

Evaluation of quality of life in children with intestinal constipation

Carmem Denise Royer¹, Bruna Diniz Neiva Giorgenon², Fernanda Bortolanza
Hernandes³, Ana Cláudia de Araújo Argentino³, Fabiano Sandrini⁴, Marcos
Antonio da Silva Cristovam⁵, Gleice Fernanda Costa Pinto Gabriel⁵

¹Pediatric Resident Physician, 3rd year, University Hospital of Western Paraná, Cascavel, PR, Brazil.

²M.D., Pediatrician- Cascavel, PR, Brazil.

³Pediatric Resident Physician, 2nd year, University Hospital of Western Paraná, Cascavel, PR, Brazil.

⁴ Ph.D., M.D. Assistant Professor of Pediatrics, Medical School at Western Paraná State University, Cascavel,
PR, Brazil

⁵M.D. Assistant Professor of Pediatrics, Medical School at Western Paraná State University, Cascavel, PR,
Brazil.

ABSTRACT:

Background: Constipation is characterized by delayed or difficult bowel movements that persist for two weeks or more, causing discomfort to the patient. Understanding how and how much it affects the quality of life of patients helps in the formulation of strategies to alleviate it.

Objective: to carry out screening to quality of life in children and adolescents carrier of intestinal constipation.

Method: Application of the general PedsQL™ 4.0 short-form questionnaire answered by parents or guardians or by children and adolescents of both genders.

Results: A total of 76 questionnaires were administered, however, three (3.9%) were excluded for incomplete completion. Thus, 73 (96.1%) were analyzed, of which 41 (56.1%) were male and 32 (43.8%) female, with ages ranging from 2 to 12 years old. There was relationship between age, physical and school items, and the total score of the PedsQL™ 4.0.

Conclusion: constipation can compromise the quality of life. Therefore, pediatricians should be aware of the signs and symptoms of intestinal constipation and initiate treatment to reduce the damage caused by it, improving the quality of life of these children.

Key-words: constipation, children, adolescent, quality of life, questionnaire.

Date of Submission: 06-03-2023

Date of Acceptance: 18-03-2023

I. Introduction

Constipation is defined as delayed or difficult bowel movements present for two or more weeks, causing discomfort to the patient¹. It is believed that chronic functional constipation occurs because the patient avoids defecation due to pain or social reasons such as travel and school. This situation creates a vicious cycle, in which the rectum becomes increasingly distended, leading to fecal incontinence by overflowing, loss of rectal sensation, and finally loss of the normal desire to evacuate². This condition causes distress to the child and the family and has a significant impact on health care³.

Although intestinal constipation accounts for about 3% of complaints in general pediatrician's offices, there is difficulty on the part of health professionals to make early diagnosis and initiate the correct treatment, which leads to increased complications of this condition⁴.

Analyzing the impact on the quality of life of children with constipation is important to design strategies to alleviate this condition. For this, several quality-of-life measurement tools can be used, such as the *Auto Questionnaire Qualité de Vie Enfant Imagé (AUQEI)*, the Child Health Questionnaire - Parent Form 50 (CHQ-PF50), the Kidscreen-52, and the Pediatric Quality of Life Inventory™ 4.0 (PedsQL™ 4.0)⁵.

Therefore, the objective of this research was to evaluate the quality of life of children diagnosed with intestinal constipation.

II. Method

This was a cross-sectional, observational, probabilistic, and retrospective epidemiological study developed by applying the PedsQL™ 4.0⁶ general questionnaire-short form to children and adolescents of both genders, aged 2 to 12 years, regularly enrolled in early childhood education centers (< 5 years old) or in

elementary schools (> 6 years old). These subjects were diagnosed with constipation by the Rome IV Criteria: two or fewer bowel movements per week in patients 4 years of age or older; at least one episode of fecal incontinence per week; history of stool holding posture or behavior; history of painful bowel movements and hardened stools; the presence of a large fecal mass in the rectum; history of large diameter stools that may obstruct the toilet; after appropriate evaluation the symptoms cannot be explained by another medical condition. The age group 0-4 years does not need to fulfill the criteria of "large diameter stool that may obstruct a toilet bowl" and "fecal incontinence with at least one episode per week"⁷.

