

## PREDISPOSING FACTORS FOR CHRONIC CONSTIPATION IN CHILDREN – 2-YEAR CLINICAL STUDY

Claudia Olaru<sup>1</sup>, Smaranda Diaconescu<sup>1</sup>, V.V. Lupu<sup>1</sup>, Nicoleta Gimiga<sup>1</sup>,  
Gabriela Padurarur<sup>1</sup>, Ancuta Ignat<sup>1</sup>, Gabriela Ciubotariu<sup>1</sup>, Vasile Drug<sup>2</sup>,  
Marin Burlea<sup>1</sup>

<sup>1</sup>Department of Pediatrics, „St. Mary“, Children Emergency Hospital,  
„Gr. T. Popa“ University of Medicine and Pharmacy, Iasi

<sup>2</sup>Institute of Gastroenterology and Hepatology,  
„Gr. T. Popa“ University of Medicine and Pharmacy, Iasi

### ABSTRACT

In the last decade constipation has become a current problem addressed in the pediatric gastroenterology departments.

**Objectives.** We propose a study to establish the prevalence of constipation and the correlations between diet and the socio-familial environment in children aged from 1 to 17 years old, hospitalized in the Gastroenterology Department, „Saint Mary“ Emergency Hospital for Children of Iasi, between 1 January 2012 and 1 January 2014

**Results.** The study group consisted of 994 patients, representing 9.6% of all hospitalized children. Regarding the prevalence of constipation, we did not notice a significant difference between the sexes, the ratio F/M was 1.3/1, but we found a significantly higher proportion of patients from urban areas 68% (676) versus 32% (318) from rural areas. In terms of social and family environment: 34% (338) of children live with grandparents, 13.9% (139) come from single-parent families, 6.7% (67) are in the care of a foster parent and 2.6% (26) come from orphanages. In the group studied a low percentage of children were breastfeed, respectively 26.2% (261) in the first month, 10.7% (107) for 3 months, while at 6 months 98.1% (976) of children received a milk formula. Diversification was done incorrectly in the case of 41% (408) patients. Only 14.6% (145) reported daily consumption of fruits and vegetables, while 51.1% (508) had dinner at least once a week at fast food restaurants. 21.6% (214) practice sport at least 2 hours/week, while 48.7% (484) spend at least 3 hours/day watching television. 12.8% (128) of patients are overweight and 5.7% (57) obese.

**Conclusions.** Constipation is a condition that affects children of all ages. There are not notable differences between the sexes. An increased proportion of urban patients with predominance of inadequate diet, physical inactivity and an increased proportion of overweight patients was found. The socio-familial environment has an important role in the psychological changes.

**Keywords:** constipation, encopresis, child

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### INTRODUCTION

Constipation is an important public health problem due to its impact on patients, influencing their productivity and welfare. In recent years pediatricians have encountered a spectacular growth of cases occurred in children of all ages.

Corresponding author:

Smaranda Diaconescu, „Gr. T. Popa“ University of Medicine and Pharmacy, 16 Universitatii Street, Iasi

E-mail: turti23@yahoo.com

## OBJECTIVES

We propose a study to establish the prevalence of constipation and the correlations between diet and the socio-familial environment in children aged from 1 to 17 years old, hospitalized in the Gastroenterology Department, „Saint Mary“ Emergency Hospital for Children of Iasi, between 1 January 2012 and 1 January 2014

## MATERIAL AND METHODS

We performed a prospective study including children diagnosed with chronic constipation, as defined by the Rome III criteria. According to the Rome III criteria (2006) constipation is manifested by: 2 or fewer bowel movements per week; at least 1 episode of fecal incontinence per week; a history of adoption of voluntary retention posts or excessive retention of feces; difficult removal or disposal of faeces of increased consistency; presence of faeces in the rectum; removal of faeces of increased diameter. Functional Constipation is diagnosed in children aged 0-4 years if at least 2 criteria were present in at least 1 month and in children over 4 years if at least two criteria were present at least 1 time per week for a minimum 2 months.

Both parents and children were asked to answer a questionnaire which included data on: family history, type of food and diversification method, physical activity, time spent watching TV/computer and socio-familial environment.

The study group consisted of 994 patients representing 9, 6% of hospitalized children. The investigational protocol included: history, clinical examination, rectal examination and blood counts tests, inflammatory evidence, urinalysis and abdominal echography. Other laboratory investigations focused on exclusion of organic diseases that could cause constipation. In this aspect, depending on the clinical context, various tests were performed: thyroid hormones, transglutaminase antibodies, calcium and potassium levels and occult bleeding test.

