

URINER INCONTINENCE SCREENING INVOLVING 6957 MIDDLE SCHOOL STUDENTS IN THE ESKİSEHİR PROVINCE

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April 16, 2021

Abstract

Aim: Urinary incontinence is an important problem that can arise due to neurogenic or functional reasons and can negatively affect the psychological, social and personality development of children. This study was conducted in Eskişehir province, on secondary school students in order to determine the prevalence and nature of urinary incontinence at night and/or daytime. **Methods:** The study universe included all secondary school students attending state elementary schools in the city center of Eskişehir (N=34.000). Ethics Committee and Provincial Directorate of National Education approval was obtained before conducting the study, which was supported by Eskişehir Osmangazi University Scientific Research Projects Commission (2017-1876). A data collection form prepared by the researchers, and a consent form were delivered in sealed envelope to the parents via the students. The study data were collected between 09.05.2018-30.05.2018. Only volunteers were included in the study. 6957 questionnaires which have been fully completed from the 7370 surveys have been taken into consideration. The statistical analysis was carried out using the SPSS software package. **Results:** The number of children found to have urinary incontinence was determined to be 215 (3.1%). It has been determined that 33 children (0.5%) have urinary incontinence only at daytime, 61 children (0.9%) have urinary incontinence both at night and daytime, and 121 children (1.7%) have urinary incontinence only at night. It was observed that 56% of the children suffering from urinary incontinence had not applied to any health institution for treatment before. **Conclusions:** Children and families with urinary incontinence need medical information and support to cover the cause of the problem and suggestions for solutions. Accompanying pathologies in cases to be detected can be determined in the early period by means of school screenings and medical evaluation and support can prevent the psychosocial and personality development of children from being adversely affected.

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approval was obtained before conducting the study, which was supported by Eskişehir Osmangazi University Scientific Research Projects Commission (Project no: 2017-1876) . A data collection form prepared by the researchers, and a consent form were delivered in sealed envelope to the parents via the students. The study data were collected between 09.05.2018 and 30.05.2018. Only volunteers were included in the study. 6957 questionnaires which have been fully completed from the 7370 surveys have been taken into consideration. The statistical analysis was carried out using the SPSS soft ware package.

Results: The number of children found to have urinary incontinence was determined to be 215 (3.1%). It has been determined that 33 children (0.5%) have urinary incontinence only at daytime, 61 children (0.9%) have urinary incontinence both at night and daytime, and 121 children (1.7%) have urinary incontinence only at night. It was observed that 56% of the children suffering from urinary incontinence had not applied to any health institution for treatment before.

Conclusions: Children and families with urinary incontinence need medical information and support to cover the cause of the problem and suggestions for solutions. Accompanying pathologies in cases to be detected can be determined in the early period by means of school screenings and medical evaluation and support can prevent the psychosocial and personality development of children from being adversely affected.

Keywords: Urinary incontinence, children, school screenings

What is already known about this topic?

Urinary incontinence is an important problem that can negatively affect the psychological, social and personality development of children. Despite this, many families do not apply to a health institution because of the expectation that it will pass by itself and because they accept it as a situation to be ashamed of and hidden. It is important to identify the children who do not apply to the health institution.

What does this article add?

Thanks to the study, it was identified 120 (56%) children that had not been taken to any health institution before due to this problem. These children were directed to treatment. This situation shows the importance of school screenings. The finding of children who did not improve despite treatment was also an important result in the study. Also, the study showed that the parents still used the punishment method.

INTRODUCTION

Urinary incontinence is a common problem in childhood that can occur due to neurogenic or functional reasons (1). According to the new terminology suggested by the International Child Continence Association (ICCS), incontinence is divided into two groups as continuous and intermittent incontinence. While enuresis in the intermittent incontinence group only means incontinence during sleep (2), the term "daytime incontinence" is used for children who do not have urinary incontinence during the night and who have urinary incontinence during the day only (3). For these definitions, the child must be over 5 years old and have involuntary incontinence for at least 3 months and at least twice a week without any central nervous system defects (4, 5).

Urinary incontinence is a condition that negatively affects the quality of life and can cause psychosocial problems in both the family and the child (6). It can cause adaptation problems, social exclusion, low self-esteem, and decrease in school performance in children (7). It may cause the child's relationship with the family to deteriorate, the family to blame and punish the child, and to restrict their activities (8, 9). Despite this, many families do not apply to a health institution because of the expectation that it will pass by itself and because they accept it as a situation to be ashamed of and hidden (10). Lack of a standard screening program for the detection of urinary incontinence in our country also delays the diagnosis (11).