The research was developed with children and adolescents followed up in a pediatric gastroenterology outpatient clinic of a university hospital from December 2021 to December 2022.

After the authorization of those responsible for the subjects, which occurred by signing an Informed Consent Form and of the Child/adolescent Written Informed Assent (for subjects older than 7 years), the PedsQLTM 4.0 general questionnaire - short form was applied to their parents and/or caregivers by phone calls (because of the COVID-19 pandemic) or during outpatient clinic medical consultation.

The PedsQLTM 4.0 general questionnaire-short form is distributed internationally by the Mapi Research Trust group⁸, and its version was translated into Brazilian-Portuguese in 2008 by PhD. Klatchoian⁹. Authorization to use the questionnaire was obtained by contacting the person responsible for validation via e-mail. This instrument assesses the quality of life of patients through self-reports (report for children or adolescents) and/or from the perspective of parents or caregivers (report for parents of children/adolescents). Each questionnaire presents 15 questions divided into five groups: (i) physical ability; (ii) emotional aspect; (iii) social activity; (iv) school activity; and (v) total score. This tool is adapted for ages 2 to 4, answered by parents and/or guardians; 5 to 7, 8 to 12, and 13 to 18. Between 5 and 7 years, the alternatives to the items "not at all", "sometimes a problem", and "a lot" are represented employing a facial scale, composed of a smiling, neutral, and sad face, respectively, to improve the child's understanding. The questions to parents of children of all age groups have 5 choices of alternatives (0 = never, 1 = seldom, 2 = sometimes, 3 = often, and 4 = almost always). The alternatives are inversely scored using the Likert scale, so that response 0 is equivalent to 100 points, 1 to 75, 2 to 50, 3 to 25, and 4 to 0. Thus, each of the 15 items has the possibility of scoring between 0 and 100, and the total score is the average of the items answered, with higher values compatible with a better quality of life⁵.

The variables analyzed in this study were: age, gender, and PedsQLTM 4.0-short form score.

The software Stata/SE v.14.1, StataCorp LP, USA, 2021 was used for statistical analysis. To describe the quantitative variables, the statistics of mean, median, minimum and maximum values, 1st and 3rd quartiles, and standard deviation for gender and age were considered. To evaluate the homogeneity of genders about ages, the Student's t-Test for independent samples was considered. To compare the genders concerning the variables of interest, the Mann-Whitney Non-parametric Test was used. To evaluate the association of the questionnaire variables with the child's age, Spearman's Correlation Coefficient was estimated. A p-value of less than 0.05 indicated statistical significance.

This study was approved by the Research Ethics Committee of the Western Paraná State University, under number 5.078.583/2021

III. Results

Seventy-six questionnaires were applied, however, three (3.9%) were excluded for incomplete completion. Thus, the total number of questionnaires analyzed was 73 (96.1%), of which 41 (56.1%) were male and 32 (43.8%) female. Age ranged from ≥ 2 to < 13 years (mean: 5.9; median: 5.0 and standard deviation: ±3.1).

Table 1 shows the relationship between gender and the PedsQLTM variables.

Table 1: Correlation between gender and PedsQL's variables.