## RESULTS

Regarding the prevalence of constipation we did not notice a significant difference between the sexes, (M=47.24%, F= 52.76%) (Fig. 1). Instead we found a significant proportion of patients from urban areas 68% (676) versus 32% (318) in rural areas (Fig. 2). In terms of social and family environment: 34% (338) of children are living with grandparents, 13.9% (139) come from single parent

families, 6.7% (67) are in the care of a foster parent and 2.6% (26) come from orphanages (Fig. 3). In the study group we observed that a low percentage of children were breast fed respectively 26.2% (261) in the first month of life, 10.7% (107) for 3 months to 6 months while 98.1% (976) of the children received milk formula. (Fig. 4). Diversification was done incorrectly in case of 41.3% (408) patients in the 3<sup>rd</sup> month of life. 38 children received gluten from the 6<sup>th</sup> month. In terms of eating habits, in the age group 1-3 years, we noticed an increased intake of cow's milk, mothers reporting about 4 bottles/day. Both in young children and adolescents

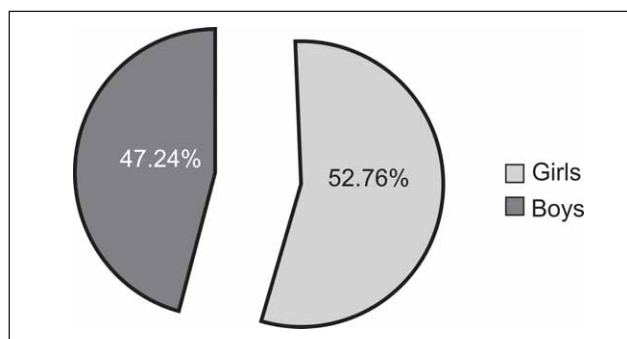


FIGURE 1. Sex distribution

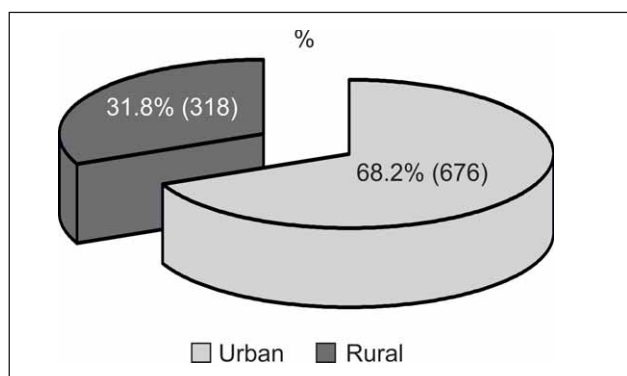


FIGURE 2. Distribution by origin area

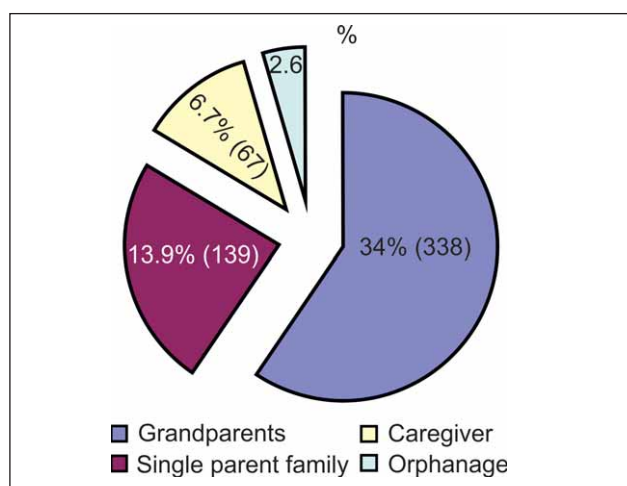


FIGURE 3. Socio-familial environment

we observed a predominant fast food nutrition with low intake of fruits and vegetables and physical inactivity. Only 14.6% (145) reported daily consumption of fruits and vegetables, while 51.1% (508) take dinner at least once a week at fast food. 21.6% (214) practice sport at least 2 hours/week, while 48.7% (484) spend at least 3 hours/day watching

