International Journal for Multidisciplinary Research (IJFMR)
E-ISSN: 2582-2160 • Website: www.ijfmr.com • Email: editor@ijfmr.com

Prevalence of Functional Constipation Among Under Five Children and Factors Contributing to it in Selected Areas of Tapi District, Gujarat

Ms. Divya R Chaudhari[1], Dr. Rani Shetty[2]

[1]Ph.D. Scholar, Lecturer, Nursing, Maniba Bhula Nursing College
[2]Dean, Nursing, Maniba Bhula Nursing College

ABSTRACT

Introduction: Constipation is one of the commonest digestive complaints in children, which has recently grown to quite a proportion as a public health problem. There are various risk factors identified globally, including centrally connected factors such as child abuse, emotional and behavioral issues, and psychological stress. Constipation is also precipitated by a low-fiber diet, physical inactivity, and an altered intestinal microbiome.

Statement: A study to assess the prevalence and factors contributing to functional constipation among under five children in selected areas of Tapi district Gujarat.

Objectives:

1. To assess the prevalence and factors contributing to functional constipation among under five children
2. To identify predictors of functional constipation and association between mean score of FC with selected demographic variables.

Methodology: A prospective survey design was adopted and mothers of under five children were selected by convenience sampling technique. Sample size was 1000.Data were collected by using structured questionnaires and self- reporting technique was used for data collection.

Result: 1000 children were screened using ROME Criteria III and prevalence was found 414(41.4%) in Tapi District and mean score of functional constipation was 3.27 with SD 1.63 ,median 2.0 mean percentage 54.5 .

Among contributing factors daily intake of high sugary diet(99.8%),More physical in activity(99.8%), screen time >2hrs/day(99.8%),poor sleep duration <8hrs/day (99.3%),lack of communication between parents and children(97.3%),intake of cowmilk(90.3%),hesitancy to sit in toilet for defecation(96.4%)and parents spending less time with their children(83.8%) were the factors identified.

Linear regression analysis to identify predictors contributing to functional constipation indicated that toilet training issues were significantly related with functional constipation, where nutritional factors ,physical activities psychological issues, parenting style were not significantly related with functional constipation. Functional constipation was significantly associated with age of the child, positive history of constipation among family members, level of education and remedial measures taken.

Conclusion: The study was able to identify the prevalence of functional constipation and factors contributing to it among under five children. Community health nurses and child health nurses should address this problem among children, seriously and educate mothers about its preventive aspects.

Keywords: Functional constipation ,Factors contributing to functional Constipation, under five children

Introduction:

Functional constipation (FC) is one of the most frequently encountered gastrointestinal disorders in children. In India, its prevalence is rising, yet its multifactorial etiology ranges from dietary habits to environmental and psychosocial factors[1]. Constipation is one of the commonest digestive complaints in children, which has recently grown to quite a proportion in public health problem[2]. There are various risk factors identified globally, including centrally connected factors such as child abuse, emotional and behavioral issues, and psychological stress. Constipation is also precipitated by a low-fiber diet, physical inactivity, and an altered intestinal microbiome.

Need of the study:

Constipation is one of the common symptoms in childhood. Over 95% of children with constipation have no organic cause, which is diagnosed as functional constipation (FC) according to the Rome IV criteria .The prevalence of FC is about 0.5% to 32% and still on the rise according to global statistics . Although FC rarely leads to life-threatening complications, it can cause physical pain and emotional distress in children . Specifically, children with FC show more aggressive behaviors and other problems such as low self-esteem, anxiety, depression , poor attention and low social competence.

Problem Statement: A study to assess the prevalence of functional constipation among under five children and factors contributing to it in selected areas of Tapi District, Gujarat.

Objectives:

1. To assess the prevalence and factors contributing to FC among under five children.
2. To identify predictors of functional constipation and association between mean score of FC with selected demographic variables.

Material and Methods:

Quantitative research approach with prospective survey research design was used for the Community based study at Tapi district, Gujarat.1000 under five 1-4 years of age children were Screened through ROME Criteria III and out of 1000 children 414 fulfilled the ROME Criteria III. The Study period was 17 June 2024 to 15 July 2024. Ethical approval was obtained from the institutional ethics committee of the college and from child welfare department Tapi. Consent was obtained from the parents. Convenience sampling technique was used while sample selection. Criteria for selection : Inclusion criteria was, Mothers of under five age children who gave consent for data collection 2.Mothers who were able to communicate in Gujarati and English. Exclusion criteria: Mothers who were not available at the time of data collection .Tool was designed under three sections which included socio demographic data, ROME criteria III for screening , structured questionnaire for factors contributing to functional constipation. Data was collected using the Self reporting technique.

