

# Functional Constipation in Children

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**Abstract** Constipation is a common problem in childhood. In most patients, constipation is of a functional nature. The authors studied the frequency of hospitalization of sick children with diseases of the gastrointestinal tract in the department of gastroenterology and pediatric surgery of the Bukhara Regional Children's Multidisciplinary Medical Center in the periods from 2018 to 2020. The study revealed that when studying the regional features of the course of constipation in children, functional constipation prevails by origin – 93.2% of cases, among causal factors, the highest frequency is represented by psychosocial maladaptation and autonomic dysfunction syndrome, according to the clinical course 48.5% of all chronic constipation, among hospitalized patients subcompensated.

**Keywords** Constipation, Functional pathology, Gastrointestinal tract, Children

## 1. Introduction

Constipation in children is very common, with a reported frequency of up to 30% [1]. The vast majority (96%) of cases are due to functional causes [2]. Organic causes of constipation are uncommon and most can be ruled out clinically. They include the following: Hirschsprung disease, hypothyroidism, hypercalcaemia, spina bifida/spina bifida occulta and medications that slow down intestinal motility.

The Rome IV diagnostic criteria require  $\geq 2$  of the following, occurring at least once a week for a minimum of one month:  $\leq 2$  defecations per week;  $\geq 1$  episode of faecal incontinence a week; retentive posturing; painful or hard bowel movements; large faecal mass in the rectum; and/or large-diameter stools that can obstruct the toilet. However, infrequent stooling in a thriving, fully breastfed baby is not considered constipation and requires only reassurance [3].

Paediatricians and other child care providers manage a large number of children with constipation, a recurrent medical problem that is frustrating to patients, their caregivers, and the health care providers themselves. Most often constipation in children is functional in nature, and only a very small percentage of patients have an organic cause for it. In this review, we discuss the epidemiology, causes, evaluation, and management of children with functional constipation [4].

Although we give our patients many different modalities to treat constipation (eg, diet changes, behaviour modification, probiotics, medication), there is little evidence

to support any of these modalities. We also tend to order unnecessary tests during the diagnostic process. This article tries to clarify the diagnostic process and provide a clear treatment path to be used for functional constipation [5].

## 2. The Purpose of the Research

The purpose of scientific work was to study the frequency of functional constipation in children, a study was conducted to study the frequency of hospitalization of sick children with diseases of the gastrointestinal tract (gastrointestinal tract) in the department of gastroenterology and pediatric surgery of the Bukhara Regional Children's Multidisciplinary Medical Center in the periods from 2018 to 2020.

## 3. Materials and Methods

The analysis showed that during the studied period 43,012 sick children were hospitalized in Bukhara Regional Children's Multidisciplinary Medical Center, of which 8.71% were sick children with gastrointestinal diseases (3745 patients). Among all sick children with gastrointestinal diseases (3745), functional constipation accounted for 7.87% (295 patients).

A retrospective analysis of 3745 case histories of children who received inpatient treatment in the departments of gastroenterology and surgery of the Bukhara Regional Children's Multidisciplinary Medical Center from 2018 to 2020 for diseases of the gastrointestinal tract was carried out. During the analysis, 295 case histories of sick children with chronic constipation were selected.

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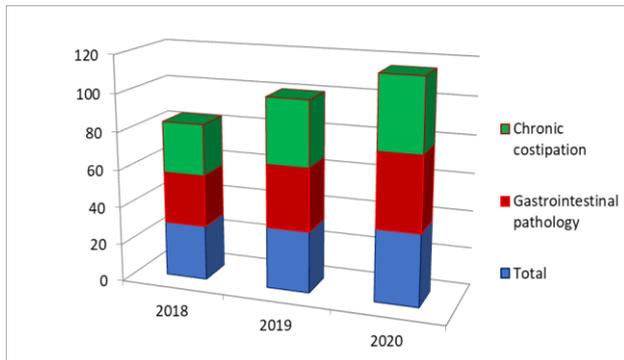
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### 4. Research Results

The results of the study showed that the total number of patients hospitalized in Bukhara Regional Children's Multidisciplinary Medical Center for 3 years amounted to 43012 patients, in 2018 – 12540 (29.2%), in 2019 – 14024 (32.6%) and 2020 – 16448 (38.2%).

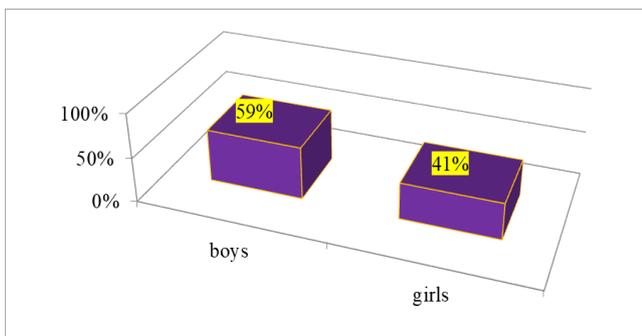
Hospitalization of children for gastrointestinal diseases during the studied period was 3745 (8.7%), in 2018 – 1021 (27.3%), in 2019 – 1246 (33.3%) and 2020 – 1478 (39.4%), respectively, which indicates an increase in gastroenterological morbidity over 3 years (Figure 1).



