

A Survey Study on Evaluation and Management of Nocturnal Enuresis in Pediatricians and Family Physicians

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What's known on the subject? and What does the study add?

Although nocturnal enuresis is a common disorder in pediatric urology practice, it can sometimes cause a challenge for both physicians and parents. However, it is known that most of the patients primarily refer to family physicians and pediatricians. This survey study, which included multiple-choice questions, showed that the participants felt inadequate during management of nocturnal enuresis. We believe that postgraduate training programs may increase the self-confidence of physicians in management of nocturnal enuresis.

Abstract

Objective: Nocturnal enuresis (NE) is one of the most common disorders in pediatric urology, and patients often turn to family physicians (FP) and pediatricians (P) initially. The aim of this study was to understand the awareness, self-confidence and suggestions of physicians regarding the management of NE.

Materials and Methods: In this study, 360 FP and family medicine residents (FMR), as well as 280 P and pediatrics residents (PR), were contacted through a cellular phone texting system. A simple multiple-choice questionnaire (SurveyMonkey®) consisting of 10 questions was used to gather data. The survey included questions about their experience, training, evaluation, and management of NE.

Results: A total of 119 FPs and Ps (18.5%) filled the questionnaire. Thirty (25.21%) of the participants were P, 27 (22.69%) PR, 3 (2.52%) FP and 59 (49.58%) FMR. The rate of physicians who encounter at least 5 children with NE per month is 31.33%. The mean self-confidence in the management of NE was 4.5 out of 10. The self-confidence of pediatricians was significantly higher than that of PR and FMR ($p < 0.001$, $p < 0.001$). Most ($n = 78$, 65.55%) of the participants stated that they received training on EN during medical faculty and 62 (52.10%) during residency. Psychological problems (89.92%), sleep disorders (78.15%), and excessive fluid intake (75.63%) were the most frequently considered factors in etiology. While most responders (75.63%) considered dietary regulation and behavioral interventions as the first-line treatment, 25.21% consult a pediatric urologist and only 1.6% recommend medical treatment.

Conclusion: Although FP and P admit they had training on NE, they mostly felt incompetent to manage NE and exclusively avoided pharmacological treatment.

Keywords: Children, enuresis nocturna, pediatric urology, physicians, survey

Introduction

Nocturnal enuresis (NE) is defined as involuntary urinary incontinence during sleep that occurs in children older than 5 years of age (1). Enuresis is classified as monosymptomatic

NE and non-monosymptomatic NE according to daytime lower urinary tract (LUT) symptoms, such as urgency, voiding difficulties, abnormal daytime voiding frequency, and incontinence. Primary NE refers to a child who has not been dry for 6 months, whether secondary NE is symptom-free 6

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months before bedwetting. Around 10 to 15 percent of 7-year-old children experience primary NE, but it resolves at a rate of 15 percent per year, with approximately 99 percent of children becoming dry by the age of 15 (2). Although enuresis is three times more common in boys than in girls before the age of 10, this gender difference decreases with age. Nocturnal polyuria, nocturnal detrusor overactivity, low bladder capacity at night, high arousal thresholds, genetic factors, and psychological/psychiatric problems can be considered as etiological factors of NE (3).

A multicenter and multinational survey study concluded that there is no consensus among physicians on the etiology, diagnosis, and treatment of EN (4). Also, it is known that NE is often neglected by caregivers. Therefore, it may lead to low self-esteem, disturbed social life, and poor sleeping quality in untreated patients (5,6). Urotherapy, fluid restriction in the evenings, enuretic alarms, and desmopressin are first-line treatments for monosymptomatic NE (7-9). Also, LUT symptoms and constipation should be managed in patients with nonmonosymptomatic NE. Some patients should see a psychologist or psychiatrist for behavioral or antidepressant treatment (10,11).

Bedwetting is one of the most frequent complaints in pediatric urology outpatient clinics. However, patients often refer to family physicians (FP) and pediatricians (P) first. This study aims to understand the awareness, self-confidence, and suggestions of FP and P about the evaluation and management of NE in children.