Variable	gender	n	Average	Minimum	1 st quartil	Median	3 rd quartil	Maximum	S-D*	p-value**
Phisic	Male	41	71.8	0	50	85	95	100	30.7	0.193
	Female	32	79.8	0	67.5	90	100	100	25.4	
Emotional	Male	41	59.4	0	44	62	81	100	27.7	0.837
	Female	32	57.5	0	50	56	76.5	100	25.5	
Social	Male	41	68.7	0	50	67	100	100	28.0	0.170
	Female	32	78.2	17	58	91.5	100	100	24.1	
School	Male	41	66.3	0	42	75	100	100	37.5	0.548
	Female	32	72.8	0	56	83	100	100	33.2	
Total PedsQL	Male	41	266.2	75	205	277	333	400	87.0	0.333
	Female	32	288.3	152	263	279	331	400	63.5	

*Standard-Deviation

**p-values below 0.05 indicate statistical relevance

Table 2 shows the relationships between age and the PedsQL™ variables, demonstrating the correlation between age and the physical, school, and total score items. The data indicate that the higher the age, the lower the quality of life.

Table 2: Correlation between age and PedsQL™ variables.

Variable	Coefficient of Correlation	p-value*
Physical	- 0.36	0.002
Emotional	- 0.04	0.764
Social	-0.13	0.266
School	- 0.47	<0.001
Total PedsQL™ Score	- 0.32	0.005

*p-values below 0.05 indicate statistical relevance

IV. Discussion

Constipation is a common complaint in childhood that rarely causes risk to life; however, it causes emotional and physical suffering, concern, and social isolation of patients and their families, which impairs quality of life^{10,11}.

This study evaluated the quality of life of children with functional constipation based on the assessment of parents and/or caregivers and found no statistical difference between boys and girls, a result similar to the findings in literature^{10,12}.

In this study, there was relationship between age and score in the physical item (for instance, walking and running) and in the total score item, so that the older the age, the lower the score of the participants in these items, which also corroborates the data observed in the literature^{11, 13, 14}. Although no relationship was found between age and the emotional and social items, research has shown that patients with constipation tend to be more anxious, have more sleep disorders and social problems and consequently a worse quality of life^{15, 16}.

Furthermore, the study showed association between age and the school item (for example, doing the same activities as the others or not going to school). Some studies have shown that schoolchildren with constipation avoid using the bathroom for fear and often because they are bullied, which generates stress and reduces the academic performance of these children^{12, 16}.

Some limitations of the study were: a cross-sectional cohort study, not being possible to assess the causes and consequences of the results; a small sample that, although representing part of the population of a city, one should be careful when extrapolating the data for the country as a whole; limitation of variables for a deeper and more complete analysis, and finally, the report was only from parents and/or caregivers, not analyzing the self-report of the participants. However, studies that compared the quality of life between patients' self-reports and caregivers' reports, and healthy children found no difference in the quality-of-life scores when comparing patients and caregivers, furthermore found lower quality of life scores than in healthy children^{10, 11, 12}.

In conclusion, it can be stated that patients with intestinal constipation seem to have worse quality of life due to the limitations characteristic of this disorder, extending this condition to other family members. Moreover, this clinical condition is often neglected by health professionals, which delays its diagnosis and treatment. Thus, paying attention to the diagnostic criteria and the factors related to the improvement of quality of life is of extreme importance for the promotion of the health of patients and their loved ones.