**Figure 1.** Frequency of hospitalization of sick children with gastrointestinal diseases

The frequency of functional constipation among gastrointestinal pathology was 295 (7.9%) cases, which also indicates a steady growth trend: in 2018 – 80 (27.1%), in 2019 – 102 (34.6%), and 2020 – 113 (38.3%).

In the distribution of patients by gender, boys predominated – 174 (59.0%), compared to girls - 121 (41.0%). In almost all studies, children with constipation had a higher prevalence than boys with constipation compared to girls (Figure 2).



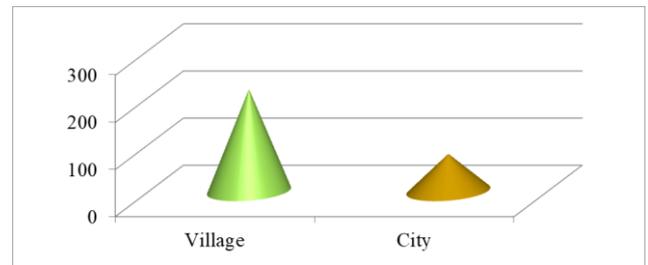
**Figure 2.** Distribution of constipated patients by gender

This may not be the result of a true difference in frequency, but because of the difference in seeking medical advice and treatment.

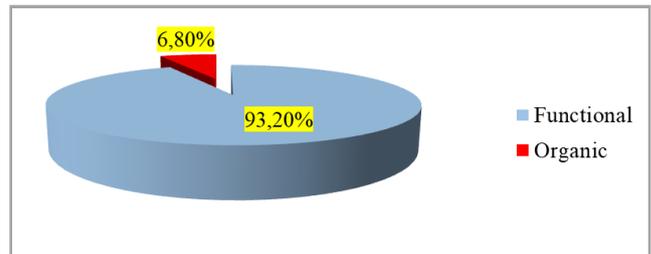
The analysis of data on the place of residence revealed the frequent hospitalization of children living in rural conditions, which amounted to 216 (73.2%), and urban accounted for 79 (26.8%) (Figure 3).

Analysis of the nature of constipation showed the predominance of functional nature. When distributing

constipation by origin, functional constipation accounted for 275 (93.2%), and organic constipation accounted for 20 (6.8%) (Figure 4).

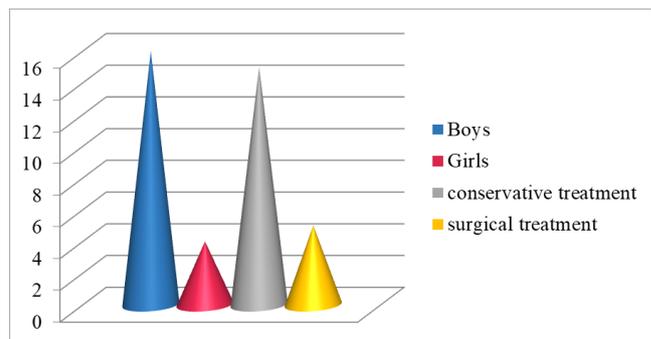


**Figure 3.** Distribution of examined patients by place of residence



**Figure 4.** The nature of constipation in the examined sick children

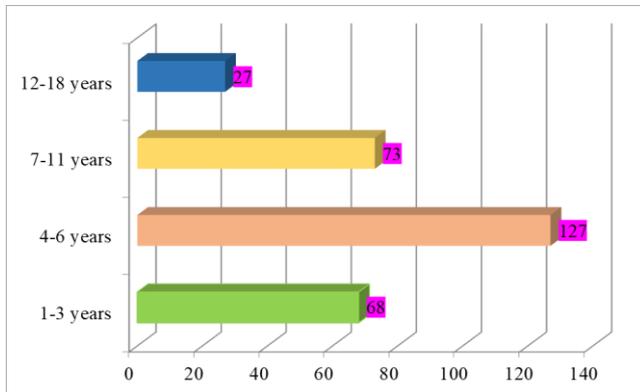
All pathology of organic genesis was represented by Hirschsprung's disease, among which boys -16 (80%), and girls - 4 (20%), 5 of them were operated on (25%), and the rest - 15 (75%) were treated conservatively in the surgical department. Among the operated patients, there were 3 boys (18.75%) and 2 girls (40%), respectively (Figure 5).



**Figure 5.** Gender differences in the frequency of constipation depending on the type of treatment

In the distribution of patients by age categories, preschool children predominated, which amounted to -127 (43.1%) cases. For children aged 1-3 years and 7-11 years, 68 (23.1%) and 73 (24.7%) were almost the same, respectively. The smallest number of patients was at the age of 12-18 years – 27 (9.2%), which is associated with low parental access to medical care and the acquisition of skills to control the frequency of stool, as well as relative adaptation to the pathological condition in children of high school age (Figure 6).