Materials and Methods

Three hundred and sixty FP and family medicine residents (FMR) and 280 P and pediatrics residents (PR) were reached through a cellular phone texting system using a simple multiple-choice questionnaire (SurveyMonkey®) consisting of 10 questions. Marking multiple answers was allowed for six of the 10 questions. However, 119 physicians filled out the questionnaire and were included in the study. Others were excluded from the study. The survey contained questions on the experience and training of the physicians, the frequency of seeing these patients, knowledge about the etiology, evaluation, and management of NE, and self-confidence to manage them. All questions in the survey are listed below.

1. What is your area of expertise? (Only single response)
2. How many years have you been a physician? (Only single response)
3. How often do you encounter children with NE? (Only single response)

4. How confident are you in the management of NE? (Only single response)
5. Where did you get information about NE? (Multiple response available)
6. Which of the following sources did you use to learn about NE? (Multiple response available)
7. Which one(s) do you think is involved in the etiology of NE? (Multiple response available)
8. Which of the following do you use in the first evaluation? (Multiple response available)
9. What is your approach in the first-line treatment of children with NE who have never been managed before? (Multiple response available)
10. What is your approach in children who are resistant to first-line treatment? (Multiple response available).

Ethical approval was obtained from the local ethics committee (ethical number: 09.2023.01, date: 02.02.2023 - Marmara University Faculty of Medicine Clinical Research Ethics Committee).

Statistical Analyses

Data were analyzed using the IBM Statistical Package for the Social Sciences version 23 (IBM SPSS Statistics for Windows, Chicago, IL, USA). The normality of the distribution of the variables was evaluated using the Shapiro-Wilk test. As the distribution of continuous variables did not provide a normal distribution, continuous data were presented with a median, minimum and maximum. Independent groups were compared with Mann-Whitney U and Kruskal-Wallis tests. The Pearson chi-square and Fisher's exact test were used for binary categorical-dependent data. A p value <0.05 was set as statistically significant.

Results

A total of 119 participants (18.5%) filled out the questionnaire. Thirty (25.21%) of the participants were P, 27 (22.69%) PR, 3 (2.52%) FP and 59 (49.58%) FMR. While 74.79% (n=89) of participants had less than 5 years of experience, only 11.76% had more than 10 years (n=14). Most of the responders (n=55, 46.22%) rarely encounter children with NE (0-2 patients/month). The rate of physicians who encounter at least 5 children with NE per month is 31.33%. The mean self-confidence in the management of NE was 4.87 out of 10. The self-confidence score of pediatricians was significantly higher than PR and FMR (p<0.001, p<0.001) (6.86±1.56, 4.96±1.97, 3.86±1.89, respectively). It was found to be higher in specialists than in residents (p=0.0001). When the self-confidence score was

compared according to experience and monthly case frequency, it was found to be statistically significant between the groups ($p=0.001$, $p=0.001$) (Table 1). Most ($n=78$, 65.55%) of the participants stated that they received training on EN during medical faculty and 62 (52.10%) during residency. Seventeen (14.29%) of them responded that they received information from postgraduate training. While 76 (63.87%) of the participants indicated faculty members as educational resources related to EN, 56 (47.06%) experts and senior assistants, 66 (55.46%) written training materials, 35 (29.41%) seminars and meetings, 26 (21.85%) personal clinical experience, and 14 (11.76%) internets. Psychological problems (89.92%), sleep disorders (78.15%), and excessive fluid intake (75.63%) were the

most frequently considered factors in etiology (Table 2). In the subgroup analysis, preferences were similar in terms of disciplines and seniority, except for higher nocturnal urine production ($p=0.017$ for seniority) (Table 2). Urine analysis (86.44%), voiding diary (82.20%), and biochemical analysis (62.71%) were the main exams in the first evaluation (Table 3). In the subgroup analysis, preferences were similar in terms of disciplines and seniority, except for urinary system ultrasound ($p=0.017$ for seniority) (Table 3). While most of the responders (75.63%) considered dietary regulation and behavioral interventions as the first-line treatment, 25.21% consult a pediatric urologist and only 1.6% recommend medical treatment (Table 4). In the subgroup analysis, all preferences were similar in terms of disciplines