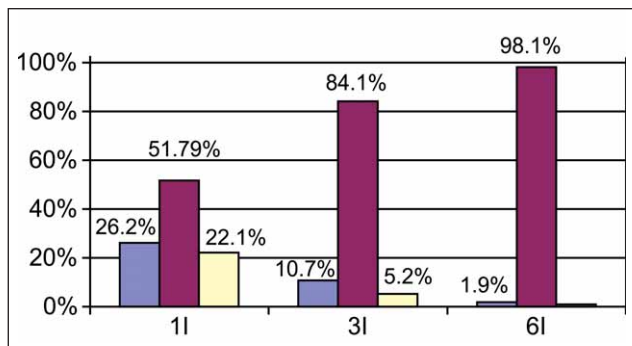


FIGURE 4. Type of food

television. In the study group 12.8% (128) of patients are overweight and 5.7% (57) obese (Fig. 5). Symptoms of constipation were associated in 78% of cases with abdominal pain in 13% of cases with hypotrophy, 11% were associated with rectal bleeding and 9% with encopresis. (Fig. 6) A digital rectal exam was conducted in case of 654 patients. 6 showed rectal prolapse, 34 had anal fissures and 76 associated rectal bleeding.

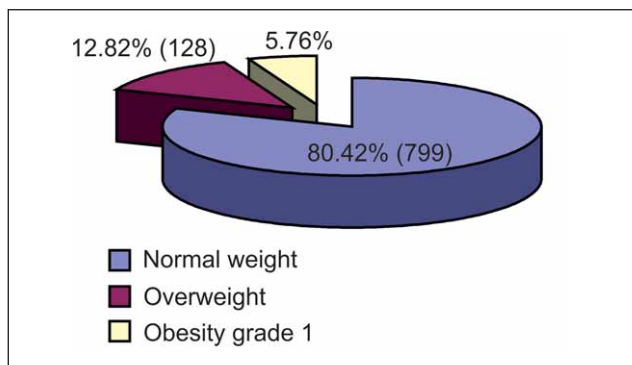


FIGURE 5. Nutritional status

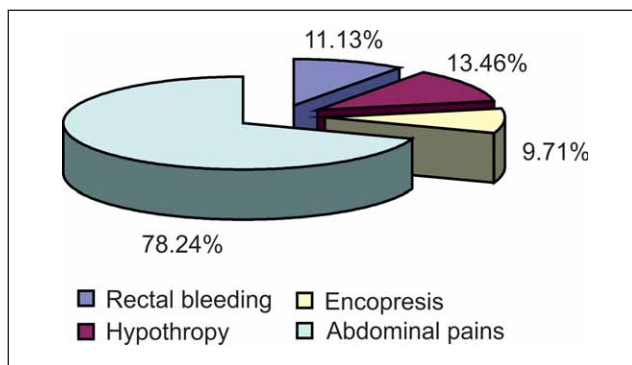


FIGURE 6. Associated symptoms

## DISCUSSION

A variety of factors have been identified as being predisposing for constipation during early childhood, including: genetic predisposition, (1) toilet training education started too early, (2) Food transition from breast milk to formula (3) or from liquid to the solid meals, (4) pain at defecation, (5) or school beginning (6).

So far, there have been no studies regarding the frequency and importance of such events. Between 1958 and 1986, the number of physician visits of children aged 0 to 9 years for constipation doubled, while the highest increase occurred in terms of children younger than 2 years. (7,8) It is unclear whether this increase reflects an increase of constipation frequency or a greater desire of parents to seek medical care. Some authors attributed this apparent increase in the incidence of constipation to some changing patterns of toilet training. (8) Others have hypothesized that constipation is becoming more widespread because of a decreasing food fiber intake associated with modern processing methods. (9) The data obtained indicate that in most cases children develop constipation as a result of pain occurred at defecation, rather than as a result of external factors such as family history, age, toilet training, or other forms of physical or mental trauma. When parents were asked to describe the factors that occurred within 3 months after the onset of constipation and which they believe could trigger constipation, the majority reported pain at defecation as a causal factor. This study results suggest that tutors should receive recommendations on prevention, early recognition and early intervention in treating constipation. Parents should be counseled for signs of constipation and the presence of pain on defecation and to promptly respond by encouraging children to go to the toilet more frequently, by changing the child’s diet or the use of osmotic laxatives.

## CONCLUSIONS

Constipation is a condition that affects children of all ages. There are not notable differences between the sexes. In most cases the etiology is functional, being the result of voluntary retention of the faeces. An increased proportion of urban patients with predominance of inadequate diet, physical inactivity and an increased proportion of overweight patients was found. The social and family environment plays an important role in the psychological changes.

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