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Original Article

Determining the relationship between urinary incontinence and urinary dysfunction in children and quality of life

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Abstract

Aim: The aim of this study is to determine the relationship between quality of life and urinary incontinence in children.

Material and Methods: This study was carried out with the cross-sectional research model, one of the observational analytical research models. The study was conducted between November 2018 and December 2019 at the urology outpatient clinic of Necmettin Erbakan University Hospital. The sample of the study consisted of fifty one pediatric patients between the ages of 5 and 18 years who were selected by using the simple random sampling method, were able to communicate and volunteered to participate in the study. The data were obtained through the face-to-face interview method using a Patient Demographic Information Form, the Dysfunctional Voiding and Incontinence Symptoms Score Questionnaire (DVISS), the Dysfunctional Voiding Symptom Score (DVSS) and the Pediatric Urinary Incontinence Quality of Life Score (PIN-Q). The data are expressed as percentage, mean and standard deviation.

Results: Among the patients participating in the study, the mean Dysfunctional Voiding and Incontinence Symptoms Score was found as 17.07 ± 5.12. In this study, a significantly positive correlation was found between DVISS and DVSS and PIN-Q. There was a significant relationship between PIN-Q dimensions and DVISS and DVSS.

Conclusion: Pin-Q and DVSS are complementary and offer clinical effects. This study showed that there is a correlation between urinary incontinence and quality of life.

Keywords: Child; urinary incontinence; quality of life

INTRODUCTION

Urinary incontinence is a very common problem in childhood. It occurs in about 1 out of every 5 children who come to pediatric urology clinics (1). Urinary incontinence means uncontrollable urinary incontinence at the age at which urine control is expected to develop, and this may be continuous or intermittent (2). Factors such as genetic, psychological, developmental, urodynamic factors sleep disorders and antidiuretic hormones are thought to have an effect on incontinence in children. In particular, the factors discussed in this regard are nocturnal polyuria, detrusor activity, awakening threshold and functional bladder capacity (3).

As a first step in the treatment of the child who has incontinence, it is necessary to identify the child's problem and find out which group he\she belongs to. During this long period of treatment, the attitude of the child and the family is important in establishing the balance between social life and health (4). Children with urinary incontinence have more social problems. Their time spent at school, playtime, social life are more affected (5,6). This puts the child at risk of social isolation, peer conflict, ridicule and in-class struggle (7,8). Unfortunately, information on quality of life assessment in this group of children is very limited. Urinary incontinence is often a shame for the affected child (6).

The aim of this study is to determine the relationship between quality of life and urinary incontinence in children.

MATERIAL and METHODS

Participants

This study was carried out with the cross-sectional research model, one of the observational analytical research models. The subjects were selected from among the children who were admitted to the urology outpatient clinic of a university hospital in the city center of the province of Konya in Turkey. In the power analysis performed with the NCSS PASS 13 program, the sample size was determined based on a 5% error level, in a 95%

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confidence interval and with an 80% power. The data were collected from 51 patients who had had urinary incontinence for at least 6 months, agreed to participate, met the criteria of participation in the study in November 2018 and December 2019 and were selected using the simple random sampling method. We included children between the ages of 5 and 18 years with daytime wetting who met the inclusion criteria, and excluded those with neurogenic bladder dysfunction, congenital anomalies of the urogenital tract or nocturnal enuresis only.

Ethical Considerations

In order to conduct this study, the required approval was obtained from the Ethics Committee for Clinical Research at Necmettin Erbakan University Medical School (2018/1586). Our study protocol was approved on the basis of the ethical standards of the Declaration of Helsinki. Informed consent form was given to the families of each patient before the study, and the patients and their families provided verbal consent.

Data Collection

Fifty-one pediatric patients between the ages of 5 and 18 years were included in this study. The scales were filled out by the parents for the children aged 5-7 and among the older children and recorded by the researchers. The data were obtained using a Sociodemographic Information Form (age, sex, place of living, economic status (income less than expense, equal to expense, more than expense)), the Dysfunctional Voiding and Incontinence Symptoms Score Questionnaire (DVISS), the Dysfunctional Voiding Symptom Score (DVSS) and the Pediatric Urinary Incontinence Quality of Life Score (PIN-Q).

