

The effects of constipation on the quality of life of children and mothers

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This study, a quasi-experimental study, was planned to investigate the effects of functional constipation on the quality of life (QOL) of children and their mothers. The sample of the study included children with functional constipation and its complications and their families (n=26).

The Pediatric Quality of Life Inventory (PedsQL) and Short Form Health Survey-36 (SF-36) were used. No statistically significant difference was found by SF-36 QOL scale scores of the first and sixth month interviews with the mothers. There was a statistically significant difference in total psychosocial scores of the children. When the PedsQL scores, which were completed during the first and sixth month interviews with the mothers, were compared, there were no statistically significant differences between total physical health scores, total psychosocial scores and total inventory scores.

Key words: child, constipation, nursing care, quality of life.

Quality of life (QOL) can be defined as “an individual’s subjective perception of overall well-being and satisfaction with life” or “physical, social and emotional aspects of a patient’s well-being that are important to the individual”¹.

Constipation is a common problem in childhood, and is defined as difficulty or delay in the passage of stools of more than two weeks in duration^{2,3}. Three percent of children presenting to pediatric clinics and 25% of children presenting to pediatric gastroenterology clinics suffer from constipation. It is thought that 0.3-28% of children worldwide have constipation problems. Up to 84% of children with functional constipation have a stool retention problem. It is reported that 3% of preschool and 1-34% of school children have a constipation problem²⁻¹².

Constipation in children is usually transient and not regarded as a serious problem. Functional constipation is often seen as a minor problem, which will either resolve spontaneously or respond to extra fiber and fluids in the diet. Parents often feel that it is their fault and that the significance of functional constipation is overlooked¹³.

Constipation may cause significant abdominal pain. The symptoms of chronic abdominal pain and fecal soiling may cause psychosocial problems, disruption of peer relationships and familial stress. Long-term follow-up studies indicate that chronic constipation and the associated complaints persist into adulthood in one-third of patients. Children with constipation may appear quiet, withdrawn, embarrassed, and angry during medical evaluation when compared with children with other chronic gastrointestinal disorders¹⁴.

Health professionals need to be aware of the social consequences of what may seem to be a trivial condition and the importance of their role in the early recognition of functional constipation. By doing so, they will be serving children and young people and their families and helping to prevent the long-term effects of functional constipation¹³.

Material and Methods

The study was planned to investigate the effects of functional constipation on the QOL of children and their mothers. The research was performed in the Pediatric Surgery Unit of a University Hospital. The study sample was

composed of children suffering from functional constipation and its complications (rectal bleeding, anal fissure, anal fistula, hemorrhoids, stool retention, etc.) who presented to the clinic between September 2008- September 2009, together with their mothers (n=26). "Non-probability sampling technique" was used in choosing samples. Children and adolescents aged 2-18 years with constipation problems and their mothers were included into the study; the subjects met the Rome III constipation criteria, could communicate, and were willing to take part in the study. Children with physiological constipation (organic constipation) and those with neurological problems (i.e. meningomyelocele) were not included in the study.

The QOL of children aged between 2-4 years and 5-7 years (n=13) was evaluated by the mother using the Parent Form; QOL of children aged between 8-12 years and 13-18 years (n=13) was evaluated by the children themselves with the Child Form and by the mothers with the Parent Form. The QOL of three of the mothers (n=26) could not be evaluated with the Short Form Health Survey-36 (SF-36) as they were either pregnant or in the postpartum period.

Study Design

Three forms (Child and Family Data Collection Form, Protocol Follow-up Form, Soiling Follow-up Form) developed by the researchers were used for data collection. In addition, Pediatric Quality of Life Inventory (PedsQL) and SF-36 were used for children and their mothers, respectively.

The PedsQL is a QOL inventory developed by Varni et al.¹⁵ in 1999 in order to evaluate the QOL of children and adolescents aged 2-18 years. Grading is performed in three parts: Inventory Total Score (ITS), Physical Health Total Score (PHTS), and Psychosocial Health Total Score (PSHTS), which are obtained by calculating emotional, social and school scores. PedsQL, which is one of the general health quality inventories, is a 23-item QOL inventory. The items are scored between 0-100 on a Likert scale, which ranges from "almost always" to "never"¹⁵. If more than 50% of the inventory was not completed, the inventory was not included in the evaluation¹⁶. The higher the PedsQL total score, the better the health QOL. The most important properties of PedsQL are that it is short, can be completed in 5-10 minutes, and is easy to apply and evaluate by the researcher. For children aged 2-18 years, Turkish validity and reliability studies have been performed^{15,16}.