Table 1. Comparison of self-confidence scores in terms of disciplines, seniority, experience and case frequency

		n (%)	Self-confidence score (0-10) [Median (min-max)]	p-value
Discipline	Pediatrics	57 (47.9)	6.00 (1-10)	0.001
	Family medicine	62 (52.1)	4.00 (1-8)	
Seniority	Specialist	32 (26.9)	6.50 (3-10)	0.0001
	Resident	87 (73.1)	4.00 (1-10)	
Experience (year)	0-5	89 (74.8)	4.00 (1-10)	0.001 [#]
	6-10	16 (13.4)	6.50 (4-10)	
	11-15	12 (10.1)	6.50 (5-10)	
	>16	2 (1.7)	7.50 (6-9)	
Case frequency (n/month)	0-2	55 (46.2)	4.00 (1-7)	0.001 ^{&}
	3-4	26 (21.8)	5.00 (1-8)	
	5-6	23 (10.3)	6.00 (1-9)	
	7-10	11 (9.2)	7.00 (3-10)	
	>11	4 (3.4)	8.50 (4-10)	

([#]: 0-5 vs 6-10 = 0.001, 0-5 vs 11-15 = 0.0001; [&]: 0-2 vs 7-10 = 0.001, 0-2 vs >11 = 0.04), Min-max: Minimum-maximum

Table 2. Etiology of nocturnal enuresis according to participants and comparison of preferences in terms of disciplines, seniority (Multiple response available)

	n	%	Discipline		p-value	Seniority		p-value
			Pediatrics n (%)	Family medicine n (%)		Specialist n (%)	Resident n (%)	
Sleep disorders	93	78.15	43 (75.4)	50 (80.2)	0.492	28 (87.5)	65 (74.7)	0.134
Detrusor overactivity during sleep	72	60.50	33 (57.9)	39 (62.9)	0.577	17 (53.1)	55 (63.2)	0.318
Decreased bladder capacity	62	52.10	34 (59.6)	28 (45.2)	0.114	21 (65.6)	41 (47.1)	0.073
High nocturnal urine production	36	30.25	20 (35.1)	16 (25.8)	0.271	15 (46.9)	21 (24.1)	0.017
Excessive fluid intake	90	75.63	46 (80.7)	44 (71)	0.217	25 (78.1)	65 (74.7)	0.701
Obstructive sleep apnea	31	26.05	17 (29.8)	14 (22.6)	0.368	11 (34.4)	20 (23)	0.210
Psychological problems	107	89.92	51 (89.5)	56 (90.3)	0.878	28 (87.5)	79 (90.8)	0.596
Genetics	65	54.62	35 (61.4)	30 (48.4)	0.154	22 (68.8)	43 (49.4)	0.060

NA: Not available

and seniority (Table 4). Refractory cases of first-line behavioral treatment are vastly referred to pediatric nephrologists and urologists (Table 5). In the subgroup analysis, preferences were

similar in terms of disciplines and seniority, except for I check compliance to treatment (p=0.048 for seniority) (Table 5).

Table 3. Diagnostic methods preferred by the participants in the first evaluation and comparison of preferences in terms of disciplines, seniority (Multiple response available)

	n	%	Discipline		p-value	Seniority		p-value
			Pediatrics n (%)	Family Medicine n (%)		Specialist n (%)	Resident n (%)	
I decide according to age	72	61.02	34 (59.6)	38 (61.3)	0.855	18 (56.3)	54 (62.1)	0.565
Child and family psychosocial development assessment	72	61.02	32 (56.1)	40 (64.5)	0.350	17 (53.1)	55 (63.2)	0.318
Urine analyses	102	86.44	51 (89.5)	51 (82.3)	0.261	30 (93.8)	72 (82.5)	0.129
Biochemical analysis	74	62.71	37 (64.9)	37 (59.7)	0.556	23 (71.9)	51 (58.6)	0.186
Urinary system ultrasound	51	43.22	26 (45.6)	25 (40.3)	0.560	22 (68.8)	29 (33.3)	0.001
Voiding diary	97	82.20	47 (82.5)	50 (80.6)	0.799	27 (84.4)	70 (80.5)	0.626
Uroflowmetry and measurement of residual urine	7	5.93	2 (3.5)	5 (8.1)	NA	2 (6.3)	5 (5.7)	NA
Invasive urodynamics	6	5.08	2 (3.5)	4 (6.5)	NA	2 (6.3)	4 (4.6)	NA
I do not make any examinations and refer to the expert	6	5.08	3 (5.3)	3 (4.8)	NA	0	6 (6.9)	NA