Dysfunctional Voiding and Incontinence Symptoms Score Questionnaire (DVISS)

In 2005, DVISS was developed by Akbal et al. DVISS consists of 14 items in total. 13 items question lower urinary tract symptoms, voiding and defecation habits in children day and night, and 1 question is on how these symptoms affect the severity of the problem and activities of daily living (9,10). The results of this study were evaluated using the mean value of DVISS. With a sensitivity of 90% and specificity of 90%, a score of 8.5 or above in a confidence interval of 96.2% is considered an abnormal voiding pattern. The higher the DVISS score, the higher the severity of the disease (9). In our study, the Cronbach's Alpha coefficient was found as 0.87.

Dysfunctional Voiding Symptom Score (DVSS)

DVSS is a test that evaluates the sensitivity and specificity of urinary dysfunction with 10 items (9,11).

Pediatric Urinary Incontinence Quality of Life Score (PIN-Q)

In 2011, PIN-Q was tested for validity and reliability in Turkish by Hanımeli and Akil (12). PIN-Q is a scale which consists of 20 items. The scoring is performed by grading as 0: never, 1: almost never, 2: sometimes, 3: often, 4: always. The total score range is between 0 and 80. Higher scores show that the patient's quality of life is worse (13,14). The Pin-Q external Cronbach's alpha coefficient was found as 0th Month: 0.50, 3rd Month: 0.75 and 6th Month: 0.85. The Pin-Q internal Cronbach alpha coefficient was found as 0th Month: 0.76, 3rd month: 0.80 and 6th month: 0.95 (12). In our study, the Pin-Q external Cronbach's Alpha coefficient was found as 0.60, and the Pin-Q internal Cronbach's Alpha coefficient was found as 0.77.

Data Analysis

The IBM SPSS Statistics Version 22.0 (Statistical Package for Social Sciences; SPSS Inc., Chicago, IL, USA) software was used for the statistical analyses of the collected data. The results were evaluated in a confidence interval of 95% and on a significance level of $p < 0.05$. The data are expressed as percentage, mean and standard deviation. The suitability of the data for normal distribution was investigated by using Kolmogorov-Smirnov/Shapiro-Wilk tests. Pearson's simple correlation analysis was used to analyze the relationship between the quantitative variables.

RESULTS

A total of 51 pediatric patients participated in the study. 56.9% of the patients (15) were male, and 43.1% (11) were female. While 72.5% of the children lived in the city center, 49% of their families had an economic level were their income and expense were equal. The mean age of the children was 9.43±3.45 years. The DVISS, DVSS and PIN-Q scores of the participants are shown in Table 1.

The mean Dysfunctional Voiding and Incontinence Symptoms Score was found as 17.07 ± 5.12. However, the percentage of each question of the dysfunctional voiding and incontinence symptoms score (DVISS) questionnaire was answered. The findings are shown in Table 2.

As a result of the correlation analysis in this study, a significant positive correlation was found between DVISS and DVSS and PIN-Q. There was a weak relationship between PIN-Q dimensions and DVISS and DVSS (Table 3).

Table 1. Voiding and quality of life test results of the childrens

n:51	X±SD	Min- Max
Dysfunctional Voiding and Incontinence Symptoms Score Questionaire (DVISS)	17.07 ± 5.12	6-29
Dysfunctional Voiding Symptom Score (DVSS)	10.05 ± 1.77	6-15
Ouality of Life (PIN-Q)	39.56 ± 13.29	8-69

Table 2. Percentage of each question and answer of dysfunctional voiding and incontinence symptoms score (DVISS) questionnaire