In this study, it was aimed to determine the children with urinary incontinence problem at a state secondary school in Eskişehir city center, and to evaluate the relationship between urinary incontinence and the social and medical anamnesis of the child. After the study was completed, families that had urinary incontinence problems and made a request were informed and directed for appropriate treatment.

METHODS

Samples

All of the students of the secondary school that is affiliated to the state in Eskişehir city center were included in our study (N=34.000). Incomplete questionnaires and children diagnosed with neurogenic bladder were excluded from the study. Of the 34,000 questionnaires distributed, 7370 were sent to us, and the study was completed with 6957 people.

Materials

In order to collect the data in the study, a data collection form prepared by the researchers in line with the literature was used. The data collection form includes questions that question the descriptive characteristics of students and their voiding disorders. For the content validity of the questionnaire, expert opinions were taken from a total of six people, one of whom was a pediatric nursing specialist, four of them pediatric urologists, and one of whom was a statistician. The questionnaire items were prepared in line with the recommendations.

Prosedure

Before the study was carried out, the permission of the Ethics Committee and the Provincial Directorate of National Education was obtained, and it was supported by the Scientific Research Projects Commission of Eskişehir Osmangazi University as the project numbered 2017-1876. The study data was collected between 09.05.2018 - 30.05.2018. The purpose of the study was explained to the teachers. The questionnaire and consent form were delivered to the families by the teachers in a sealed envelope. The questionnaires filled out by the parents were also delivered to the teachers in a sealed envelope.

In our study, it was stated at the end of our questionnaire that referrals for treatment can be made to the families who request, if they write their contact information. At the end of the study, the families were called by phone and a meeting day was determined, and the families attending the meeting were informed and directed for diagnosis and treatment.

Statistical Analysis

Statistical analyses were performed using the SPSS software (IBM Corp. Released 2012. IBM SPSS Statisticsfor Windows, Version21.0. Armonk, NY: IBM Corp.). Percentage and chi-square tests were used to evaluate the data, $p < 0.05$ was considered significant.

RESULTS

The study was completed with 6957 people. The ages of the children included in the study are between 10-15 and the average age is 11,9. It was found that 215 of the children (3.1%) had urinary incontinence problems. 33 of these children (0.5%) leak urine only during the day, 61 (0.9%) both during the day and at night, and 121 (1.7%) only at night. Table 1 shows the relationship between the descriptive characteristics of the child and the problem of urinary incontinence. There is a relationship between age, school success, the age of starting toilet training and urinary incontinence problem ($p < 0.001$).

The relationship between the child's health history and urinary incontinence problem is evaluated in Table 2. The problem of urinary incontinence was found at a significantly higher rate in children with a history of urinary tract infection or constipation, surgery, chronic disease or psychological disorders ($p < 0.001$).

In our study, 1621 of the children have a history of surgery. 489 of these are adenoid vegetation surgery. 586 of the children have a diagnosed chronic disease and the most common diagnosis is asthma ($n=117$). The number of children with diagnosed psychological diseases is 104 and the most common diagnosis is attention deficit-hyperactivity disorder ($n=57$).

The relationship between some characteristics of the family of the child and the urinary incontinence problem in the child is given in Table 3. A relationship was found between income level and urinary incontinence

problem ($p < 0.001$). It was determined that there was no relationship between the number of children and urinary incontinence problem ($p > 0.05$).

In Table 4, the relationship between the history of urinary incontinence of other family members and the presence of urinary incontinence in the child is given and it was determined that there is a significant relationship between them ($p < 0.001$).

In our study, it was determined that 120 (56%) of the children with urinary incontinence problem had not been taken to any health institution before due to this problem. 13.9% of the children who applied to health institution but still have urinary incontinence problem did not continue the recommended treatment, 11.6% continued to have urinary incontinence despite treatment, in 6.9% the severity of urinary incontinence decreased with treatment, in 7.4% urinary incontinence stopped with treatment but started again after a while.

Families were asked if there was any significant change in their lives that could effect the child before their children started to have urinary incontinence. 7.9% of the families stated that the sibling of the child was born, 2.7% stated that they moved to a new house, 3.7% stated that the parents divorced, 1.8% stated that the child was hospitalized, 2.3% stated that one of the family members got sick or was hospitalized and 1.3% stated that the child was effected by war.

In our study it was observed that some families blamed or punished their children who had urinary incontinence problem. 8.8% of the families stated the punishment they gave as "I am angry with my child, I scream", 5.1% "I state that I am angry with my body language", 6% "I say that it upsets me", 4.1% "I compare them with other children".