NA: Not available

Table 4. Approaches of the participants in first-line treatment and comparison of preferences in terms of disciplines, seniority (Multiple response available)

	n	%	Discipline		p-value	Seniority		p-value
			Pediatrics n (%)	Family Medicine n (%)		Specialist n (%)	Resident n (%)	
I decide according to the age of the child	82	68.91	40 (70.2)	42 (67.7)	0.774	20 (62.5)	62 (71.3)	0.360
I decide according to duration, frequency and severity of EN	69	57.98	31 (54.4)	38 (61.3)	0.446	15 (46.9)	54 (62.1)	0.137
Depends on the presence of daytime symptoms	80	67.23	40 (70.2)	40 (64.5)	0.511	22 (68.8)	58 (66.7)	0.830
I start with psychosocial support, diet, fluid restriction, and behavioral advice	90	75.63	45 (78.9)	45 (72.6)	0.419	25 (78.1)	65 (74.7)	0.701
I start with alarm therapy	18	15.13	10 (17.5)	8 (12.9)	0.480	8 (25)	10 (11.5)	0.068
I start with an anticholinergic agent	0	0	0	0	NA	0	0	NA
I start with desmopressin	2	1.68	2 (3.5)	0	0.227	1 (3.1)	1 (1.1)	NA
I start with imipramine	1	0.84	1 (1.8)	0	NA	0	1 (1.1)	NA
I do not treat and refer patients to the specialist	30	25.21	10 (17.5)	20 (32.3)	0.479	6 (18.8)	24 (27.6)	0.325

NA: Not available

Table 5. Approaches of the participants in cases resistant to first-line treatment and comparison of preferences in terms of disciplines, seniority (Multiple response available)

	n	%	Discipline		p-value	Seniority		p-value
			Pediatrics n (%)	Family Medicine n (%)		Specialist n (%)	Resident n (%)	
I check compliance to treatment	66	55.46	28 (49.1)	38 (61.3)	0.182	13 (40.6)	53 (60.9)	0.048
I check again daytime symptoms	54	45.38	21 (36.8)	33 (53.2)	0.073	13 (40.6)	41 (47.1)	0.528
If it is resistant to conservative and alarm treatment, I apply medical treatment	53	44.54	27 (47.4)	26 (41.9)	0.551	17 (53.1)	36 (41.4)	0.253
If I gave pharmacological treatment, I would change the dose	11	9.24	7 (12.3)	4 (6.5)	0.273	3 (9.4)	8 (9.2)	0.673
If I gave pharmacological treatment, I switch to another agent	7	5.88	2 (2.5)	5 (8.1)	NA	1 (3.1)	6 (6.9)	NA
If I gave pharmacological treatment, I add a second pharmacological agent	3	2.52	1 (1.8)	2 (3.2)	NA	0	3 (3.4)	NA
The drug I would just start or add would be anticholinergic	6	5.04	3 (5.3)	3 (4.8)	NA	1 (3.1)	5 (5.7)	NA
The drug I would just start or add would be desmopressin	5	4.20	3 (5.3)	2 (3.2)	NA	3 (9.4)	2 (2.3)	NA
The drug I would just start or add would be imipramine	1	0.84	1 (1.8)	0	NA	0	1 (1.1)	NA
The treatment I would just start or add would be enuretic alarm	7	5.88	3 (5.3)	4 (6.5)	NA	3 (9.4)	4 (4.6)	NA
I do not treat and refer to the relevant expert	80	67.23	38 (66.7)	42 (67.7)	0.910	18 (56.3)	62 (71.3)	0.122

NA: Not available

Discussion

In this study, we evaluated the NE management of P and FP using a questionnaire. To the best of our knowledge, this is the first study to assess the awareness and approach of primary care physicians toward NE in our country. Surprisingly, we found that this group, who regularly evaluates a large number of sick children in their daily practice, encountered fewer cases of NE than anticipated. About 68.07% of the participants reported encountering four or fewer children with NE per month. Another interesting point was that the vast majority of the participants received their NE-related training during their undergraduate education and residency, whereas only 14.29% of them benefited from postgraduate training. When asked about the etiology of NE, a significant number of participants (89.92%) attributed it to psychological and family psychosocial factors, which are causes of secondary NE. Notably, only 30.25% of participants identified nocturnal polyuria, one of the primary

causes of NE. Moreover, in subgroup analysis, preferences for etiology and management of NE were similar between disciplines and seniority.

