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**STUDY THE PREVALENCE OF CONSTIPATION IN GORGAN PRIMARY SCHOOL
AGE CHILDREN USING ROME III QUESTIONNAIRE IN 2011**

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ABSTRACT

This study aims to evaluate the prevalence of constipation in Gorgan primary school age children in 2011, using ROME III questionnaire. This is descriptive- analytic study. All primary school students constituted statistical population that was selected using random sampling. 262 persons were selected as sample size based on previous studies. Diagnostic criteria included Rome III diagnostic criteria. After data entry into computer, data were analyzed by SPSS-16 software and X2 test was used in order to examine the relationship between variables and prevalence of constipation and Fisher's exact test was used when it was necessary. According to results of this study, 72 participants (10.3%) were diagnosed with constipation. The prevalence of constipation in children who were a third child or above was more compared to first or second children of families. Constipation in children who were educated in public schools was more compared to children who were educated in non-profit schools.

Keywords: Constipation, Rome III diagnostic criteria and Gorgan city

INTRODUCTION

Inorganic constipation (functional) is a common reason of abdominal pain in children and has a prevalence equal to 4-36% (1, 2) and includes approximately 3-5% of medical visits. One third of 6-12 years children suffer from constipation at least once a year. 95% of children referred for constipation evaluation don't have underlying problem and ultimately, functional constipation identify is chosen for them (1, 3). The factors that have been implicated in constipation include low intake of dietary fiber, psychological factors, stressful factors and unstable parental relationships (3). According to ROME II criteria, functional constipation diagnosis between 4 to 18 years is due to 2 or more of the following cases within 1 month before diagnosis (2): Defecation of twice or less within a week

- Incontinence of defecation for at least once a week;
- A history of severe prevention from defecation;
- A history of stiff or painful defecation;
- The presence of large fecal mass in rectum;
- A history of large fecal that obstructs the toilet.

Listed criteria are somewhat different for children below 4 years.

Constipation can lead to physical and psychological complications such as depression, anorexia, anxiety, anal fissures

and rectorrhagia. Even if constipation has no major cause in child, since it can result in incontinence of loose defecation and dirty shorts (which often happen) could further delay the child's social development (4).

Important of constipation is not only due to its prevalence, but is due to the fact that it may be the first sign of a serious patience and threatening factor for child's life and needs further investigation; in this regard this study was done in order to examine the prevalence of constipation in Gorgan primary school age children using Rome III questionnaire in 2011.

METHODOLOGY

This is descriptive- analytic study. All Gorgan primary school students constituted statistical population that was selected using random sampling. 262 persons were selected as sample size based on previous studies.

Firstly, coordination with Education Department of Gorgan was applied and they went to primary schools of city and asked officials to distribute questionnaires between school classes and demand students to complete the questionnaires with their parents. Diagnostic criteria included Rome III diagnostic criteria. After data entry into computer, data were analyzed by SPSS-16 software and X2 test was used in order to

examine the relationship between variables and prevalence of constipation and Fisher's exact test was used when it was necessary. $P < 0.05$ was considered as significance level. Children whose diagnosis was confirmed were referred to pediatric gastroenterologist for further testing and possible treatment. Patient characteristics were protected by project executor.

Data analysis

A total of 702 children were enrolled. According to results of this study, 72 participants (10.3%) were diagnosed with constipation. The mean age of subjects was 9.68 years and standard deviation was 1.5 years. In total, 452 of participants (64.4%) were female and 250 (35.6%) of them were male. Approximately 81% of participants lived in families with 3 children or less. Approximately 58% of participants lived in families with 2 children or less. About 75% of participants were first or second child.

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lived in families with 3 children or less. Approximately 58% of participants lived in families with 2 children or less. About 75% of participants were first or second child.

67.8% of children were with BMI (body mass index less than 18.5) and 27.9% were with NBM I (body mass index between 18.5-25) and 4.3% were with BMI in the range of 25 or higher (overweight & obese).