DISCUSSION

In our study, the prevalence of urinary incontinence was found to be 3.1%, and the frequency of urinary incontinence was found to decrease with increasing age. The frequency of urinary incontinence in school-age children is stated to be 2-7% (12). The prevalence of enuresis is 15-20% on average in 5-year-old children, 5-6% in the 10-year-old group, and less than 1% in the 15 and above-year-old group (13, 14). Studies (7, 15, 16) have also stated that the prevalence of enuresis decreases with increasing age. Our result is compatible with the literature. This result is thought to be due to the increase in controlling ability in children as the age increases.

In our study, it was determined that the frequency of urinary incontinence was 3.2% in boys and 3% in girls, and the relationship between them was not significant ($p > 0.05$). Similarly, in the study of Kahrman and Mumcu (2011), it was found that enuresis was seen more in boys, but the result was not significant. Goksu et al. (2020), in their study with primary school children, found that the frequency of enuresis was higher in boys. Similarly, in a meta-analysis conducted with Iranian children (18), it was found that the prevalence of enuresis was higher in boys. Contrary to these results, there are also studies (16, 19) in which the frequency of urinary incontinence was higher in girls. It is thought that this difference in the results may be due to the lack of gender homogeneity in the studies. In the literature, it is stated that girls complete toilet training earlier than boys, and male gender is seen as a risk factor delaying toilet training (12). The reason for this is thought to be that girls develop faster than boys, as continence is associated with developmental maturity. It has been suggested that the incidence of enuresis is also less common in girls for this reason, although it has not yet been proven conclusively (20).

In our study, a significant difference was found between children's school success and urinary incontinence problem. Similar to our results, studies (21, 22) have also found that enuretic children have a lower school success. These results can be considered as the reflection of low self-esteem and sense of failure due to urinary incontinence problem experienced by children on school success.

In our study, a significant relationship was found between the age of starting toilet training and the frequency of urinary incontinence. Similar to our results, Barone et al.'s (2009) study also states that as the age of starting toilet training is delayed, the frequency of urinary incontinence increases and urge-type urinary

incontinence problem is observed. Contrary to these results, Goksu et al. (2020) concluded in their study that the age of starting toilet training did not affect the frequency of enuresis. However, it was thought that this situation might be due to a random response given at face-to-face interviews with the families. In the literature (24), it has been stated that starting toilet training before the child reaches the age of 1.5 and after the age of 2.5 may pave the way for enuresis. It has been suggested that a higher rate of enuresis may be seen, especially in children who start toilet training late.

In our study, a significant relationship was found between the child's operation status, chronic illnesses, presence of psychological illnesses and their urinary incontinence problem. There are previously conducted studies that show a relationship between adenoidectomy (25, 26) and attention deficit and hyperactivity disorder (27), and the enuresis frequency. In addition, there are studies reporting a relationship between urinary incontinence and obesity and high body mass index (28, 29). Erdem et al. (2006) suggested that obesity will result in bad eating habits and constipation, and that this may be associated with urinary incontinence.

In our study, the rate of urinary incontinence was found to be significantly higher in children who had at least one urinary tract infection (UTI). Similarly, studies (30-33) have shown that there is a significant relationship between urinary tract infection and urinary incontinence problem. In addition, it has been stated that the possibility of a structural anomaly in the urinary system increases in cases with UTI with enuresis (30).

In our study, it was found that the problem of urinary incontinence was significantly higher in children with constipation. In the literature (17, 31, 34), it has been stated that constipation is a risk factor for enuresis. This result is thought to be due to the fact that the genitourinary and gastrointestinal systems share the same embryological origin, anatomical cavity and innervation (35).

In our study, it was found that the lower the family income level, the higher the frequency of urinary incontinence. In many studies (17, 18, 36, 37), it is stated that urinary incontinence is a common pathology in children of families with low socio-economic status. This shows that economic and social problems in the family can increase the frequency of urinary incontinence by creating stress on children. In a study conducted by Erguven et al. (2004), it was found that there was no significant relationship between children with primary enuresis and the control group in terms of socio-economic and educational levels of families. However, it was stated that this result was due to the participation of people with similar socioeconomic status.

In our study, it was found that children with a history of urinary incontinence in their mothers, fathers and siblings have urinary incontinence problems significantly. In accordance with our result, it has been stated in the literature (18, 39, 40) that genetic factors or genetic predisposition are important in the etiology of urinary incontinence problem. In the study of Akyuz et al. (2014), it was determined that 50% of the patients had a history of enuresis nocturna in their siblings, 42.1% in the mother, 28.9% in the father and 89.5% in their relatives from their mother or father's side. However, it was reported that it would be wrong to explain this situation only with genetic transmission, and the toilet training the child received and the approach of the family may also have an effect.