STATISTICAL ANALYSIS:

The data were analyzed using the statistical software IBM SPS 22.0 version . Descriptive statistics were used to describe the characteristics of variables. Linear regression analysis was used to assess the factors contributing to FC.

RESULT:

Out of 1000 children screened 414 children were reported to have constipation ,as per ROME Criteria III with a prevalence rate of 41.4% .

Finding of the demographic variables :

Highest number 346(83.6%) of children were from the age group of 2.5-4 years, female gender was highest 240(58%),233(56%) of them were single children and 56.3% of them lived in joint families,184(44.5%) of the children were attending Bal mandir,44.5% of the mothers were full time employed and 64% of the children were cared by their grandparents,66.7% of the children were underweight BMI < 5^{th} percentile.

Table:1 Factors contributing to Functional Constipation among under five children: (N=414)

Factors		F	P(%)
Nutritional factors	High sugary food intake	413	99.80%
	Time of dinner (8pm- 9pm)	315	76.10%
	Food intake duration between two meals (4hrs)	293	70.80%
	Frequency of food intake (<4 meals)	354	85.50%
	Intake of cow milk Food allergy (milk)	374 331	90.30% 80%

Factors		F	P (%)
Physical activities	Highest level of activities(walking)	413	99.80%
	Screen time /day(mobile)	413	99.80%
	Sleep hours <8hrs	411	99.30%
Psychological stress	Irritable/angry	269	65%
	Refuse to go to school	209	50.40%
	food related communication with parents	403	97.30%
	Always communicate with parents	60	14.5%
Toilet training issues	Hesitancy to sit	399	96.40%
	Control urge to defecate	208	50.20%
	Position while passing the stool	358	86.50%
Parenting style	Spent with child <2hrs/day	347	83.80%
	Strict with child	256	61.80%

As reported in table 1 Many factors were identified as contributing to constipation in under five children. **Nutritional factors** :Major nutritional factors identified were intake of high amount of sugary food(99.80%),intake of cowmilk(90.3%),less than 4 meals/day(85.5%),allergy to milk(80%),late night

dinner (8-9pm) (76.1%) and time gap of 4 hours between two meals(70.8%).
Physical activities: Mothers reported that 99.8% of children did walking daily 99.8% of them spent >2hrs /day watching Mobile/TV,99.30% of them slept for a duration of < 8hrs/day.
Psychological factors: The reported psychological factors were food related communication between parents and children(97.30%) remains angry and irritable (65%),always communicate with parents (60%),refused to go to school (50.4%)
Factors related to toilet training: Mothers reported that 96.4% of children showed hesitancy to sit in the toilet ,86.50% of them had a problem in squatting position and 50.2% of them controlled their urge to defecate.
Factors related to parenting style: It was identified that 61.80% of parents were strict with their child and the highest number (83.8%) of them spent less than 2 hours per day with their children

Table 2: Range, mean, standard deviation, median and mean percentage of Functional Constipation
N=414

Range	Mean	Standard deviation	Median	Mean Percentage
2-6	3.27	1.63	2.0	54.5

It is evident from table 2 that ,Factors contributing to functional constipation showed a range of scores from 2-6 indicating a narrow variability. The Mean score was 3.27 with standard Deviation of 1.63 suggesting less variation. The median which was 2 is close to the mean, indicating that the distribution is fairly symmetric. The mean percentage 54.5 reflects that on an average problems were present in children with functional constipation.

Table 3: Linear regression analysis to identify predictors for functional constipation (n = 414)

	OR	P value	95% C.I. for EXP(B)	
			Lower	Upper
High sugary food	1.308	0.361	.736	2.324
Veg Food	1.551	0.273	.708	3.398
Nonveg	.873	0.684	.455	1.678
No. meals per day	.394	0.002	.217	.715
Consumption of Milk	1.152	0.707	.551	2.410
Physical activities	.801	0.367	.494	1.298
Screen time	.000	10.000	.000	.000
Amount of sleep	.883	0.923	.071	11.010
Refused to school	.693	0.376	307	1.562
Child anger	1.099	0.742	.627	1.927
Control to urge	1.647	0.054	.992	2.735

