

PREVALENCE OF CHRONIC CONSTIPATION AND ITS PSYCHOSOCIAL IMPACT ON CHILDREN AGED BETWEEN 4 TO 14 YEARS AND THEIR PARENTS: A HOSPITAL BASED CROSS-SECTIONAL STUDYB. S. Madhu¹, Apurva Agarwal²**HOW TO CITE THIS ARTICLE:**

B. S. Madhu, Apurva Agarwal. "Prevalence of Chronic Constipation and its Psychosocial Impact on Children Aged between 4 To 14 Years and their Parents: A Hospital Based Cross-Sectional Study". Journal of Evolution of Medical and Dental Sciences 2015; Vol. 4, Issue 69, August 27; Page: 12031-12042, DOI: 10.14260/jemds/2015/1735

ABSTRACT: BACKGROUND: Gastrointestinal functional disorders especially constipation cause morbidity in otherwise healthy children with an estimated prevalence of 1% to 30%. It is perceived as a benign, easily treatable condition however left untreated, can lead to complications (Faecal impaction, incontinence and bowel perforations). Only a small proportion of patients seek medical advice; thus, the exact prevalence of the disorder is difficult to estimate. **AIMS:** To estimate the prevalence of chronic functional constipation in children aged 4-14 years and the degree of psychosocial impact on children and their parents. **SETTINGS AND DESIGN:** This cross-sectional study was carried out at K.R and Cheluvamba Hospital, MMC &RI, MYSORE from 1st FEB 2014 to 31ST MAY, 2014. **METHODS AND MATERIAL:** Constipation was defined using Rome III criteria. Children with organic causes of chronic constipation were excluded. Abdominal pain, fecal mass, anorexia, fecal soiling, withholding behavior were recorded. Psychosocial impact on children and parents was assessed using Paediatric Quality Of Life Inventory (PQLI) and modified PIP Questionnaires. Scoring done according to instructions given with respective questionnaires. **STATISTICAL ANALYSIS:** Prevalence was calculated using rates, ratios and percentages. Tests of significance were performed wherever relevant. P value of less than 0.05 was considered significant. **RESULTS:** The prevalence of functional constipation was estimated to be 14.29% with higher prevalence in females as compared to males i.e. 16.19% vs. 13.42%. Perineal soiling was significantly associated with functional constipation i.e. 58.33%. Mean score of all children was 75.4 and 70.6 for physical and psychosocial impact. 88% children reported PQLI score <80(Mean 69.4). No difference between male and female child (p=.614). 83.33% parents reported score <80(Mean 69.3). No significant difference on psychosocial impact and quality of life according to PQLI parent report (p=1). **CONCLUSIONS:** High prevalence of functional constipation was observed amongst the younger female children. Children with chronic constipation have a lower quality of life. This study proves that functional constipation, its associated factors and complications are frustrating to the child and their parents.

KEYWORDS: Functional constipation, psychosocial, Encopresis, Laxative, Pediatric.

MESH TERMS: Functional Colonic Diseases.

INTRODUCTION:

- Gastrointestinal functional disorders especially constipation are common morbidity factors in otherwise healthy children.
- Constipation due to organic aetiologies like mechanical obstruction, spinal cord injury¹, hypothyroidism, neurogenic disorders e.g. Hirschsprung's disease.² account for minority of

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patients. Dietary habits, physical inactivity, socioeconomic status, psychological parameters, medications.³ etc. are implicated in development of functional constipation.