In our study, it was found that 56% of the children with urinary incontinence problem had not been taken to any health institution before due to this problem. In the literature (42-44), it was stated that families also did not seek treatment because they had a history of urinary incontinence, believed that it would recover spontaneously, and fear that the drugs used could cause infertility. This result showed the importance of detecting children with urinary incontinence problems by screening and the need for medical information for the families of children with problems.

In our study, some families whose children had urinary incontinence stated that they reacted as "I am angry at my child, I am shouting", "I state that I am angry with my body language", "I say that it hurts me", "I compare them with other children". In their study, Karaman et al. (2013) found that 58.1% of the families used at least one punishment method against their children with urinary incontinence problem, such as reprimanding, threatening with punishment, humiliating in the presence of others and not fulfilling their

requests. In the study of Sarhan et al. (2021), it was stated that 47% of the families punished their children for urinary incontinence. In the study of Tabanoglu and Ozlu (2021), on the contrary to these results, 86.4% of the families stated that the child who has urinary incontinence problem at night should not be punished. In a study (47) comparing children with enuresis who were punished by their families and those who were not, it was found that depressive symptoms were significantly higher and quality of life was lower in children who were punished. In addition, it was stated that the severity of enuresis in punished children was significantly higher than in children who were not punished. Based on this result, it can be said that the punishment approach of families does not prevent urinary incontinence in children, on the contrary, it harms and increases the severity of the problem.

CONCLUSION

In our study, the number of children with urinary incontinence problems was found to be 215 (3.1%). A significant portion of the families participating in our study did not take their children to any health institution before due to urinary incontinence problem. On the other hand, 52.5% (n=113) of the families added their contact information to the questionnaire in order to get support. These results showed that patients with urinary incontinence problems and their families need medical information and support to cover the cause of this problem and suggestions for solutions. While the accompanying pathologies can be detected in cases to be detected in the early period with school screenings, it can be prevented from adversely affecting the psycho-social and personality development of children with medical evaluation and support.

Importance of the Study

In our study, it was stated at the end of our questionnaire that referrals for treatment can be made to the families who request, if they write their contact information. At the end of the study, the families were called by phone and a meeting day was determined, and the families attending the meeting were informed and directed for diagnosis and treatment. Our study is important in terms of reaching a very large population in Eskisehir Province and creating social awareness. It is also important for children with urinary incontinence problems in that they are directed to diagnosis and treatment before it is too late.

Conflict of Interest Statement

The authors have no relevant financial or non-financial interests to disclose.

Authors' Contributions

These authors contributed equally to this paper.

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Table 1. The Relationship Between Descriptive Characteristics of the Child and Urinary Incontinence Problem

Descriptive Characteristics	Descriptive Characteristics	Urinary Incontinence Problem (+)	Urinary Incontinence Problem (-)	Total	Chi-square	p	p
Age	Age	Age	Age	Age	Age	Age	Age
10-11	n	119	2593	2712	27.728	<0.001	<0.001
	%	4.4	95.6	100			
12-13	n	84	3298	3382			

Descriptive Characteristics	Descriptive Characteristics	Urinary Incontinence Problem (+)	Urinary Incontinence Problem (-)	Total	Chi-square	p	p
14-15	%	2.5	97.5	100			
	n	12	851	863			
	%	1.4	98.6	100			
Gender	Gender	Gender	Gender	Gender	Gender	Gender	Gender
Girl	n	121	3859	3980	0.078	0.78	0.78
	%	3	97	100			
Boy	n	94	2883	2977			
	%	3.2	96.8	100			
School success	School success	School success	School success	School success	School success	School success	School success
High	n	54	2285	2339	69.162	<0.001	<0.001
	%	2.3	97.7	100			
Upper-middle	n	79	3045	3124			
	%	2.5	97.5	100			
Middle	n	68	1336	1404			
	%	4.8	95.2	100			
Lower-middle	n	12	65	77			
	%	15.6	84.4	100			
Low	n	2	11	13			
	%	15.4	84.6	100			
Age of starting toilet training	Age of starting toilet training	Age of starting toilet training	Age of starting toilet training	Age of starting toilet training	Age of starting toilet training	Age of starting toilet training	Age of starting toilet training
<1 age	n	14	662	676	16.332	16.332	<0.001
	%	2.1	97.9	100			
1-3 age	n	182	5828	6010			
	%	3.0	97.0	100			
4-6 age	n	19	252	271			
	%	7.0	93.0	100			