In Table 1, the frequency of constipation was according to father's education level and the highest prevalence was in below diploma group. Differences in constipation prevalence were significant in terms of father education.

62 female (13.7%) and 10 male (4%) participants were suffering from constipation and this difference was statistically significant (P -value < 0.001).

The prevalence of constipation in children who were third child or above was more compared to children who were first or second children, but this difference was not significant (P -value = 0.36).

24% of parents of children with constipation were aware of their children defecation problem.

Among 34 (24%) of parents who were aware of their child's problem, only 50% referred to doctor for their child treatment.

The prevalence of constipation in children who have had a positive family history of this

disease (27.6%) was higher significantly compared to other children (8.1%). (P-value< 0.001)
 Constipation in children who educated in public schools was higher compared to children who educated in non-profit schools

(11.1% vs 8.3%), but the difference was not statistically significant. (P = 0.16).

As can be seen, the prevalence of constipation was not significantly different due to weight, height and body mass index in children.

Table 1: Distribution of study participants in terms of father education level

Literacy level	Percent	Number
Illiterate	13.5	95
Sub- diploma	53.3	374
Diploma	23.4	164
College education	9.8	69
Total	100	702

Table 2: Prevalence of constipation in children by weight

Constipation	More than 30kg		Less than 30kg		P-value
	Percent	Number	Percent	Number	
Ok	9.2	33	11.3	39	0.21
No	90.8	325	88.7	305	
Total	100	358	100	344	

Table 3: Prevalence of constipation in children by height

Constipation	More than 130cm		Less than 130cm		P-value
	Percent	Number	Percent	Number	
Ok	8.7	34	12.3	38	0.07
No	91.3	359	87.7	271	
Total	100	393	100	309	

Table 4: Prevalence of constipation in children by BMI

BMI	25 and over		18.5-25		Less than 18.5		P-value
	Percent	Number	Percent	Number	Percent	Number	
Constipation							0.09
Ok	13.3	4	10.7	21	9.9	47	
No	86.7	26	89.3	175	90.1	429	
Total	100	30	100	196	100	476	

DISCUSSION AND CONCLUSION

This study aims to determine the prevalence of constipation in Gorgan primary school age

children. According to results of this study, 72 participants (10.3%) were diagnosed with constipation. It included 62 female (13.7%)

and 10 male (4%) and it was statistically significant. The prevalence of constipation in children whose fathers have higher diploma education is less than children whose fathers have below diploma education and the results show a significant relationship between these two.

the prevalence of constipation was very various in different studies; as this frequency was 25% in study of Del campo (5), 85% in study of Khanna (6) and it was less in some West studies, as in America studies it was 3.2% (7). The statistical differences of various studies can be found in factors such as selecting different diagnostic criteria, various methods of statistical analysis, difference in statistical sampling, environmental- economic social conditions of communities, location geography, nutrition and other issues affecting the condition.

In study of Rafii et al in Tabriz and in Hong Kong (9, 10), the overall prevalence of constipation in children was very high (43% and 36%, respectively) while, in another study in Hong Kong (11) and in Sri Lanka (12) who used Rome III criteria, the prevalence of constipation was reported (10.7 and 12.2%) that are closer to our results (10.3%). This statistical difference may be justified by different sampling, data collection

and statistical methods and selection of diagnostic criteria.

Since the most of data obtained from studies using Rome III diagnostic criteria are closer to our results, it can be concluded that in developing countries having almost the same living conditions, the criteria can be efficient and be used for diagnose.

Gender is one of the factors influencing the prevalence of constipation. In some studies, like Karami (13), Hong Kong (11) and Brazil (8), gender difference is not observed between male and female. The results of our study showed that the prevalence is 13.7% in female compared to 4% in males, respectively. In Karami study (14), the prevalence is reported higher in girls, while in some studies, such as Turkey (15), the difference was not significant statistically despite the fact that the frequency was a little high in female. Higher prevalence of constipation is justified in female due to risk of urinary tract infection as predisposing factor and psychological characteristics and sensitivity of girls in using public health services.