Although there are some studies in the literature evaluating the experiences of children suffering from NE and their parents (12,13), there are only a few studies examining the approach of physicians. One of them is a multicenter international survey study published in 2018, a total of 261 physicians' views on the etiology, diagnosis, and treatment of NE were evaluated (4). The percentage of participants with 10 or more years of experience was 70%. While the rate of participants with 10 or more years of experience was 70%, in this study, 88.24% were within the first 10 years. It was reported that 67% of the participants believed that monosymptomatic NE was due to ADH release variation, 64% to familial predisposition, and 48% to psychological reasons. In the same study, it was reported that bedwetting was the main complaint of only 32% of the patients and that the

majority of others were revealed by the physician's questioning during the appointment for another reason. In the treatment, restriction of fluid intake was preferred by 82%, pharmacologic intervention by 71%, urologic consultation by 59%, and family support by 54%. In the present study, psychological causes were prominent at 89.92%, sleep disorders at 78.15%, excessive fluid consumption at 75.63%, and detrusor overactivity at 60.50% in terms of etiology. Unlike this study, in our survey, participants were asked about their approach to NE, not monosymptomatic NE. Therefore, the difference in responses may have resulted from this situation. However, it is seen that psychological problems come to mind intensively in both studies. In the present survey, while supportive treatment such as psychosocial support, fluid restriction, and diet recommendation was considered as the primary treatment approach in 75% of cases, enuretic alarm was preferred only in 15.13% and desmopressin in 1.68%. Similar to the answers of our participants, supportive treatment for NE is recommended as first-line therapy in the The European Association of Urology pediatric urology guideline (Level of Evidence: 1, Strength Rating: strong) (14).

The other is a historical survey study published in 1996 and conducted with 61 primary care physicians (15). It was reported that 38% of the children treated by the participants in the last year showed complete remission, 41% showed partial remission, and 21% were resistant to treatment. 95% of the participants considered slow maturation of bladder control to be the cause of NE and 86% considered unusually deep sleep. According to the participants, 98% of the families had tried fluid restriction and 95% of the awakening method. It has been reported that behavioral treatments are used more commonly than pharmacological treatments and that 91% of the participants recommend the rewarding method to their families. Other methods used by the participants are postponing the problem to a later period and waiting for its development (80%), fluid restriction (80%), awakening (68%), and medication (52%). On the other hand, 36% of the physicians who recommended pharmacotherapy-prescribed imipramine. In this study, only one participant (0.84%) responded that imipramine could be recommended as a first-line treatment. Similarly, psychological disorders came to the fore in this study. It also gives an idea about the drug selection of that period.

Psychological stress or trauma and mood changes are known to cause NE or increase its symptoms (16,17). NE has also been reported to be associated with anxiety, depression and inferiority (18). Behavioral problems, which are seen in 10-15% of the general population, have been shown to be approximately twice as common in children with NE (10). Moreover, bedwetting causes additional psychological stress for children and reduces their quality of life (19). Also, it has been reported that mothers of children with NE have worse depression and anxiety scores

than mothers of healthy children, and they seem more punishing (20,21). Therefore, a psychosocial assessment may be required in the management of NE. However, although psychological and behavioral disorders are important causes of NE, LUT functions should be evaluated in detail. Before treatment, it should be determined whether it is monosymptomatic or nonsymptomatic. Thus, detailed anamnesis, physical examination, and voiding diary should be performed, and if necessary, urine analysis, ultrasound, and uroflowmetry should be included (14).