Parenting	.663	0.089	.413	1.064

OR=Odds Ratio, CI= Confidence Interval, EXP (B) = Exponential value of B

It is evident from Table :3 that The crude odd ratio with a 95% confidence interval(CI) and p- value <0.05,showed that toilet training issues significantly related with functional constipation whereas the nutritional factors, physical activities, psychological issues, parenting style were not significantly related with functional constipation. The chances for the functional constipation were higher in toilet training issues :control to urge (OR =1.647,P=0.05).In nutritional factors veg food were higher than No. of meal/day(OR=39,P=0.00).In physical activities amount of sleep(OR=88,P=0.92)higher than screen time(OR=0.00,P=10.00).In psychological factors child anger (OR=1.09,P=0.74)higher than the refuse to school(OR=0.69,P=0.37).Parenting style (OR=.66,P=0.08).

Table:4 Association of Functional Constipation with selected demographic variable n=414

Sl. No	**Demographic variables**	**Functional Constipation score**		**Total**	**χ^2 test**
		≤Median (≤2.0)	**>Median (>2.0)**		
1	**Age in years**				**=5.643, df=1, p=0.021 ***
	1- 2.4	33	35	68	
	2.5-4	221	125	346	
2	**Education of Child**				
	Play group	11	11	22	**=7.991, df=3, p=0.046***
	Bal Mandir	201	116	315	
	Nursery	6	0	6	
	Not applicable	36	33	71	
3	**Family History**				
	Yes	191	142	333	**χ^2=11.458, df=1, p=0.001*****
	No	63	18	81	
	Family History – Parent				
	Yes	217	152	369	**χ^2=9.274, df=1, p=0.002****
	No	37	8	45	
	Family History – Sibling				
	Yes	214	147	361	**=5.110, df=1, p=0.024***
	No	40	13	53	
4.	**Remedial measures used for constipation**				**χ2=9.896, df=1, p=0.002****

	Dietary modification	91	34	125	
	None	163	126	289	

It is evident from table 4 that functional constipation was significantly associated with age of child, level of education, positive history of constipation among family members and remedial measures taken. FC had significant association with children of 2.5-4 yrs of age, those who are attending Bal mandir ,positive family history of constipation among parents and those who did not seek remedial measures.

Discussion

1. Prevalence of Functional constipation among 1000 under five children screened was 41.4% among the under five children screened in Tapi district. However, Sumanth Reddy Musali and Archana Reddy Damireddy(2021) have reported 43.6% of toddlers having constipation in Andhra Pradesh . Two more studies supported the above finding. Asu Satya et.al(2024) have reported 27.2% of 2-18 years of children having constipation in Mangalagiri [5], Dr. Aparna R and Dr. Varsha S.A(2023) have reported 50(20%)of 2-12 years of children having constipation in Bangalore.
2. With regard to the ROME criteria III,41.4% of children had two or fewer defecation/week, as the diagnostic criteria,as reported by their mothers. In a study done by Anne Willemijn Walter et.al(2019),they have identified the same factors in 25% of the children(N=1113) screened in Sri Lanka .One more study conducted in Bangalore by Dr. Aparna R and Dr. Varsha S.A (2023) using ROME criteria III, Out of 250, 20% children fulfilled the ROME III criteria for functional constipation.
3. **.Nutritional factors** :Major nutritional factors identified were intake of high amount of sugary food(99.80%),intake of cowmilk(90.3%),less then 4 meals/day(85.5%),allergy to milk(80%),late night dinner (8-9pm) (76.1%) and time gap of 4 hours between two meals(70.8%).In a study done by Maha Al Ghamdi and Abduljabbar Alfetni(2016), on prevalence and factors associated with functional constipation among children attending well baby clinic in aladel primary health care center in Makkah al-mukarramah ,they reported nutritional factors like Children on bottle feeding (38.5%) had FC and Having no serving fruits provided daily(55.6%)also had FC. [7].
4. **Physical activities**: Mothers reported that 99.8% of children did walking , 99.8% of them spent >2hrs /day watching Mobile/TV,99.30% of them slept for a duration of < 8hrs/day.
5. **Psychological factors**: The reported psychological factors were food related communication between parents and children(97.30%) remains angry and irritable (65%),always communicate with parents (60%),refused to go to school (50.4%)
6. In a study conducted by Chandra Sekhar Kondapalli, Sagari Gullapalli(2017) on Constipation in children, they reported factors like The location of the toilet was indoor in 71 (35.1%) and outdoor in 131 (64.8%). Marital disharmony was present in 47 (23.2%) children, sibling rivalry in 49(24.2%), temper tantrum in 121 (59.9%) of children with constipation. However these factors were not included in the current study. School phobia was present in 22 (10.8%) and unwillingness to use the school toilet was present in 74 (37.1%) children.
7. **Factors related to toilet training**: Mothers reported that 96.4% of children showed hesitancy to sit in the toilet ,86.50% of them had problems in squatting position,and 50.2% of them controlled their urge to defecate.
8. The above finding was supported by Naenen et.al(2025), A Cohort Study on Specific Behaviours of

