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Original Article

Quality of Life and Psychiatric Comorbidity in Children and Adolescents with Functional Constipation: A Case-Control Study

Hamidreza Kianifar [1], Paria Hebrani [2], Fatemeh Behdani [2], Mohammad Naser Dadpour [3], Hasan Karami [4], Atieh Mehdizadeh [5*]

[1] Associate Professor, Department of Pediatric Gastroenterology, Mashhad University of Medical Sciences, Mashhad, Iran
[2] Associate Professor, Department of Child and Adolescent Psychiatry, Mashhad University of Medical Sciences, Mashhad, Iran
[3] Mashhad University of Medical Sciences, Mashhad, Iran
[4] Associate Professor, Department of Pediatric Gastroenterology, Mazandaran University of Medical Sciences, Sari, Iran
[5] Department of Nutritional Sciences, Mashhad University of Medical Sciences, Mashhad, Iran

ABSTRACT

Background:
The behavioral and psychological problems associated with chronic constipation include a wide range of disorders, which lead to impaired quality of life. The purpose of the current study was to evaluate psychiatric disorders and quality of life in children and adolescents suffering from chronic functional constipation.

Materials and Methods:
In a case-control clinical trial, 55 children and adolescents with functional constipation and 55 individuals without constipation were included into case and control groups, respectively. After taking medical history and physical examination, three questionnaires including demographic information, pediatric quality of life (PedsQL) questionnaire, and strengths and difficulties questionnaire (SDQ) were provided to parents, children, and adolescents. Collected data were coded and analyzed using SPSS software.

Results:
The mean child self-reported and parent-reported scores of PedsQL were 54.67±3.9 and 49.86±3.2 in the case group, while it was 63.26±4 and 66.09±3.4 in the controls. Only parent-reported quality of life score was statistically different among case and control participants (p =0.014). The emotional performance of quality of life was statistically different based on both self and parents' reports (p=0.016 and 0.024, respectively). Total SDQ score was in abnormal levels in 93% and 83% of the case and control participants, which was insignificant (p =0.631). There was no statistically difference in SDQ subgroups between the two groups.

Conclusion:
Quality of life and emotional performance are impaired in children with functional constipation and they should be screened for consequent disorders. Treatment and management of these patients can be improved through evaluating constipation related indices, quality of life, and referring at risk patients to related specialists

Keywords: Constipation, Quality of life, Children, Adolescents

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Corresponding author:
Atieh Mehdizadeh, MD
Department of Nutrition, School of Medicine,
Azadi square, Mashhad, Iran
Tele: + 98 51 38002423
E-mail: mehdizadeha921@mums.ac.ir

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INTRODUCTION

Chronic constipation is considered as one of the most common disorders with an estimated prevalence of 1-30% (median 10.4%)(1). Functional constipation is mainly characterized by a defecation of hard and large stools with decreased frequency, besides often painful defecation in the absence of an underlying organic cause(2). Chronic stool retention can lead to urinary tract pathologies, recurrent abdominal pain, and psychological problems in

addition to distress and discomfort in family members (3). Moreover, almost 84% of children with constipation suffer from frequent episodes of fecal incontinence due to overflow caused by fecal impaction (4).

Quality of life especially during chronic diseases is recently becoming a center of attention among health providers and researchers. Even there are advices regarding incorporating behavioral and quality of life screening into diagnostic evaluations (5). Functional constipation and consequent fecal incontinence cause concern and inconvenience for both child and his/her family (6-8).Sometimes children experience feel of shame and embarrassment that might be manifested through behavioral problems, both internalizing (such as social withdrawal, depression, and anxiety) and externalizing (such as violent behavior and aggression) (9.10). Children with constipation may appear quiet, embarrassed, angry and withdrawn, during medical evaluation when compared to patients who suffer from other chronic gastrointestinal disorders (11). Denial of the symptoms is common in constipated children (12). Although appropriate treatments have been associated with fading behavioral problems, (13) about 1:3 of these children continue to have constipation into adulthood despite treatment and follow-up (14).

It is believed that patients with chronic disorders such as constipation are more concerned about their quality of life and probable disability (15).

Furthermore, impaired quality of life can more reliably predict the health care requirement of the patient. Although functional constipation is not usually associated with life threatening clinical problems, this condition can remarkably impair the quality of life in children and adolescents who chronically suffer from functional constipation (16), especially in those who have constipation along with fecal incontinence (17). There are different instruments for assessing health-related quality of life (HRQoL), generally or disease-specifically. General HRQoL instrument focuses on more general changes in patient's daily functioning, while disease-specific HRQoL instrument evaluates the burden of the disease with less attention to general functioning. Therefore, regardless of the time consumed, combination of general and disease-specific tools is optimal(18).

The current study was operated to assess the quality of life in children and adolescents with chronic functional constipation and to compare the scores with control counterparts.