The SF-36 Health Quality Inventory for Families, which is a self-evaluation inventory with generic criteria that provides a wide-range inventory, was developed by the Rand Corporation in 1992. The inventory is composed of 36 items and provides the inventory of eight concepts: physical function (10 items), social function (2 items), limitations in usual role activities because of physical activities (4 items), limitations in usual role activities because of emotional problems (3 items), mental health (5 items), energy/vitality (4 items), pain (2 items), and general health perceptions (5 items). Subjects are to consider the last four weeks when completing the inventory. Except for the 4th and 5th items, the evaluation is done

Table I. Distribution of Children According to Presence of Rome III Criteria

Rome III constipation criteria	First Interview		One Year Interview	
	Present Number	%	Present Number	%
History of retentive posturing or excessive volitional stool retention	20	76.9	4	15.4
Two or fewer defecations in the toilet per week	19	73.1	0	0
History of painful or hard bowel movements	15	57.7	0	0
Presence of a large fecal mass in the rectum	14	53.8	0	0
At least 1 episode of fecal incontinence per week	13	50.0	2	7.7
History of large diameter stools that may obstruct the toilet	11	42.3	0	0

Table II. Comparison of SF-36 Life Quality Inventory Sub-Dimension Scores of Mothers in the 1st and 6th Month Interview

Dimensions of scale (n=23)*	1 st Interview			6 th Interview			Statistical Analysis			
	\bar{x}	\pm SD	Min	Max	\bar{x}	\pm SD	Min	Max	Z	P
Physical functioning	83.48	\pm 23.62	20	100	83.26	\pm 22.54	35	100	-0.264	0.792 p>0.05
Role physical	68.48	\pm 33.89	0	100	69.57	\pm 36.89	0	100	-0.171	0.864 p>0.05
Social functioning	69.57	\pm 25.79	0	100	81.52	\pm 15.48	50	100	-1.935	0.053 p>0.05
Pain	66.91	\pm 25.20	32	100	72.61	\pm 22.89	0	100	-0.934	0.350 p>0.05
Mental health	58.74	\pm 18.50	8	88	63.30	\pm 20.88	16	92	-1.861	0.063 p>0.05
Role emotional	44.93	\pm 34.24	0	100	52.17	\pm 41.23	0	100	-0.317	0.751 p>0.05
Vitality	52.83	\pm 24.25	0	100	61.97	\pm 21.02	25	100	-1.734	0.083 p>0.05
General health	60.13	\pm 24.73	10	100	66.22	\pm 21.45	20	100	-0.682	0.495 p>0.05

*Three of the mothers were not included in the evaluation because of pregnancy and postpartum period, which could affect the life quality.

in Likert type (3-6); the 4th and 5th items are answered as yes/no. Sub-inventories evaluate health between 0–100, with 0 indicating poor health and 100 indicating good health¹⁷. Turkish validity and reliability studies were performed.

In this study, the data were collected face-to-face from the children and their families during monthly interviews by the researcher. The child with constipation was examined by a doctor, a prescription was given to the patient, and then the patient was directed to the researcher. The researcher collected data from the child and the family, arranged for the child to visit the dietician, and educated the patient/family on nutrition, modification of behaviors and medication, and how to use the follow-up form. At the end of the education, an informational booklet was provided to the

child and the family as well as the follow-up form in order to monitor the passage of stools at home. Children were followed for at least one year (first interview on the 15th day, 1st month, 2nd, 3rd, and 6th months when necessary, and 1st year; follow-up periods were increased and extended if necessary). QOL of children and mothers was evaluated during the first interview and after six months of follow-up. Children were evaluated according to Rome III constipation criteria during the first interview and the 12th-month interview.

Analysis Methods

The data analysis was performed by the University Biostatistics and Medical Informatics Main Field of Study using the Statistical Package for the Social Sciences 16 for Windows

Table III. Child Form: Comparison of Pediatric Life Quality Inventory Sub- Dimension 1st and 6th Month Interview Scores

Dimensions of scale (n=13)	1 st Interview				6 th Month Interview				Statistical analysis	
	\bar{x}	\pm SD	Min	Max	\bar{x}	\pm SD	Min	Max	Z	P
Physical health total score (PHTS)	81.59	\pm 15.20	53.13	46.87	83.90	\pm 15.87	46.88	100	-0.802	0.423 p>0.05
Psychosocial health total score (PSHTS)	71.13	\pm 9.51	53.33	88.33	80.90	\pm 12.17	58.33	93.33	-2.671	0.008 p<0.01
Inventory total score (ITS)	74.96	\pm 9.29	60.87	88.04	81.93	\pm 12.96	57.61	95.46	-1.783	0.075 p>0.05

