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Original Research Article

A Hospital-Based Case Control Study Assessing the Impact of Functional Constipation on Quality of Life of Paediatric Patients

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Abstract

Aim: The aim of the present study was to investigate the health-related quality of life (HRQOL) in preschool children diagnosed with FC and the impact of the condition on affected families.

Material & Methods: This case-control study was conducted on a total of 100 children aged 7- 12 years, 50 children as case group including all patients with functional constipation selected from Upgraded Department of Pediatrics, in between the duration of 1 year(Jan 2012 to December 2012) As well as 50 children as control group selected from the children's health care clinic clientele at the same hospital aged 7-12 years, simultaneously.

Results: The mean age of both groups was 9.51 ± 1.81 and 9.48 ± 1.43 respectively. There was male predominance in constipation group. Mean QoL scores for children with constipation were compared with healthy non-constipated children in four aspects of physical, emotional, social, and school functioning. In terms of physical functioning, mean QoL scores in two groups with and without FC was 58.42±3.87 and 82.18±4.96 respectively; and the difference was statistically significant ($p< 0.001$). Mean emotional functioning QoL scores in group of constipated patients were lower than the control group, 56.14±4.66 against 84.46±4.86 and a statistically significant difference was found between the two groups studied ($p< 0.001$). Furthermore, mean social functioning QoL scores in constipated and healthy children were 48.22±7.23 and 82.78±4.36 respectively; and a significant difference confirmed between these two groups ($p< 0.001$). Also, mean school functioning QoL scores in children with and without FC respectively were 64.16±3.92 and 82.68±6.16 and p-value < 0.001 demonstrated statistically significant difference. Totally, mean QoL scores in children with and without constipation were 56.74±1.68 and 82.58±2.38 respectively; and a significant difference was found (p-value <0.001).

Conclusion: In conclusion, duration and characteristics of symptoms of FC adversely influence the quality of life of affected children in all four aspects of physical, emotional, social, and educational functioning, and it may be a source of family agitation.

Keywords: Children, Constipation, Quality of Life.

Introduction

Functional constipation (FC) is known as a major problem in childhood with a prevalence range of 1 to 30% (median 10.4) worldwide. [1] Although FC is rarely accompanied with life threatening complications, its impact on affected children may be considerable. Functional constipation in childhood is a common defecation disorder with 0.7–29.6% prevalence in the general population. [2] The hallmark symptom of constipation is infrequent defecation (less than three times per week), which is often painful. Unrecognized or inadequately treated constipation can lead to significant abdominal pain, appetite suppression, fecal incontinence, perineal infection/cellulitis, fissures, fistulae or tags with lowered self-esteem, social isolation and family disruption.

Non-specific abdominal pain has been reported in 33% and painful defecation in up to 68% of children with constipation. [3] About 50% of children with chronic constipation are relieved of symptoms after a year and 65–70% after two years, with much higher relief rates in motivated families that adhere to treatment regimens. [4] About 34–37% remain constipated 3–12 years after treatment. [4,5] Growing up with a complaint of constipation may adversely affect the psychosocial development of the children by influencing the independence of the

areas of gaining skills and by affecting the relationship of the child with parents and siblings, friendship, academic success, self-care, and personal hygiene. [6,7,8] Children with constipation were negatively affected physically, socially, and emotionally compared with the healthy children. [9,10] These patients may have a significantly impaired quality of life, and also growth retardation compared with the unaffected population. [11]

The chronic nature of constipation, especially symptoms such as fecal incontinence, and painful excretion of faces may lead to behavioral and psychological problems in the child and family and adversely impact on the child's quality of life (QoL) in different aspects of emotional, physical, social and school functioning. The chronic course of FC and a maladaptive patient's family functioning may lead to loss of self-reliance, agitation, affective disturbances, deterioration of coping skills, school refusal. [12-15] It has been reported that children with FC have a lower quality of life than that of children with inflammatory bowel disease. [9]

Therefore, aim was to compare four aspects of emotional, social, physical and educational functioning of constipated children with their healthy peers by means of paediatrics.

Material & Methods

This case-control study was conducted on a total of 100 children aged 7- 12 years, 50 children as case group including all patients with functional constipation selected from Upgraded Department of Pediatrics, Patna Medical College and Hospital, Patna, Bihar, India, in between the duration of 1 year (Jan 2012 to December 2012). As well as 50 children as control group selected from the children's health care clinic clientele at the same hospital aged 7-12 years, simultaneously. The protocol of the study was approved by the Institutional Ethics committee and conducted in accordance with the Helsinki Declaration. The design and objectives of the study were explained to all participants and written informed consent was obtained from those who were willing to participate in this study.