Children below 6 years in Turkey (15) and in study of Karami (14), children from 1 month to 15 years who participated in study and in study of Taiwan (16) and our study, primary school age children were examined. It can be

concluded that factors such as age are involved in determining the frequency of constipation in both sexes. As it is seen in Karami study (14), more prevalence can be seen in ages below 1 year; in Turkey study (11) where children 0-6 years are examined, the highest prevalence is related to ages 37-72 months; in Taiwan (16) study where 7-12 year age group is studied, most frequency is related to age range of 7 and 8 years with prevalence of 39.6%. In a study of Hong Kong (14) where Rome III criteria are used on primary school age children, most prevalent is associated with children between 6 -7 years but in study of Sri Lanka (13), preferable frequency is related to 12 years but in our study, which was conducted on children 6-15 years, all children are divided into below 10 years and children above 10 years and no significant difference is observed in constipation frequency by age.

We study constipation frequency in children, according to educational level of parents and birth rank of children. According to results, the prevalence of constipation in children whose fathers are diploma or have higher education (university) is significantly less than other children ($P < 0.001$). The prevalence of constipation in children whose mothers are diploma or have higher education (university) is less than other children whose

mothers have below diploma education level but this difference is not statistically significant. Previous studies have reported no relationship between prevalence of constipation and parents' education. It seems that higher education is effective in reducing the incidence of constipation due to more familiarity with disease symptoms and the importance of children issues.

Some studies have studied the relationship between BMI and prevalence of constipation in children; for example, in Taiwan (16) study the prevalence of constipation is significantly in children with BMI 17.5 higher than children with BMI 18.5; in America study, the prevalence of constipation is higher in obese children (17), while in a study of Hong Kong (14) there is no significant relationship between frequency of constipation in children with low and high BMI. In our study, there is no significant relationship between the prevalence of constipation in children with different BMI.

according to results, the prevalence of constipation in children whose birth order is third or higher is more than first or second children but the difference is not statistically significant ($P = 36.0$). No relationship is reported in previous studies between prevalence of constipation and birth order. However, family, social and nutrition

conditions have been studied, for example, in study of Hong Kong (14), prevalence of constipation is significantly higher in children who are not living with either parent, children whose parents have not been liable or have not have proper conditions in family. Brazil (7) study results confirm this and have considered social, environmental, family, lifestyle and children's nutrition conditions as important factors affecting the incidence of constipation. One of the factors affecting the differences of constipation prevalence in various countries is such factors. As in our study, the prevalence of constipation in children who are educated in public schools 11.1% is more than children who are educated in non-profit schools 8.3%. However, this difference is not significant statistically. Any factor that reduces the parents' attention to child is the reason of physical problems in children and children number and rank are among these factors.

Compared to other studies and according to the results of this study, the prevalence of constipation in children who have had positive family history of disease (27.6%) is significantly higher than other children (8.1%). In a study of Sri Lanka (13), the prevalence of 49% is higher than 14.8% prevalence in children with a positive family history.

In our statistical calculations, we find that 24 percent of children parents (34) with constipation were aware of their children defecation problems and only 50% were referred to doctor for medical treatment of their children. While in study of China (2), 42% of parents are aware of their child's problem and this confirms the need for education of parents in order to pay more attention to health of children.

One limitation of present study is no investigation of organic reasons in constipation children. However, children who had a constipation diagnosis were referred to a specialist for further review. In addition, the age of symptoms onset was not evaluated in children. This can be considered in future studies in order to investigate the reasons of constipation.

As it is seen, numerous issues can affect the statistical calculations of constipation incidence that formulation of fundamental precise diagnostic criteria is the first and most important. For diagnosis, treatment, training and follow-up child health, it is essential to consider all effective conditions including child age, the family, social, economic, nutritional, birth rank, education conditions, genetic issues and family history of disease.

Constipation is the major and complicated diseases of children and its prevalence can be

reduced by different ways. Recurrent education through media and the relationship between schools and parents is one of these methods. Screening schools and feedback to parents and informing the predisposing factors can be used.

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