Table 2. The Relationship Between Children's Health History and Urinary Incontinence Problem

		Urinary Incontinence Problem (+)	Urinary Incontinence Problem (-)	Total	Chi-square	p
History of surgery	History of surgery	History of surgery	History of surgery	History of surgery	History of surgery	History of surgery
Yes	n	65	1556	1621	5.966	0.017
	%	4.0	96.0	100		
No	n	150	5186	5336		
	%	2.8	97.2	100		

		Urinary Incontinence Problem (+)	Urinary Incontinence Problem (-)	Total	Chi-square	p
History of chronic disease	History of chronic disease	History of chronic disease	History of chronic disease	History of chronic disease	History of chronic disease	History of chronic disease
Yes	n	33	553	586	13.795	<0.001
	%	5.6	94.4	100		
No	n	182	6189	6371		
	%	2.9	97.1	100		
History of psychological disorders	History of psychological disorders	History of psychological disorders	History of psychological disorders	History of psychological disorders	History of psychological disorders	History of psychological disorders
Yes	n	16	88	104	53.283	<0.001
	%	15.4	84.6	100		
No	n	199	6654	6853		
	%	2.9	97.1	100		
History of urinary tract infection	History of urinary tract infection	History of urinary tract infection	History of urinary tract infection	History of urinary tract infection	History of urinary tract infection	History of urinary tract infection
Yes	n	97	1467	1564	65.226	<0.001
	%	6.2	93.8	100.0		
No	n	118	5275	5393		
	%	2.2	97.8	100.0		
Constipation	Constipation	Constipation	Constipation	Constipation	Constipation	Constipation
Yes	n	38	385	423	52.181	<0.001
	%	9.0	91.0	100.0		
No	n	177	6354	6531		
	%	2.7	97.3	100.0		

Table 3. The Relationship Between Family Traits and Child's Urinary Incontinence Problem

Family Traits	Family Traits	Urinary Incontinence Problem (+)	Urinary Incontinence Problem (-)	Total	Chi-square	p
Family income level	Family income level	Family income level	Family income level	Family income level	Family income level	Family income level
Low	n	256	1662	1918	49.902	<0.001
	%	13.3	86.7	100.0		
Middle	n	385	4812	5197		
	%	7.4	92.6	100.0		
High	n	63	893	956		
	%	6.6	93.4	100.0		
Number of children	Number of children	Number of children	Number of children	Number of children	Number of children	Number of children
1	n	23	790	813	1.958	0.581
	%	2.8	97.2	100		

Family Traits	Family Traits	Urinary Incontinence Problem (+)	Urinary Incontinence Problem (-)	Total	Chi-square	p
2	n	116	3527	3643		
	%	3.2	96.8	100		
3	n	49	1729	1778		
	%	2.8	97.2	100		
4+	n	27	696	723		
	%	3.7	96.3	100		

Table 4. Urinary Incontinence History of Other Family Members and Presence of Urinary Incontinence Problem in Child

Urinary Incontinence History of Other Family Members	Urinary Incontinence History of Other Family Members	Urinary Incontinence Problem (+)	Urinary Incontinence Problem (-)	Total	Chi-square	p
Presence of Urinary Incontinence in Mother	Presence of Urinary Incontinence in Mother	Presence of Urinary Incontinence in Mother	Presence of Urinary Incontinence in Mother	Presence of Urinary Incontinence in Mother	Presence of Urinary Incontinence in Mother	Presence of Urinary Incontinence in Mother
Yes	n	26	322	348	23.475	<0.001
	%	7.5	92.5	100		
No	n	189	6420	6609		
	%	2.9	97.1	100		
Presence of Urinary Incontinence in Father	Presence of Urinary Incontinence in Father	Presence of Urinary Incontinence in Father	Presence of Urinary Incontinence in Father	Presence of Urinary Incontinence in Father	Presence of Urinary Incontinence in Father	Presence of Urinary Incontinence in Father
Yes	n	42	263	305	121.489	<0.001
	%	13.8	86.2	100		
No	n	173	6479	6652		
	%	2.6	97.4	100		
Presence of Urinary Incontinence in Siblings	Presence of Urinary Incontinence in Siblings	Presence of Urinary Incontinence in Siblings	Presence of Urinary Incontinence in Siblings	Presence of Urinary Incontinence in Siblings	Presence of Urinary Incontinence in Siblings	Presence of Urinary Incontinence in Siblings
Yes	n	43	488	531	48.132	<0.001
	%	8.1	91.9	100		
No	n	172	6254	6406		
	%	2.7	97.3	100		

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