MATERIALS AND METHODS

In a case-control observational study in Qaem Hospital, Mashhad, Iran, children and adolescents aged between 5-18 years, with functional constipation that was approved by a pediatric gastroenterologist were enrolled. Sampling method was non-random purposeful. Considering 95% confidence interval and 80% power, the sample size was calculated as 55 in case group. Therefore, 55 participants were also included as controls (a total of 110 participants). Inclusion criterion for the patients in the case group was approved functional constipation, while those with organic constipation, other internal chronic diseases, neurological disorders, and mental retardation were excluded. The study was approved by the Ethics Committee of Mashhad University of Medical Sciences.

Functional constipation was defined as less than three times defecation per week, in addition to the presence of palpable abdominal or rectal fecal mass and absence of any organic reasons such as inappropriate diet and gastrointestinal and urogenital disorders. The control group consisted of apparently healthy children and adolescents aged between 5-18 years, without functional or organic constipation who were referred to the same pediatric clinic due to other reasons. The participants of the both groups were matched for age, sex, education, salary level of parents, and the number of family members.

After taking an informed consent from the parents, three questionnaires were answered by the parents and filled by a trained nurse who was unaware of the group (case or control) of participants. The first questionnaire contained questions related to demographic characteristics. The second questionnaire was "pediatric quality of life questionnaire" (PedsQL), which is a general sufficiently detailed instrument and specifically addresses physical, emotional, social, and school functioning in children and adolescents with parallel child and parent report versions. It contains 15 questions. Each question has four multiple answers: never (frequency of 0%), almost never (frequency of 0-25%), sometimes (frequency of 25-50%), often (frequency of 50-75%), and always (frequency of 100%).

Table 1: Demographic characteristics of the participants

Variables		Case No. (٪)	Control No. (٪)
Age (year)	2-4	28 (50.9)	26 (47.3)
	5-12	26 (47.3)	27 (49.1)
	13-18	1 (1.8)	2 (3.6)
Sex (females)		27 (49.1)	24 (43.6)

"Strength and difficulties questionnaire" (SDQ) that has self- and parent-reported versions, was also answered by all parents and those children over the age of 13. SDQ evaluates the behavioral symptoms in children and adolescents and contains 25 questions that focus on five fields of conduction, hyperactivity, peer interactions, and emotional and social encounters. Total score of all items in parent-reported SDQ was finally categorized into normal (0-13), borderline (14-16), and abnormal (17-40) levels. These scores were 0-15, 16-19, and 20-40, respectively for self-reported SDQ.

Validity and reliability of all questionnaires used in the current study were repeatedly approved through several previous studies in Iran and other countries (19-23).

Data were analyzed using SPSS software version 16 and described as mean ± standard deviation. Chi-square test, independent samples t test, and analysis of variance or non-parametric equivalents (in case of abnormal distribution) were used for data analysis. Confidence interval was considered as 95%.

RESULT

A total of 110 children (55 in each group) were enrolled and all of them completed the study. Demographic characteristics of the participants are presented in table 1. No significant difference was detected between the participants of both groups regarding age and sex (Chi-square, p=0.5, and 0.3, respectively).

PedsQL Questionnaire

The quality of life scores based on self and parents' reports and the difference between the scores are presented in table 2.

Compare means analysis revealed a significant difference in parent proxy-report scores between the case and control groups independent samples t test, p=0.01), while self-report scores were not significantly different (independent samples t test, p =0.13)

To look more precisely, analysis of the quality of life in four different fields of children's function indicated that emotional function was significantly lower in children with functional constipation according to both self and parents' reports (p=0.01, and 0.02, respectively). Although case group showed poorer performance in three other fields compared with the control group, these differences were not statistically significant.

SDQ Questionnaire

Since there were few adolescents over age of 13 in the current study, SDQ was only handed over the parents. The parents of 39 participants (15 cases and 24 controls) answered the SDQ questionnaire. Scores in each field of behavioral function and the comparison analysis among the case and control participants are summarized in table 3. Insignificant difference was existed between SDQ scores among the case and control participants.

DISCUSSION

The current case-control observational study indicated that chronic functional constipation was associated with lower quality of life in children and adolescents. Total PedsQL scores and emotional functioning were significantly lower in patients of the case group compared with the control participants. SDQ scores did not show any difference among the two groups.

Quality of life can be explained as "the person's sense of well being and satisfaction with his/her general condition and life" (24). This perception of well being has many components and can be defined in different aspects of an individual's life, such as physical ability, emotional and social interactions, and education. Quality of life especially during chronic diseases such as functional constipation is recently becoming a center of attention among health providers and researchers. Many physicians prefer to improve the patients' quality of life and sense of well being in addition to medical treatments.