In the early puberty period, functional constipation becomes chronic and in more than 9.0% of cases, patients also need treatment in a hospital.



**Figure 6.** Age category of patients with constipation

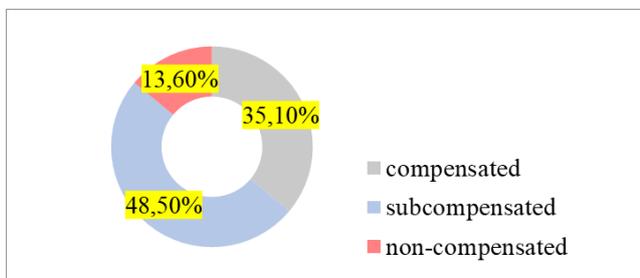
By studying the causes of constipation from anamnestic data, 6 main causal and etiological factors contributing to the development of chronic constipation were identified:

- psychosocial maladaptation in 86 (29.1%), including children going to a preschool educational institution, potty training, fear of defecation after an episode of acute stool retention, the unfavourable emotional atmosphere in the family, stress, etc.;
- autonomic dysfunction syndrome (ADS) – in 78 (26.5%);
- the alimentary factor, represented by an unbalanced diet and insufficient fluid intake, was found in 57 (19.4%);
- intestinal dysbiosis – 38 (12.9%);
- a gastrointestinal form of food allergy – 26 (8.8%);
- inactivity – 10 (3.3%).

To assess the consistency of stool, the Bristol Stool Shape Scale was used [5].

The clinical course of chronic constipation was compensated – stool 1 time in 2-3 days, as a rule, independent, but with a feeling of incomplete emptying and flatulence – 112 (35.1%), subcompensated – stool 1 time in 3-5 days against the background of laxatives and cleansing enema – 143 (48.5%), decompensated – independent stool no, its delay can reach 10 or more days, accompanied by abdominal pain, intoxication, emptying is possible with the use of siphon or hypertensive enemas - 40 (13.6%).

The prevalence of compensated and subcompensated stages of constipation in the examined sick children was established (Figure 7).



**Figure 7.** Clinical stage of constipation in the examined children

This leads to the conclusion that functional constipation affects the quality of life of patients from the age of one year

and is a reason for hospitalization in a hospital.

In our studies, in 128 (43.3%) patients out of all hospitalized, comorbidity with functional constipation was detected (Table. 1), which affected the course of the underlying disease.

**Table 1.** The frequency of comorbidity in functional constipation (m±M)

Pathology	Abs	%
Mild iron deficiency anaemia	60	23
Iron deficiency anaemia of moderate severity	8	3,0
Congenital malformations of the anorectal zone	3	1,1
Conditions after operations for b-ni Hirschsprung, dolichocolones, congenital malformations of the anorectal zone	17	6,5
The complication with faecal incontinence	10	3,8
Hirschsprung's disease	34	13,0
Dolichosigma	28	10,7
Dolichocolon	44	17,0
Megacolon	2	0,7
Pyre's disease	6	2,3
Ectopia ani	2	0,7
Atresia ani et recti	3	1,15
Ani stenosis	6	2,3
Hilaiditi syndrome	1	0,3
Cardiac arrhythmia	1	0,3
Reactive hepatitis	9	3,4
Cholecystocholangitis	4	1,5
Hepatosplenomegaly	2	0,7
Ascites	1	0,3
Pyeloectasia of the kidneys	3	1,15
Pyelonephritis	3	1,15
Hydronephrosis of the kidneys	4	1,5
Perinatal encephalopathy	1	0,3
Diffuse goitre	2	0,7
Enuresis	1	0,3
Salts in the kidneys	1	0,3
Encopresis	1	0,3
Thrombocytopathy	1	0,3
Adenoids	1	0,3
Short bridle of the tongue	1	0,3
Total	260	

Thus, based on the results of the study and the study of the regional characteristics of chronic constipation in the Bukhara region, it was found that chronic constipation accounts for 7.9% of cases among all gastrointestinal pathology in children when distributed by gender and place of residence, boys living in rural areas aged 4-6 years are more likely to suffer. Functional constipation prevails by origin – 93.2% of cases, among the causal factors, the highest frequency is represented by psychosocial maladaptation and ADS, according to the clinical course 48.5% of all chronic constipation, among hospitalized patients subcompensated.

## 5. Conclusions

All this confirms the importance of preventive measures to prevent chronic constipation in children at risk. The conditions for the effectiveness of constipation treatment and improvement of the patient's quality of life are the interaction of the doctor and the patient in choosing the timing of surgical correction suitable for each individual child with Hirschsprung's disease, as well as the optimal management tactics for functional constipation.

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## Conflicts of Interest

The authors report no conflicts of interest.

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