Table IV. Parent Form: Comparison of Pediatric Life Quality Inventory Sub-Dimension 1st and 6th Month Interview Scores

Dimensions of scale (n=26)	1 st Interview				6 th Interview				Statistical Analysis	
	\bar{x}	\pm SD	Min	Max	\bar{x}	\pm SD	Min	Max	Z	P
Physical health total score (PHTS)	66.98 \pm 20.71		28.30	100	75.09 \pm 18.69		43.75	100	-1.651	0.099 p>0.05
Psychosocial health total score (PSHTS)	69.76 \pm 16.13		30	100	74.42 \pm 18.09		23.21	98.33	-1.004	0.316 p>0.05
Inventory total score (ITS)	68.92 \pm 14.70		29.35	92.65	74.67 \pm 16.61		30.68	98.91	-1.843	0.065 p>0.05

program (SPSS, Chicago, IL). Number, percent, McNemar test, and Wilcoxon test were used for data analysis.

Ethical Consideration

In order to be able to perform the research, written consents from the Health Sciences Institute, University School of Nursing Ethics Committee and University Faculty of Medicine Hospital were obtained. Written informed contents of families ensuring that their identities would not be revealed were also obtained prior to the study.

As this study is a long-term study and only the families accepting to take part in the study were included, these results cannot be generalized and are valid only for this study.

Results

The average age of the children was 7.21 \pm 4.12 years (min: 2 years, max: 18 years); 34.6% (n=9) were 2-4 years old, 15.4% (n=4) were 5-7 years old, 46.2% (n=12) were 8-12 years old, and 3.8% (n=1) were 13-18 years old. 73.1% of children (n=19) were boys and 26.9% (n=7) were girls.

It was seen that 46.2% (n=12) of the children were attending elementary school, 42.3% (n=11) were not attending any school, 7.7% (n=2) were attending kindergarten, and 3.8% were attending high school.

When the sociodemographic characteristics of the families were examined, it was seen that 61.5% (n=16) of the mothers had graduated from elementary school, 23.1% (n=6) had graduated from high school, 7.7% (n=2) had graduated from middle school, and 7.7% (n=2) had graduated from university. 80.8% (n=21)

of the families had two children, 11.5% (n=3) had one child and 7.7% (n=2) had three children. It was also seen that the caregiver was the mother for 80.8% of the children, the grandmother for 7.7% (n=2), and a nanny for 7.7% (n=2); care was given by someone else for 3.8% (n=1) of the children.

Table I shows the children meeting the Rome III constipation criteria. Statistical analysis using chi-square McNemar test demonstrated a significant difference between the first interview and 12th month interview values of Rome III criteria, including <2 stools per week (p<0.001), fecal incontinence at least once per week (p=0.001), habit of stool retention or history of withholding on purpose (p<0.001), history of painful or hard bowel movements (p<0.001), presence of large fecal mass in the rectum (p<0.001), and history of thick stools (p<0.001).

Mothers' (n=23) SF-36 QOL inventory sub-dimension first interview and 6th month interview scores were compared using Wilcoxon test. There were no statistically significant differences in parameters including physical function (0.792, p>0.05), physical role limitations (0.864, p>0.05), social function (0.053, p>0.05), pain (0.350, p>0.05), mental health (0.063, p>0.05), emotional role limitations (0.751, p>0.05), vitality/energy (0.083, p>0.05), and general perception of health (0.495, p>0.05) sub-dimensions (Table II, Fig. 1).

The PedsQL Inventory that was completed by the children (n=13) during the first interview and 6th month interviews demonstrated no statistically significant difference between PHTS and ITS; however, the difference between PSHTS was significant using Wilcoxon test (Z=

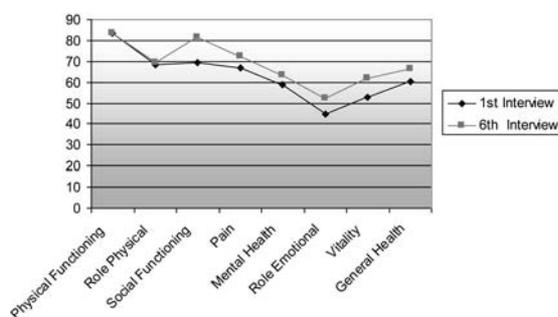


Fig 1. Comparison of SF-36 Life Quality Inventory Sub-Dimension Scores of Mothers in 1st and 6th Month Interview

-2.671, $p=0.008$, <0.01) (Table III).