- Functional constipation in children is perceived as insignificant, easily treatable condition that resolves on its own or requires non-invasive treatment. However, if left untreated, can lead to serious complications (Faecal impaction, incontinence, etc.) with implications on the health-related quality of life (HR-QOL).⁴
- Only a small proportion of patients seek medical advice; thus making it difficult to estimate the exact prevalence of functional constipation.
- Constipation in children has global prevalence rates between 1-30%.⁵ it is the principal complaint in 3-5% of all visits to paediatric OPD and 35% of all visits to paediatric gastroenterologists.⁶
- Numerous international studies have reported prevalence in various age groups however no such studies have been reported in India. No study has reviewed the psychosocial impact of functional constipation in children.
- A study in UK.⁷ reports increased prevalence of constipation in pre-school children attributable to reduced consumption of plant foods. However no such studies have been done in India due to the belief that constipation is uncommon due to consumption of fibre rich diet, nevertheless acculturation of western culture has led to an increased consumption of fibre lacking diet. A recent study suggested association of obesity and constipation in children.⁸
- Chronic constipation affects the physical, psychological and social wellbeing of the child, worsens academic performance and deteriorates the quality of life. This mandates the need for assessment of psychosocial impact on children suffering from constipation.
- Parents are affected as they may anticipate that a major underlying disease, in spite the fact that 95% patients have functional constipation.⁹ Parents feel guilty, even though the child's illness is not their fault often. Parents must increase attention and devote time to help the child cope up in a normal way thus face dilemma, whether the problem will resolve or it is worthwhile to take consultation, hence necessitating the assessment of psychosocial impact on parents as well.
- This study will assess the burden of this under-addressed yet common problem, the factors associated and the need for further measures to reduce the psychosocial morbidity and improve the quality of life of young children.

MATERIALS AND METHODS: The present study was carried out at the Department of Surgery and Paediatric Surgery, K.R. and Cheluvamba Hospital, MMC & RI, Mysore.

Study Design: Hospital Based Cross-Sectional Study from 1st Feb. 2014 to 31st May, 2014.

Study Period: 4 Months.

METHOD OF DATA COLLECTION:

Sample Size: 336 children's of both genders aged between 4 to 14 years.

Sampling Procedure: Based on total no. of children registering at our hospital for the above mentioned period, considering the standard error of 5%, and the highest known prevalence i.e. 30%, 336 children between 4 to 14 years were considered.

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SELECTION CRITERIA:

Inclusion Criteria: Children aged 4-14 years registered during the study period.

Exclusion Criteria:

- Children <4 years and >14 years age.
- Postoperative patients.
- History of intake of drugs causing constipation.
- Children known to have Mental Retardation.
- Children with a known organic/surgical disease.

PROCEDURE:

This is a “Questionnaire-based”, Cross-sectional Study:

- After informing details of the study, an informed verbal consent in vernacular language was obtained from the parents.
- Information regarding socio-demographic details, presenting complaints, birth and dietic history was obtained to rule out any organic causes, drugs intake, malnutrition, etc. Leading questions asked to confirm functional constipation by Rome 3 criteria.
- Detailed anthropometric, physical and per/Rectal examination was done.
- Organic constipation was excluded by appropriate investigations.
- Thereafter, the children aged 8-14 yrs. answered a health related Quality of Life Tool i.e. Paediatric Quality Of Life Inventory (PQLI) to assess the psychosocial impact. Children less than 8 years were not considered eligible for this questionnaire.
- The parents answered PQLI Parent Proxy Report for psychosocial impact on their child.
- The scores on PQLI were calculated for physical impact (8 items), psychosocial impact (15 items) and total scale scores (23 items) on a scale of 0-100 where 0 was considered as worst quality of life and higher psychosocial morbidity and 100 considered as excellent quality of life and nil psychosocial morbidity. We classified scores as <80 (Indicating higher morbidity) and >80 (Indicating less morbidity) since 80 was chosen as cut-off point as in one of the studies.¹⁰
- To assess the psychosocial impact on parents, a 12 items questionnaire was administered using Paediatric Inventory for Parents(PIP) and scoring was done on a 5 point Likert Scale from 0-60 for frequency and difficulty faced by the parents during child’s illness. The maximum “frequency” and “difficulty” scores are 60 as measure of higher psychosocial morbidity.

ETHICS: The study was done within the ethical standards of the responsible institutional committee.

STATISTICAL METHODS:

- Prevalence was calculated using rates, ratios and percentages.
- Tests of significance were performed wherever relevant. The level of significance was set at a P value of less than 0.05.

RESULTS:

- Total no. of children participating in the study= 336.

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Age Group	No. of Children	Percentage Distribution
4 – 6 yrs.	88	26.19%
7 – 8 yrs.	62	18.45%
9 – 10 yrs.	67	19.94%
11 – 12 yrs.	53	15.78%
13– 14 yrs.	66	19.64%
TOTAL	336	100.00%

Table 1: Age Distribution of the Participants

The maximum no. of children was aged 4 – 6 yrs. i.e. 88 (26.19%) and the minimum were aged 11-12 yrs. (15.78%).