Constipation is one of the suffering and unpleasant conditions in childhood, which is often associated with lowered self-esteem, impaired adaptive skills, and emotional disorders. Based on previous literature, constipation obviously impairs both mental and

Table 2: Scores of quality of life among the case and control participants (PedsQL questionnaire)

PedsQL fields of functioning		PedsQL score (mean±standard deviation)		*p* value
		Case	Control	
Physical	Child-report	58.2±5.0	66.0±4.5	0.47
	Parent-report	55.3±2.3	67.4±4.3	0.19
Emotional	Child-report	42.8±5.2	61.7±5.4	0.01
	Parent-report	40.0±4.6	57.3±5.8	0.02
Social	Child-report	69.2±5.1	74.3±4.7	0.47
	Parent-report	67.5±5.3	77.9±3.9	0.17
School	Child-report	48.2±6.5	50.9±7.1	0.77
	Parent-report	36.4±5.6	61.6±7.4	0.11
Total	Child-report	54.6±3.9%	63.2±4.0	0.13
	Parent-report	49.8±3.2%	66.0±3.4	0.01

*Independent samples t test

Table 3: Frequency distribution of SDQ indices in the case and control participants and the results of comparison analysis

SDQ fields of functioning		Number of participants (٪ of each case or control group)						*p* value
		Case participants			Control participants			
		Normal	Borderline	Abnormal	Normal	Borderline	Abnormal	
Emotional	Parent-report	3(20)	2(13)	10(67)	9(37)	6(25)	9(37)	0.20
Conduction	Parent-report	4(27)	4(27)	7(46)	10(42)	3(12)	11(46)	0.44
Hyperactivity	Parent-report	8(53)	1(7)	6(40)	11(46)	5(21)	8(33)	0.49
Peer interactions	Parent-report	8(53)	1(7)	6(40)	15(63)	2(8)	7(29)	0.78
Social encounters	Parent-report	14(93)	0	1(7)	18(75)	2(8)	4(17)	0.30
Total score	Parent-report	0	1(7)	14(93)	0	4(17)	20(83)	0.63

* Chi-square

physical components of quality of life in children and adolescents (24), which is more considerable than other chronic disorders such as gastroesophageal reflux (GERD), and inflammatory bowel disease (IBD) (26). This fact approves the importance of improving quality of life as a therapeutic goal in the management of chronic constipation.

PedsQL score was lower among children with constipation compared with the control participants based on both parent- and self-reports, while this difference was significant only in parent-report. According to a previously published systematic review, similar studies that applied short form-36 and short form-12 versions of PedsQL as generic tools, generally reported impairment of general health, social functioning, and mental health in children. Based on their results, significant effect of constipation on quality of life is comparable with other disorders including allergies, musculoskeletal problems, and IBD(27). In another study that specifically considered the effects of functional constipation on quality of life in middle-aged black Americans, vitality, bodily pain, social functioning, and role-emotional scores were lower in patients with constipation compared with healthy controls. Following adjustment for comorbidities, they revealed a significant negative effect of functional constipation especially on mental component of the quality of life(28).

Varni and colleagues reported that patients with chronic gastrointestinal problems spent more school

days in bed, needed more care and care facilities, had parents who missed more working days and totally had lower quality of life in all dimensions of functioning, which all these were in larger effect size in children with functional diseases compared with those with organic disorders(29). Components of physical, emotional, social, and school functioning scores of HRQoL questionnaire were also lower in Chinese children with functional constipation compared with healthy children. These components were suggested to be influenced by children's ages, duration and symptoms of constipation, child-caregivers relationship, family economic status, and caregivers' educational level (30) Moreover, a school-based study on 138 children with constipation reported significant lower HRQoL scores in all four domains of functioning(31).

It has been indicated that parent-report scores in HRQoL questionnaire, which is another general instrument for assessment of life quality in children are lower than their children as well, even in other chronic diseases, particularly in the domains of emotional and social functioning(27). Several reasons may be associated with the fact that why parents report a lower quality of life. Parents usually consider the frequent complaints of their children and the duration of their symptoms as quality of life determinants, while children mainly focus on their physical ability and peer interactions. This lower parental perception of their children's quality of life might indicate the remarkable impact of chronic constipation on the family members and the difference between adult and child assessment(32). Another explanation to this finding is that in parents' point of view, the severity of condition and their child's inconvenience is higher than what the child him/herself understands. Moreover, the psychological defense mechanisms such as denial should not be ignored, especially in self-reports of adolescents with chronic constipation.

CONCLUSION

Quality of life and emotional performance in children and adolescent with functional constipation. are impaired. According to total PedsQL questionnaire scores, emotional functioning is highly influenced in these patients. Treatment and management of patients with functional constipation can be improved through evaluating constipation-related indices, quality of life, and referring at risk patients to related specialists.

CONFLICT OF INTERESTS

The authors declare no conflict of interest related to this work.

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