References

- [1]. Regina A, Ramos L, Borges Pinto R, Sanfelice F. Constipação crônica funcional: como o pediatra deve manejar [Internet]. 2019 May; 1-4. Available from: https://www.sprs.com.br/sprs2013/bancoimg/190521112509Artigo_Constipacao_cronica_funcional.pdf
- [2]. Tabbers MM, Di Lorenzo C, Berger MY, Faure C, Langendam MW, Nurko S, et al. Evaluation and Treatment of Functional Constipation in Infants and Children. *Journal of Pediatric Gastroenterology and Nutrition* [Internet]. 2014 Feb; 58(2):265–81.
- [3]. Hyams JS, Di Lorenzo C, Saps M, Shulman RJ, Staiano A, van Tilburg M. Childhood Functional Gastrointestinal Disorders: Child/Adolescent. *Gastroenterology*. 2016 May; 150(6):1456-1468.e2.
- [4]. Vieira M, Krueger Negrelle I, Webber K, Gosdal M, Krüger Truppel B E Solena S, Kusma Z. Conhecimento do pediatra sobre o manejo da constipação intestinal funcional. *Rev Paul Pediatr*. 2016; 34(4):425-431
- [5]. Souza JGS, Pamponet MA, Souza TCS, Pereira AR, Souza AGS, Martins AME de BL. Tools used for evaluation of Brazilian children's quality of life. *Rev Paul Pediatr*. 2014 Jun; 32(2):272–8.
- [6]. Varni JW, Burwinkle TM, Seid M. The PedsQL™ 4.0 as a School Population Health Measure: Feasibility, Reliability, and Validity. *Quality of Life Research*. 2006 Mar; 15(2):203–15.
- [7]. Levy EI, Lemmens R, Vandenplas Y, Devreker T. Functional constipation in children: challenges and solutions. *Pediatric Health, Medicine and Therapeutics* [Internet]. 2017 Mar 9; 8(8):19–27.
- [8]. Varni JW, Burwinkle TM, Jacobs JR, Gottschalk M, Kaufman F, Jones KL. *The PedsQL™ Generic Core Scales version 4.0 Short Form – Portuguese (Brazil)*. <http://www.pedsq.org>.
- [9]. Klatchoian DA, Len CA, Terrieri MTRA, Silva M, Itamoto C, Ciconelli RM, et al. Quality of life of children and adolescents from São Paulo: reliability and validity of the Brazilian version of the Pediatric Quality of Life Inventory™ version 4.0 Generic Core Scales. *JPediatr (Rio J)*. 2008 Aug 7; 84(4):308-315.
- [10]. Wang C, Shang L, Zhang Y, Tian J, Wang B, Yang X, et al. Impact of Functional Constipation on Health-Related Quality of Life in Preschool Children and Their Families in Xi'an, China. *Huang L-M, editor. PLoS ONE*. 2013 Oct 10; 8(10):e77273.

- [11]. Vriesman MH, Rajindrajith S, Koppen IJN, van Etten- Jamaludin FS, van Dijk M, Devanarayana NM, et al. Quality of Life in Children with Functional Constipation: A Systematic Review and Meta-Analysis. *The Journal of Pediatrics*. 2019 Nov;214:141–50.
- [12]. Karami H, Yazdani J, Khalili N, Pourasghar M. The Relationship Between Functional Constipation and Emotional, Social, Physical, and Educational Functioning of Children. *Iranian Journal of Psychiatry and Behavioral Sciences*. 2017 Feb 19;11(1):e7127
- [13]. Varni JW, Shulman RJ, Self MM, Nurko S, Saps M, Saeed SA, et al. Gastrointestinal symptoms predictors of health-related quality of life in pediatric patients with functional gastrointestinal disorders. *Quality of Life Research*. 2016 Oct 14;26(4):1015–25.
- [14]. Varni JW, Bendo CB, Nurko S, Shulman RJ, Self MM, Franciosi JP, et al. Health-Related Quality of Life in Pediatric Patients with Functional and Organic Gastrointestinal Diseases. *The Journal of Pediatrics*. 2015 Jan;166(1):85-90.e2.
- [15]. Elkhayat HA, Shehata MH, Nada A, Deifalla SM, Ammar MS. Impact of functional constipation on psychosocial functioning and quality of life of children: A cross-sectional study. *Egyptian Pediatric Association Gazette*. 2016 Sep;64(3):136–41.
- [16]. Neto JN da S, Freitas AR, Araújo LB de, Fernandes TAOD, Neto JMC, Brito PN, Castro LFP, Boas RTV, Pereira WS, Cavalcante TSA. Influência das complicações da constipação intestinal na qualidade de vida do paciente pediátrico: uma revisão integrativa. *REAS [Internet]*. 26abr.2022 [citado 18jan.2023];15(4):e10188. Available from: <https://acervomais.com.br/index.php/saude/article/view/10188>

Carmem Denise Royer, et. al. "Evaluation of quality of life in children with intestinal constipation." *IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)*, 22(3), 2023, pp. 16-19.