Total no. of children found to have chronic functional constipation (Rome 3 Criteria) = 48

Functional Constipation	Male		Female		Total	
	NO.	%	NO.	%	NO.	%
Present	31	13.42%	17	16.19%	48	14.29%
Absent	200	86.58%	88	83.81%	288	85.71%
Total	231	100%	105	100%	336	100.00%

Table 2: Prevalence of Functional Constipation

Females showed a higher prevalence of functional constipation.

The Overall Prevalence of Chronic Functional Constipation was estimated to be 14.29%.

Age Group	Total no. of Children who Participated	Children Fulfilling Rome 3 for Constipation	Percentage Distribution
4 – 6 yrs.	88	18	20.45%
7– 8 yrs.	62	5	8.06%
9 – 10 yrs.	67	9	13.43%
11 – 12 yrs.	53	6	11.32%
13 – 14 yrs.	66	10	15.15%

Table 3: Age Distribution of the Children with Functional Constipation

Out of 48 functionally constipated children, most were in age group 4-6 yrs. i.e. 20.45%.

Faulty Diet	Functional Constipation	Percentage
Present	34	70.83%
Absent	14	29.17%
TOTAL	48	100%

Table 4: Association of Faulty Diet with Functional Constipation

Faulty diet in the form of low intake of fibres in diet, irregular meals, excess consumption of beverages and junk foods, etc. was present in 70.83% children.

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Anaemia	Functional Constipation Present	Percentage
ABSENT	21	43.75%
PRESENT	27	56.25%
MILD (8-10gm %)	16	33.33%
MODERATE (7- 8 gm %)	11	22.92%
SEVERE (<7gm %)	0	00.00%
TOTAL	48	100%

Table 5: Occurrence of Anaemia in Functional Constipation

Majority of functionally constipated children showed laboratory evidence of Anaemia i.e. 56.25% (27 out of 48 children).

Malnutrition (iap)	Constipation +	Percentage
ABSENT	10	20.83%
PRESENT Wt. for Age	38	79.17%
GRADE 1 (70-80%)	21	43.75%
GRADE 2 (60-70%)	12	25.00%
GRADE 3 (50-60%)	5	10.42%
GRADE 4 (<50%)	0	00.00%
TOTAL	48	100%

Table 6: Occurrence of Malnutrition in Functional Constipation

Malnutrition was significantly associated with a prevalence of 79.17%.

Perineal Soiling	Functional Constipation Present	Percentage
Present	28	58.33%
Absent	20	41.67%
TOTAL	48	100%

Table 7: Perineal Soiling in functional Constipation

Perineal soiling was a major problem associated in 58.33% of children.

PQLI CHILD (8- 14) PHYSICAL IMPACT	NO. OF CHILDREN	PERCENTAGE
50-60	2	8%
61-70	4	16%
71-80	11	44%
81-90	7	28%
91-100	1	4%
TOTAL	25	100%

Table 8: PQLI scores "Child report" for Physical impact on Children (8-14 yrs.) with Functional Constipation

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68% reported scores < 80 with maximum scores between 71-80%. Mean score ($\sum fx/n$) of all the children were 75.4.

Pqli child (8-14) Psychosocial impact	No. of Children	Percentage
50-60	2	8%
61-70	10	40%
71-80	9	36%
81-90	3	12%
91-100	1	4%
TOTAL	25	100%

Table 9: PQLI Scores "Child report" for Psychosocial impact on Children (8-14 yrs.) with functional constipation

80% reported scores less than 80 with maximum score in range 61-70. The mean ($\sum fx/n$) psychosocial score for all children was 70.6.

Pqli child (8-14) Psychosocial Impact	Male		Female	
	No.	%	No.	%
50-60	1	6.67%	1	10%
61-70	7	46.67%	3	30%
71-80	4	26.66%	5	50%
81-90	2	13.33%	1	10%
91-100	1	6.67	0	0%
TOTAL	15	100%	10	100%

Table 10: Gender distribution for psychosocial impact on children (8-14 yrs.)

80% male children and 90% female children showed significant psychosocial morbidity. The "Fisher Exact Test" showed no significant difference between male vs. female child ($p=.626$).

