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### RESEARCH ARTICLE

#### CLINICAL PROFILE OF FUNCTIONAL CONSTIPATION IN CHILDREN

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#### Abstract

**Introduction:** Constipation causes physical, psychological morbidity and poor quality of life. Data from developed countries shows that prevalence of childhood constipation in general population ranges from 0.7-29.6%. Various studies have showed pain of passing hard stools in infancy and early childhood is the principal contributing factor for acute childhood constipation, leading to constipation and soiling in adulthood. Because of lack of awareness regarding common occurrence of childhood constipation and its proper management, it is often underdiagnosed and sub optimally managed. Hence, this study was conducted to study the frequency of constipation and risk factors in children attending tertiary care hospital in rural Bangalore.

**Materials and methods:** A total of 50 children attending pediatric OPD with constipation were surveyed at MVJ Medical College and Research Hospital, Bangalore. Children who fulfilled the ROME III criteria for constipation were analyzed for demographic profile, socio-economic status, psychosocial aspects and dietary habits affecting bowel pattern. Data was collected and recorded from the parents in pre-fixed proforma which also included Stool frequency and type of stool passed.

**Results:** A total of 50 children fulfilled the ROME III criteria for functional constipation. The constipation in children had male preponderance and majority were aged 2-4 years. Majority of constipated children (62%, n=31) had retention behavior in the form of abnormal posturing. In children with constipation, the average number of stools passed in a week is 2.05.

**Conclusions:** Constipation is an iceberg disorder. Skipping breakfast, early toilet practicing, low intake of vegetables and fruits, marital disharmony, sibling rivalry, temper tantrums, school phobia, aversion to use school toilet were factors leading to constipation.

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#### Introduction:-

Constipation is often characterized by irregular bowel movements, large, hard stools, and discomfort or difficulty during feces passage. Constipation is one of the top ten conditions pediatricians see patients for, and it accounts for 25% of all referrals to pediatric gastroenterologists globally.<sup>1</sup> The minimum number of bowel movements required

by the diagnostic criteria for constipation is three per week. Prevalence rates of constipation range from 0.7% to 29.6% of the worldwide general population.

Constipation is a common issue in children, and in industrialized nations, it may account for up to 30% of visits to pediatric gastroenterologists and 3% of visits to general pediatric clinics.<sup>2</sup> There is a dearth of data on its prevalence in poorer nations. Recent findings from south Asia, however, seem to indicate that it is not unusual in Asia.<sup>3-5</sup> Functional constipation is thought to be uncommon in South Asia due to the region's high fiber diet. In order to rule out Hirschsprung disease, many children with constipation are submitted to thorough examinations. The scant data we do have from Asia, however, indicates that functional constipation is the most prevalent type of constipation there as well.<sup>3-5</sup>

Constipation and other functional gastrointestinal disorders are prevalent morbidity factors in both ordinarily healthy people and people with a variety of underlying conditions. public health problem due to its high incidence rates, financial burden, and detrimental effects on quality of life and health status.<sup>8,9</sup>

Constipation is a common issue that arises in clinical settings. Although the clinical profile of these kids has been well recorded in the west, it hasn't been done so for poorer nations. There isn't much writing in Indian on this subject. It is essentially unknown what an Indian child's natural bowel pattern is. There aren't many studies coming from India. In order to determine the risk factors for functional constipation, the most prevalent cause of constipation in children, this study has been conducted on children of MVJ Medical College and Hospital, Bangalore.

With this background, this study was conducted to determine the clinical profile of children with constipation, its etiology and risk factors in children attending tertiary care hospital in rural Bangalore.

### **Methodology:-**

A prospective observational study was conducted after approval of institutional ethical committee. The study was conducted in department of pediatrics of MVJ Medical College and Research Hospital, Bangalore, Karnataka, India.

The study was conducted for 18 months. We calculated sample size using Considering the prevalence of 29.6% according to the study conducted by Maartje M. Van den Berg et. al.<sup>2</sup>, with 95% confidence interval, the expected sample size is calculated to be 35.56, using the formula  $4 \times pq / d^2$ , where "p" is prevalence, "q" = 1 - p and "d" is 15%. Hence, we took a minimum sample size of 50. We included all children of age 6 months to 18 years during the study period who had come to pediatric OPD. A written informed consent was taken from all parents of study subjects. A pre-validated structured questionnaire consisting of questions in the local language was designed to assess the patient's demographic profile, clinical profile and diet profile. Constipation was diagnosed based on the ROME III criteria: 2 or more of the following and the duration of at least one month in less than 4 years of age and, at least once per week for at least 2 months in more than 4 years.

1. Two or less defecation per week.
2. At least 1 episode of fecal incontinence per week.
3. H/O retentive posture or stool holding maneuver.
4. H/O painful/ hard stools.
5. Presence of large fecal mass in the rectum.
6. H/O large diameter stools that may obstruct the toilet

The data recorded was analyzed using the Statistical Package for Social Sciences (SPSS), 21 version. The associations were evaluated with the use of Student's t-test for quantitative variables and  $\chi^2$  tests for categorical variables. The level of significance was set at 5% for all significance tests.

