similar incidence of functional constipation in children whose dietary fiber intake is restricted.

## Limitations of the study

Present study was a record based study which might not give us accurate picture while number of sample can be increased.

## CONCLUSION

In the present study constipation was complained by 892 patients out of which 315 children fits in the ROME 3 criteria of functional constipation(35.31%) and 28 children have organic cause of constipation (3.14%). Among organic causes Hirschprung's disease constitute (53.5%,n=15).

Female (61.58%) were the more sufferer compared to males (38.41%). Highest incidence of constipation was seen in the age group of 2-5 years (62.2%). With increase in age the incidence decreases. least incidence was above 10 years Children with lower socioeconomic status (56.19%) were the most affected compared to middle or higher class. The Nuclear family children have the higher incidence of constipation (68.8%) compared to joint family. Children with no indoor toilet facility were the most sufferers (51.1%). Dirty school toilets particularly in rural setup causes aversion to use, thus precipitate withholding behavior which leads to constipation particularly in girls.

Withholding behavior (42.53%) was present in the majority of children with functional constipation particularly less than 5 years, while pain abdomen (21.5%) dominantly above 5 years. Fecal impaction was present in the majority of children (62.2%). Other symptoms like fecal incontinence, painful defecation, rectal bleeding, abdominal distension were frequently present.

Mean age of toilet training in our study was 17.2 months which is equally contributing factor for development of constipation. 77.46% of children having functional constipation were found to have predominant milk/milk products and only 23.5% of children were consuming adequate amount of green vegetables/roughage.

Although functional constipation in children is very common and serious problem, but delay in toilet training, increase in indoor toilet facility, change in dietary habits and improving the condition of toilets in school may help in overcoming the problem.

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