Table IV shows the scores of the PedsQL Inventory that was completed by the mothers ($n=26$). When these scores were compared with Wilcoxon test, there were no statistically significant differences between PHTS, PSHTS and ITS ($p>0.05$).

Discussion

Many studies have looked at the QOL in children with chronic diseases; however, there are few studies that have specifically examined the impact of chronic constipation on physical and psychosocial functioning¹. Health-related QOL is an important outcome in clinical trials, clinical improvement strategies and population-based health assessment¹⁴. In our study, it was seen that children with functional constipation ($n=26$) and their mothers reported a lower QOL score in the first month when compared with the 6th month interview.

Constipation treatment is long, and the families experience a number of difficulties in this period. Generally, the first six months represent an important phase for the children and family in adapting to the treatment and behavioral changes. We thus monitored the QOL assessment in the first six months. Our clinic has a constipation polyclinic, and we also wanted to show the results for the children after one year using the Rome III criteria.

In children with constipation, anxiety regarding a child's defecation and stool retention behavior is commonly seen. It becomes harder and more painful to pass the retained stools, and this causes a fear and resistance in the child toward defecation. This vicious circle can be defined as a "learned behavior"^{7,8}. In our study, it was seen that the rates of stool-retaining

behavior, holding the stools on purpose, and history of painful or hard bowel movements were high. It is thought that these findings can affect the QOL.

Children with slow transit constipation (STC) grow up with the daily problem of difficulty with stool passage, chronic abdominal pain and frequent soiling. Their social interactions are often limited because of the lack of insight of their young peers, and consequently, they can become withdrawn and socially isolated¹.

It was seen that, in the first and 6th month interviews of the children ($n=13$), there was no significant difference in PHTS and ITS; on the other hand, a statistically significant difference was determined in PSHTS ($Z=-2.671$, $p=0.008$, <0.01), which was probably due to the limited number of subjects in our study.

Questions included in the physical section of the PedsQL inquire about participation in sports activities, ability to bath/shower alone, presence of pain, and energy levels. The psychosocial section of the PedsQL is divided into emotional, social, and school functioning. Emotional functioning covers feeling afraid, sad or angry, as well as having trouble sleeping and worries about the ability of the child to integrate with others. With respect to school functioning, there are questions about memory, keeping up with schoolwork and missing school.

If children experience involuntary passage of stool or soiling, participation in sports activities can often become discouraging. They may also experience an increase in symptoms with the increase in physical exertion. The increased reporting of pain can cause low energy levels. In addition, children affected by the slow passage of stools often feel full and bloated, and complain of a poor appetite. Their resultant decreased calorific intake also contributes to their low energy levels. Children who are afflicted with chronic soiling are unfortunately easy targets for social ridicule and bullying¹.

Clarke and colleagues¹ found that the QOL of children with STC is lower than that of healthy children. In their study, they evaluated all the children with PedsQL (72.90 to 85.99) ($p<0.0001$). Youssef and colleagues¹⁴ found that life quality inventory scores of constipated children are lower than those children in other groups of intestinal involvement (inflammatory bowel disease [IBD], gastroesophageal reflux

disease [GERD] and healthy controls [HC]). The physical scores of constipated children were lower than average scores of other children. There were no differences between children with and without fecal incontinence.

In our study, although there seemed to be an improvement between the first and 6th month interview QOL scores, which were completed by the mothers (n=26), when the average first and 6th month interview scores were compared, there were no statistically significant differences between PHTS, PSHTS and ITS (p>0.005).

Youssef and colleagues¹⁴ indicated lower life quality scores for parents of constipated children than the children themselves. In our study, the scores of the mothers were also found to be lower than those of the children.

In the study of Clarke and colleagues¹, QOL of STC, as reported by the parents, was comparably lower than that of the control group (64.48 to 84.25, p<0.0001). In STC children, physical and psychosocial life quality is reported lower by both the children and mothers.

In our study, QOL of mothers (n=23) was evaluated using the SF-36 life quality inventory in the first and 6th month interviews. Although there was an improvement in groups (except the physical function subgroup), there was no statistically significant difference. It is thought that this is a result of limited number of subjects in our study.

Although there was improvement in QOL scores of children and their mothers, this difference was not statistically significant; this forces us to think that constipation is a long-term process that impacts the QOL of children and their families.

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