### **Results:-**

A total of 250 children with were surveyed, out of which 50 children fulfilled the ROME III criteria for functional constipation, majority of children were aged 2 to 4 years (66%), males (66%) belonging to lower middle SES class (42%) and living in rural area (74%) and in nuclear families (68%).

**Table 1:-** Socio-demographic characteristics of study participants.

Socio-demographic characteristics		Frequency (%)
Age group	2 to 4 years	33 (66%)
	5 to 7 years	9 (18%)
	8 to 10 years	5 (10%)
	11 to 12 years	3 (6%)
Gender	Males	33 (66%)
	Females	17 (34%)
SES class	Upper	1 (2%)
	Upper middle	9 (18%)
	Lower middle	21 (42%)
	Upper lower	11 (22%)
	Lower	8 (16%)
Residence	Rural	37 (74%)
	Urban	13 (26%)
Type of family	Nuclear	34 (68%)
	Joint	15 (30%)
	Separated	1 (2%)

Majority of constipated children (48%) had retention behavior in the form of abnormal posturing. In children with constipation, the average number of stools passed in a week is 2.05, with majority having <3 stools per week (74%).

**Table 3:-** Functional constipation characteristics.

Functional constipation characteristics		Frequency (%)
Clinical Profile	Abnormal posture	24 (48%)
	Fecal soiling	17 (34%)
	Recurrent abdominal pain	4 (8%)
	Blood streaked stools	3 (6%)
	Urinary symptoms	1 (2%)
	GERD	1 (2%)
Stool frequency	< 3 per week	37 (74%)
	>3 per week	13 (26%)
Stool type	Type I	3 (6%)
	Type II	10 (20%)
	Type III	35 (70%)
	Type IV	2 (4%)

**Table 4:-** Precipitating factors of functional constipation.

Precipitating factors		Frequency (%)
Diet	Milk	34 (68%)
	Vegetables and fruits	17 (34%)
	Junk Foods	37 (74%)
	Skipped Breakfast	3 (6%)
Psychological precipitants	Marital Disharmony	11 (22%)
	Sibling rivalry	14 (28%)
	Temper Tantrums	19 (38%)
	School Phobia	4 (8%)
	Aversion to use school toilet	2 (4%)

**Table 4** shows that, Milk was consumed by 68% constipated children. Parents marital disharmony was present in 22% children, sibling rivalry in 28%, temper tantrum in 38% of children with constipation.

### Discussion:-

Our study had male preponderance (66%). A study by Chandra Sekhar Kondapalli et.al. had 30.88%, with a slight female preponderance (54.4%).

Loening-Baucke V et al observed that the prevalence of constipation was equal in both boys and girls and that it ranged from 0.3 percent to 8 percent in the paediatric population. The prevalence of constipation in school-age children from the USA was determined to be 18 percent by Lorenzo et al.<sup>6,7</sup> Iacono et al. and Ciampo D. et al. discovered a similar equality in the prevalence of constipation between girls and boys.<sup>8,9</sup> Similar to the current study, Ip et al. and Kajiwara et al. reported that girls had an elevated prevalence of the disease at 32 percent and 24.2 percent compared to boys at 21 percent and 13.2 percent, respectively.<sup>10,11</sup> Kokkonen et al. also found that constipation was more common in girls.<sup>12</sup> 6.4 percent of boys and 5.7 percent of girls reported having constipation, according to research by Gannikou R et al. in girls.<sup>13</sup> Khanna et al. also found that functional constipation was more common in men.<sup>14</sup> Constipation is one of the top 10 conditions treated by general paediatricians and makes up roughly 25% of the work of a paediatric gastroenterologist, according to Agnarsson U et al.<sup>15</sup>

In line with earlier research, the average number of bowel movements per day in our study was 2.05, with the majority of children passing soft stools (type III of Bristol stool chart). The majority of children between the ages of 5-8 have medium-sized bowel movements daily or every other day without straining, according to a study by Wald et al.<sup>38</sup> In the Yong et al.<sup>61</sup> study, 96 percent of schoolchildren had a bowel movement frequency between three times per day and once every two days. Additionally, 96% of 1-4-year-old children passed stools three times a day to every other day, according to Weaver and Steiner.<sup>9</sup> Children of all ages passed soft stools, despite an annual rise in the passing of hard stools. At age 2, the typical number of stools passed each day was 1.7, and at age 4, it dropped to 1.2.

### Conclusion:-

Common age of presentation is 2-4 years with an overall male preponderance. Functional constipation is more common in lower socioeconomic group. Marital disharmony, sibling rivalry and school phobia have an effect on functional constipation. Skipping of breakfast and low intake of vegetables and fruits had a significant influence on functional constipation.

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