Inclusion and exclusion criteria

Authors used ROME IV classification for definition of FC as inclusion criteria:

- Two or fewer defecations per week, at least one episode of incontinence per week, history of painful defecation, presence of fecal impaction in rectum.
- History of excessive volitional stool retention, and history of large diameter stools that might obstruct the toilet were diagnostic criteria.

Presence of at least two criteria of those mentioned above for at least two months is diagnostic for FC in age group of children studied. [16]

Exclusion criteria

- Children younger than 7 years old or older than 12 years.
- Constipated children in whom were detected any organic cause including Hirschsprung's disease, spina bifida, mental retardation, hypothyroidism, hypercalcemia, prior perianal surgery, and also growth abnormalities were excluded from the study. Furthermore, use of antiepileptic, antidepressant, antipsychotic drugs, anticholinergic agents and opioids.
- Patients with other chronic diseases, and neuromuscular or neurodevelopmental disorders that might affect quality of life of children.

Methodology

The Pediatric Quality of Life Inventory (PedsQL) TM is one of the most promising HRQoL measures for children. The advantages include brevity, availability of age-appropriate versions and parallel forms for child and parent. [17,18] Patients in both constipated and healthy groups filled out the standard form of Persian pediatric quality of life questionnaire (PedsQoL) designed for elementary school children population aged 7 to 12 years. These questionnaires come with four sections: children's emotional, physical, social, and school functioning. Physical activity includes 8 questions and three other sections have 5 standard questions. The questions had 5 answers of never (zero), almost never (score 1), sometimes (score 2), often (score 3), and almost always (score4), and they have been scored in a reverse manner, meaning zero scores 100 points, 1 scores 75 points, 2 scores 50, 3 scores 25, and 4 scores zero. The questionnaire interviews were conducted between the researcher and each parent and child in a private room in the gastroenterology clinic. We included here the total parents' and children's scores as well as the children's separate domain scores.

Measuring Tool

Patients in both constipated and healthy groups filled out the standard form of Persian pediatric quality of life questionnaire (PedsQoL) designed for elementary school children population aged 7 to 12 years. These questionnaires come with four sections: children's emotional, physical, social, and school functioning. Physical activity includes 8 questions and three other sections have 5 standard questions. The questions had 5 answers of never (zero), almost never (score 1), sometimes (score 2), often (score 3), and almost always (score4), and they have been scored in a reverse manner, meaning zero scores 100 points, 1 scores 75 points,

2 scores 50, 3 scores 25, and 4 scores zero. The validity of the questionnaire has been determined for Persian elementary school children population by Akbari et al., and showed content validity of 0.84 for PedsQoL at all. The correlation coefficient between the PedsQoL and its subscales was acceptable (r= 0.7). Cronbach alpha coefficients of different categories of the tool ranged from 0.65 to 0.77. The questionnaire had proper internal consistency (α=0.82). [19]

Ethical considerations

The protocol of the study was approved by the Ethical committee and conducted in accordance with the Helsinki Declaration. The design and objectives of the study were explained to all participants and written informed consent was obtained from those who were willing to participate in this study and it was clarified that their data would be kept confidential and analyzed anonymously.

Statistical Analysis

Statistical analysis was presented as mean ± standard deviation (SD) for quantitative variables and as percentage for categorical qualitative ones. The comparison of variables between the two groups was done by t-test and Chi-square test or Fisher's exact test. P-value of 0.05 or less was considered statistically significant.

Results

Table 1: Baseline characteristics and Clinical Features in Children with and Without Constipation

Variables	With constipation	Without constipation	P-value
Mean age	9.51 ± 1.81	9.48 ± 1.43	0.975
Male prevalence, no. (%)	34 (68)	23 (46)	0.002
Mean weight (kg)	24.16 ± 4.36	27.23 ± 6.16	0.001
Mean height (cm)	124.26 ± 10.84	136.88 ± 14.46	<0.001
Feces incontinence, no. (%)	24 (48)	2 (4)	<0.001
Allergy history, no. (%)	20 (10)	4 (8)	0.604

The mean age of both groups was 9.51 ± 1.81 and 9.48 ± 1.43 respectively. There was male predominance in constipation group.