Young Healthy Children during toilet training and their associations with functional constipation From a 42.1% (n = 1228) response rate, 1218 questionnaires were analysed. Parents reported that during TT, 23.6% (n = 285; 95% confidence intervals [CIs], 21.2–26.0% of their children refused to defecate on a potty, 13.0% (n = 157; 95% CI, 11.2–15.0%) hid while defecating, and 9.7% (n = 117; 95% CI, 8.1–11.5%) asked for a diaper to defecate.

9. Factors related to parenting style: It was identified that 61.80% of parents were strict with their child and the highest number (83.8%) of them spent less than 2 hours per day with their children.
10. Factors contributing to functional constipation showed a range of scores from 2-6 indicating a narrow variability. The Mean score was 3.27 with standard Deviation of 1.63 suggesting less variation. The median which was 2 is close to the mean, indicating that the distribution is fairly symmetric. The mean percentage 54.5 reflects that on an average problems were present in children with functional constipation.
11. The crude odd ratio with a 95% confidence interval(CI) and p-value <0.05,showed that toilet training issues significantly related with functional constipation where the nutritional factors, physical activities, psychological issues, parenting style were not significantly related with functional constipation.
12. functional constipation was significantly associated with age of child level of education, positive history of constipation among family members and remedial measures taken.

Conclusion:

The study concluded that Functional constipation among under five children in Tapi district was 41.4%. Out of the factors studied, factors related to toilet training was a significant predictor for FC. It is important that mothers require training in access to toilet training modification and psychological support for their under five children.

Recommendations:

- Raising awareness of parents regarding symptoms and risk factors of functional constipation among their children; with emphasis on the importance of early recognition and management.
- Educating mothers about the importance of breast feeding and daily fruit intake for their children to prevent functional constipation.
- Better evaluation of the problem among children conducting multi-centric study including children with different presentations and risk factors.

Limitation:

This study is community based study limited to selected areas with Tapi District, Gujarat. The finding may not be generalized.

REFERENCES:

1. Indian Journal of Pediatrics (July 2025) 92(7):791 https://doi.org/10.1007/s12098-025- 05557-z
2. Constipation in infants and children [Internet]. [cited 2016 Jan 11]. Available from:http://www.uptodate.com/contents/constipation-in-infants-and-children-beyond-the-basics?source=search_result&search=constipation+in+children&selectedTitle=6~150 https://doi.org/10.21203/rs.3.rs-1495683/v1

3. MRIMS Journal of Health Sciences 11(1):p 48-54, Jan–Mar 2023. | DOI: 10.4103/mjhs.mjhs_29_22
4. Indian Journal of Pediatrics (March 2025) 92(3):328 https://doi.org/10.1007/s12098-024-05387-5
5. Journal Homepage: - www.journalijar.com Article DOI: 10.21474/IJAR01/16982 DOI URL: http://dx.doi.org/10.21474/IJAR01/16982
6. Walter et al. BMC Pediatrics (2019) 19:285 https://doi.org/10.1186/s12887-019-1652-y
7. Article DOI: 10.21474/IJAR01/5170 DOI URL: http://dx.doi.org/10.21474/IJAR01/5170
8. International Journal of Contemporary Pediatrics Kondapalli CS et al. Int J Contemp Pediatr. 2018 Jan;5(1):6-13http://www.ijpediatrics.com DOI: http://dx.doi.org/10.18203/2349- 3291.ijcp20175055
9. Journal of Developmental & Behavioral Pediatrics *Journal of Developmental & Behavioral Pediatrics* ():10.1097/DBP.0000000000001370, August 4, 2025. | *DOI:* 10.1097/DBP.0000000000001370