Pqli Child (8-14) Total Scale Score	Male		Female		Total	
	NO.	%	NO.	%	NO.	%
50-60	1	6.67%	1	10%	2	8%
61-70	9	60%	5	50%	14	56%
71-80	3	20%	3	30%	6	24%
81-90	1	6.67%	1	10%	2	8%
90-100	1	6.67%	0	0%	1	4%
TOTAL	15	100%	10	100%	25	100%

Table 11: PQLI Total Scale Scores "Child report"- Children (8-14 yrs.) with Functional Constipation

The total scale score was < 80 in 88% children. The "Fisher Exact test" showed no significant difference between male and female child's Health related Quality of Life ($p=.614$).

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Pqli Parent Report (For all ages) Physical Impact	Male		Female		Total No. of Parents who Responded Percentage Distribution	
	NO.	%	NO.	%	NO.	%
50-60	1	6.67%	1	10%	2	8%
61-70	9	60%	5	50%	14	56%
71-80	3	20%	3	30%	6	24%
81-90	1	6.67%	1	10%	2	8%
90-100	1	6.67%	0	0%	1	4%
TOTAL	15	100%	10	100%	25	100%

Table 12: PQLI scores "Parent Report" for Physical Impact on Children

91.67% reported scores less than 80. The mean score ($\sum fx/n$) was 71.04, lower than mean score for physical impact by children (75.4). The "Fisher Exact test" p value showed no significant difference on physical impact of male vs. female. (P=.121)

Pqli Parent Report (For all ages) Psychosocial Impact	No. of Parent who Responded	Percentage
50-60	5	10.42%
61-70	15	31.25%
71-80	14	29.17%
81-90	12	25%
91-100	2	4.16%
TOTAL	48	100%

Table 13: PQLI scores "Parent Report" for Psychosocial impact on Children

70.83% parents reported scores less than 80 indicating a higher psychosocial morbidity and poor Quality of life.

Pqli Parent Report (For all Ages) Physical Impact	Male		Female		Total No. of Parents who Responded Percentage Distribution	
	NO.	%	NO.	%	NO.	%
50-60	6	19.35%	3	17.65%	9	18.75%
61-70	12	38.71%	8	47.06%	20	41.66%
71-80	8	25.81%	3	17.65%	11	22.92%
81-90	3	9.68%	2	11.76%	5	10.42%
90-100	2	6.45%	1	5.88%	3	6.25%
TOTAL	31	100%	17	100%	48	100%

Table 14: PQLI Total Scale Scores "Parent Report" for Children with Functional Constipation

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The total scale score <80 was reported by 83.33% parents. The “Fisher Exact test” showed no significant difference between the psychosocial impact and Health related Quality of Life according to PQLI parent report ($p=1$).

Psychosocial Impact on Parents Difficulty Score	No. of Parents	Percentage
0-11	2	4.17%
12-24	4	8.33%
25-36	8	16.67%
37-48	20	41.66%
49-60	14	29.17%
TOTAL	48	100%

Table 15: Psychosocial Impact on Parents based on Difficulty and Frequency Scores

41.66% showed highest scores between 37-48 on the difficulty scale, thus indicating a significant stress.

Psychosocial Impact on Parents Frequency Score	No. of Parents	Percentage
0-11	3	6.25%
12-24	5	10.42%
25-36	9	18.75%
37-48	18	37.5%
49-60	13	27.08%
TOTAL	48	100%

Table 16: Psychosocial Impact on Parents based on Frequency Scores

64.58% parents reported score more than 36. The mean score reported by all parents was 36.5, indicating that the difficulty faced due to child’s constipation caused more “difficulty” than the “frequency” of stress over time.

DISCUSSION: This is the first study on prevalence of chronic functional constipation, the factors associated and the psychosocial impact on children with chronic constipation and their parents in this region of the country. Many studies⁵ showed rapid evolution of change in criteria.^{11,12} for accurate diagnosis of functional constipation. With the advent of Rome III diagnostic criteria, it was possible to classify Functional Gastrointestinal Disorders accurately for epidemiological purpose. In present study, Rome III criterion was used to classify a patient as “functionally constipated”.