Table 2: Comparison of quality of life of children with and without functional constipation

Variables	With constipation	Without constipation	P-value
Physical functioning	58.42±3.87	82.18±4.96	<0.001
Emotional functioning	56.14±4.66	84.46±4.86	<0.001
Social functioning	48.22±7.23	82.78±4.36	<0.001
Educational functioning	64.16±3.92	82.68±6.16	<0.001
Quality of life score	56.74±1.68	82.58±2.38	<0.001

Mean QoL scores for children with constipation were compared with healthy non-constipated children in four aspects of physical, emotional, social, and school functioning. In terms of physical functioning, mean QoL scores in two groups with and without FC was 58.42±3.87 and 82.18±4.96 respectively; and the difference was statistically significant (p< 0.001). Mean emotional functioning QoL scores in group of constipated patients were lower than the control group, 56.14±4.66 against 84.46±4.86 and a statistically significant difference was found between the two groups studied (p< 0.001). Furthermore, mean social functioning QoL scores in constipated and healthy children were 48.22±7.23 and 82.78±4.36 respectively; and a significant difference confirmed between these two groups (p< 0.001). Also, mean school functioning QoL scores in children with and without FC respectively were 64.16±3.92 and 82.68±6.16 and p- value < 0.001 demonstrated statistically significant difference. Totally, mean QoL scores in children with and without constipation were 56.74±1.68 and 82.58±2.38 respectively; and a significant difference was found (p- value < 0.001).

Discussion

Functional constipation is a common problem in childhood, with an estimated prevalence of 3% worldwide.[2] In 17% to 40% of children, constipation starts in the first year of life. [3] Constipation is often associated with infrequent and/or painful defecation, fecal incontinence, and abdominal pain; causes significant distress to the child and family; and has a significant impact on health care cost.[20] Although constipation may have several etiologies, in most children presenting with this symptom no underlying medical disease responsible for the symptom can be found. The North American Society for Pediatric Gastroenterology, Hepatology, and Nutrition published a medical position paper in 1999, which was updated in 2006 (search until 2004). [21] Recommendations were based on an integration of a comprehensive and systematic review of the medical literature combined with expert opinion. In addition, the National Institute for Health and Clinical Excellence (NICE) in the United Kingdom developed a guideline in 2010, based on a best

evidence strategy, for children with constipation in primary and secondary care. [22]

The mean age of both groups was 9.51 ± 1.81 and 9.48±1.43 respectively. There was male predominance in constipation group. The results of this study revealed that children suffering from FC aged 7 to 12 years had a significantly diminished functioning in all four aspects studied, including physical, social, emotional and school performance, compared with healthy group ($p<0.001$). These findings were generally similar to most of the previous studies [2,23-25] whereas, some researchers [9,23] demonstrated that not all four aspects of physical and psychosocial functioning were negatively affected in constipated children. Ozakutan et al. found no behavioral problem in constipated children compared with control group. [26] Cox et al. demonstrated that symptoms like anxiety and depression were more common in patients with constipation and encopresis, and such symptoms were more severe in children who had more social problems, worse school qualifications, and poor family support. [27]

Mean QoL scores for children with constipation were compared with healthy non-constipated children in four aspects of physical, emotional, social, and school functioning. In terms of physical functioning, mean QoL scores in two groups with and without FC was 58.42±3.87 and 82.18±4.96 respectively; and the difference was statistically significant ($p< 0.001$). Mean emotional functioning QoL scores in group of constipated patients were lower than the control group, 56.14±4.66 against 84.46±4.86 and a statistically significant difference was found between the two groups studied ($p< 0.001$). Furthermore, mean social functioning QoL scores in constipated and healthy children were 48.22±7.23 and 82.78±4.36 respectively, and a significant difference confirmed between these two groups ($p< 0.001$). Also, mean school functioning QoL scores in children with and without FC respectively were 64.16±3.92 and 82.68±6.16 and p-value < 0.001 demonstrated statistically significant difference. Totally, mean QoL scores in children with and without constipation were 56.74±1.68 and 82.58±2.38 respectively; and a significant difference was found (p- value < 0.001). In another study conducted in the Netherlands, young adults with constipation from early childhood were assessed, and no significant differences in health related QoL were found between adults with successful clinical outcome and the control group. However, adults with symptoms of constipation continuing from childhood reported significantly lower QoL scores compared to the control group. Those patients with an unsuccessful clinical outcome reported some problems in social contact and intimacy, and negative influences on quality of life. [28] In a study conducted on patients with severe chronic constipation findings have revealed that such children avoid school toilet use due to fear of unacquainted toilets, which may result in constipation and therefore, quality of academic performance diminishes. [29]

In a study discussing the impact of functional constipation in Chinese preschool children on the health related quality of life of children and their families, the authors found that HRQoL scores of physical, emotional, social, school functioning and a summary scale were significantly lower in children with FC than those of healthy children. Furthermore, scores of physical, emotional, social, cognitive function, communication, daily activity, relationship and summary score of Family Impact Module among families of children with FC were significantly lower than those of healthy children. [30]

Conclusion

In conclusion, duration and characteristics of symptoms of FC adversely influence the quality of life of affected children in all four aspects of physical, emotional, social, and educational functioning, and it may be a source of family agitation. Therefore, early diagnosis and adequate medical and behavioral treatment is necessary for improving the QoL and successful outcome in Children attending elementary school.

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