1. Does your child wet during the day?	No	Sometimes	1-2 times\day	Always
%	45.1%	31.4%	13.7%	9.8%
2. How wet is your child during the day?	Damp underwear	Damp pants only		Pants soaking wet
%	19.6%	62.7%		17.6%
3. Does your child wet during the night?	No	1–2 Nights/Week	3–5 Nights/week	6–7 Nights/Week
%	4%	19.6%	27.5%	49%
4. How wet is your child during the night?	Damp underwear	Damp bed sheet only		Bed sheets soaking wet
%	0%	27.5%		72.5%
5. How many times does your child void?	1–7/Day		More than7/day	
%	52.9%		47.1%	
6. My child strains during voiding.	No		Yes	
%	94.1%		5.9%	
7. My child feels pain during voiding	No		Yes	
%	92.2%		7.8%	
8. My child voids intermittently.	No		Yes	
%	66.7%		33.3%	
9. My child needs to go back voiding soon after finishes his/her pee.	No		Yes	
%	82.4%		17.6%	
10. My child has a sudden feeling of having to urinate immediately	No		Yes	
%	25.5%		74.5%	
11. My child holds by crossing his/her legs	No		Yes	
%	58.8%		41.2%	
12. My child wets on the way to the toilet.	No		Yes	
%	56.9%		43.1%	
13. My child misses his/her bowel movement every day!	No		Yes	
%	78.4%		21.6%	
QUALITY OF LIFE				
If your child experiences symptoms mentioned above, does it affect his/her family, social or school life?				
%	No 2%	Sometimes 33.3%	Yes affects 47.1%	Seriously Affects 17.6%

Table 3. The relationship between voiding dysfunction and quality of life of the childrens

n:51		DVISS	DVSS
	External	r 0.170	r - 0.130
		p 0.000*	p 0.012*
	Internal	r 0.224	r 0.139
		p 0.000*	p 0.000*
Total PIN-Q		r 0.227	r 0.076
		p 0.000*	p 0.000*

DISCUSSION

This is a study that describes the effects of incontinence on quality of life in children. This study showed a significant relationship between quality of life and urinary incontinence and urinary dysfunction. Urinary dysfunction occurs when the pelvic floor muscles show either insufficient relaxation or excessive activity during voiding (16). The most significant symptoms are as, despite efforts to avoid incontinence, the child suddenly pees, pushing urine, has intermittent urination and recurrent urinary tract infections (2). Many studies have reported reduced self-confidence in children with urinary incontinence, social cohesion in children, and behavioral problems with the school and friends and a decrease in quality of life have been revealed (13,17-19).

In a study conducted by Yoğurtcu to examine the relationship between voiding dysfunctions and quality of life in primary school children, DVSS and the General-Purpose Health Related Quality of Life Scale were used. Children evaluated the quality of life of their families on the highest level, but their self-esteem scores were on the lowest level of self-perception. A negative correlation was found between the student's self-assessed quality of life scores and voiding scores (20).

In another study, Thibodeau et al. reported on forty children (10 males, 30 females), aged 5–11 years with non-neurogenic daytime wetting, and their parents were administered DVSS and PIN-Q. Urinary dysfunction had a significant effect on the children's self-esteem, quality of life, family dynamics and peer relationships (8).

In a similar study, Deshpande et al. reported that the Pediatric Incontinence Questionnaire was self-administered by children who were 6 to 16 years old with urinary incontinence while attending outpatient clinics at a tertiary pediatric hospital in Australia. A weighted summative quality of life score with a range of 1.75 to 7 (7 being the lowest quality of life) was generated, and the patient characteristics (age, sex, ethnicity, symptom severity) were evaluated as potential predictors. Disease-specific quality of life was lower in the children with urinary incontinence (21).

In 2006, Bower et al. conducted a study with the participation of countries as China, Japan, Australia, Italy, Turkey, Germany, Netherlands, Belgium and Denmark to assess the quality of life of 156 children aged 6-17 years with bladder dysfunction. The researchers thought that children with bladder dysfunction may be affected primarily in their social relationships, and following this, respectively in the areas of self-esteem, family relationships, body perceptions, mental health and independence. Moreover, as a result of the study, it was found that the effects on the quality of life of children were firstly on self-esteem, then mental health, independence, family relations, social relations and body perceptions (22).

The main limitation of our study was that it included a relatively small sample size. Future studies may include a broader sample and report a decrease in the rate of urinary incontinence or urinary dysfunction after training children and families.

LIMITATIONS

Our results have some limitations. This study was carried out as single-centered research. The results obtained from this study are valid only for these groups.

CONCLUSION

In conclusion, there are few studies investigating the relationship between quality of life and urinary incontinence or urinary dysfunction in childhood. According to these studies, neither the clinician nor the family can predict the quality of life of children with urinary incontinence or urinary dysfunction as the child perceives. It is considered that an objective measurement of quality of life will increase the motivation and adaptation of the family and the child and affect the success of the treatment positively.

Competing interests: The authors declare that they have no competing interest.

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