A cross-sectional survey estimated the prevalence of functional constipation as 15.4% using Rome III criteria.¹³ this matches the prevalence estimated by us i.e. 14.29%. 1 study at SGPGI.¹⁴ in India reported functional constipation as the most common cause of constipation in children. Studies showed that it can affect the mental, physical and psychological wellbeing of the child and reflects upon the parent’s attitude, quality of life, financial constraints faced while taking care of the child.

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This study harbours a wide infra of factors which are possible known causes of chronic constipation. Worldwide 90-95% of constipation in children is functional⁹ and commonly seen in:

- Infants at weaning.
- Toddlers acquiring toilet skills.
- School age.

This study includes 336 children. The ratio of male to female children was 2.2:1. This is especially relevant to the Indian culture, where a male child is given preference over female child both in education and health care especially in the rural and sub-urban areas. Minimum no. of children were aged 11-12 yrs. (15.78%), the less no. of children in this age may be attributable to unwillingness of the child or parents to seek consultation in order to avoid absence from school, work, etc.

We estimated the prevalence of chronic functional constipation to be 14.29% and it was higher in females. Another study.¹⁵ Reported higher prevalence amongst girls in school going children. The maximum prevalence was found in age group 4-6 yrs. known to be recently toilet trained thus symptoms are more evident. This study showed low dietary fibre intake in these children.

A study.¹⁶ in US reported prevalence of chronic constipation as 18%, same range as ours. A survey.¹⁷ estimated the prevalence of functional constipation as 17.5% in children aged less than 11 years of a low-income community.

Faulty diet i.e. low intake leafy vegetables, irregular meals, excess consumption of beverages, etc. was present in 70.83%. The role of fibre and its correlation to constipation was investigated by a case-control study¹⁸ on children aged 2 to 14 years.

One study¹⁹ stated that Children with constipation are more likely to be overweight. These children had increased incidence of psychological/behavioral problems, and were more likely to fail treatment.

Another study¹⁸ reported lower height and weight in children with constipation, the possible reason for this may be anorexia, malabsorption, and inadequate intake, malpractices of feeding and weaning.

This study estimated a high prevalence of anaemia i.e. 56.25% in functionally constipated children. This could be due to inadequate intake of leafy vegetables (Rich source of iron).

Perineal soiling was a major problem with high occurrence i.e. 58.33%. A majority of children were found to have "stool in rectum" i.e. 64.58%. 68% reported scores <80 for Physical impact, and majority of children i.e. 80% children reported scores < 80 for psychosocial impact. The physical scores reported by parents was even lower i.e.,71.4.

Since constipation and faecal incontinence associated with it can cause embarrassment to the child and ridicule by peers especially in older children, this may cause emotional problems, fear of being "found out". Despite high prevalence of functional constipation and its impact on child and family, there is relatively few data in relation to behavior and quality of life in these children. As constipation has an unsure outcome, ignorance might cause the child to pay a high psychosocial price.

Health related quality of life in children with Functional Gastrointestinal Disorders was evaluated by a study.²⁰ using Child Health Questionnaire - Parent Form 50 (CHQ-PF50). In this study, 88% both male and female reported PQLI score < 80. 83.33% parents reported score <80 for total scale score.

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Parents with lower educational status and income prefer to bear the burden than to seek advice. With regard to limitation in this aspect, an intelligent step was invention of questionnaires like PSI-SF (36 items),²¹ however Paediatric Inventory for Parents (PIP),²² a 42 item scale used to assess stress on parents in many studies,^{23,24} was according to us best as it covers the all domains to assess stress with a high sensitivity and consistent reliability. The difficulty faced due to child's constipation caused more "difficulty" than the "frequency" of stress.

Functional constipation is poorly emphasized in India. The main purpose of obtaining a detailed history, physical examination and assessing the psychosocial impact is to improve health care by establishing a connection between the health personnel and parents.

We can say that it has a high yet subjectively ignored psychosocial impact on the child as well as the parents, especially when associated with complications like painful defecation, fissures, learned withholding behavior, rectal prolapse, faecal soiling, etc. This study also implicates poor quality of life.

Early recognition and appropriate treatment is essential to achieve a favourable outcome. If changes in physical, psychosocial and other domains are identified early, it can serve as a basis for early intervention for better living standards.

A broader insight is required in order to reduce the prevalence and prevent the occurrence of chronic constipation and/or alter its natural clinical course. Children and parents should be offered psychological counselling and support throughout the treatment or the intervention process.

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