Another important aspect of the study is assessing physicians' knowledge about NE and their self-confidence in managing it. Given that most of the participants have less than 10 years of experience, we believe that the results will provide insight into the current situation. The physicians NE-related self-confidence score average was only 4.87 out of 10, and the rate of physicians with a score of 8 and above was 10.92%. While 47.90% of the participants stated that they did not receive training on this subject during their residency, only 14.29% emphasized that they benefited from postgraduate training. While 63.87% of them received training on NE from faculty members, only 55.56% of them used printed training materials. It was stated that 25.21% of the participants referred the primary patient to the relevant specialist, while 67.23% referred the patient who was resistant to first-line treatment. These results suggest that physicians should be informed more about NE, which has a 15% incidence and can negatively affect the quality of life of both children and parents during their training and residency.

Study Limitations

The study has some limitations. Two different disciplines were chosen as the survey group, so it is important to consider that there may be different approaches. Unfortunately, we received feedback from only 119 of the 640 physicians which accounts for 18.59% of the response rate. While 52.1% of the participants were family practitioners, only 2.52% were FP specialists, with the remaining 49.58% being residents. Although residents were not authorized to prescribe medication, we included them in this study because we believe they play an important role in the initial evaluation of children suffering from bedwetting. It is worth noting that the question technique used in this survey allowed for multiple selection and interpretation, which may have influenced the participants' responses. Therefore, conducting face-to-face studies with a larger number of participants could provide more comprehensive information regarding the approach to NE.

Conclusion

While the majority of participants reported receiving information about NE at different stages of their education from various sources, they expressed a sense of inadequacy in assessing and

managing NE, often opting to avoid pharmacological treatment. We believe that postgraduate education programs aimed at enhancing physicians' self-confidence in dealing with NE would be beneficial.

Ethics

Ethics Committee Approval: Ethical approval was obtained from the local ethics committee (ethical number: 09.2023.01, date: 02.02.2023 - Marmara University Faculty of Medicine Clinical Research Ethics Committee).

Informed Consent: Informed consent was obtained.

Peer-review: Externally and internally peer-reviewed.

Authorship Contributions

Surgical and Medical Practices: Ç.A.Ş., Concept: Ç.A.Ş., Design: Ç.A.Ş., Data Collection or Processing: Ç.A.Ş., M.U.K., D.D., R.E., Y.T., Analysis or Interpretation: Ç.A.Ş., Y.T., Literature Search: Ç.A.Ş., Writing: Ç.A.Ş., H.K.Ç., T.T., S.Y.

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References

1. Austin PF, Bauer SB, Bower W, Chase J, Franco I, Hoebeke P, Rittig S, Walle JV, von Gontard A, Wright A, Yang SS, Nevés T. The standardization of terminology of lower urinary tract function in children and adolescents: update report from the Standardization Committee of the International Children's Continence Society. *J Urol* 2014;191:1863-5.e13.
2. Graham KM, Levy JB. Enuresis. *Pediatr Rev* 2009;30:165-72; quiz 73.
3. Nevés T. Pathogenesis of enuresis: Towards a new understanding. *Int J Urol* 2017;24:174-182.
4. Maternik M. Understanding of and misconceptions around monosymptomatic nocturnal enuresis: findings from patient and physician surveys. *J Pediatr Urol* 2019;15:37.e1-e8.
5. Hägglöf B, Andrén O, Bergström E, Marklund L, Wendelius M. Self-esteem before and after treatment in children with nocturnal enuresis and urinary incontinence. *Scand J Urol Nephrol Suppl* 1997;183:79-82.
6. Van Herzeele C, Dhondt K, Roels SP, Raes A, Hoebeke P, Groen LA, Vande Walle J. Desmopressin (melt) therapy in children with monosymptomatic nocturnal enuresis and nocturnal polyuria results in improved neuropsychological functioning and sleep. *Pediatr Nephrol* 2016;31:1477-1484.
7. Glazener CM, Evans JH. Desmopressin for nocturnal enuresis in children. *Cochrane Database Syst Rev* 2002: Cd002112.
8. Alqannad EM, Alharbi AS, Almansour RA, Alghamdi MS. Alarm Therapy in the Treatment of Enuresis in Children: Types and Efficacy Review. *Cureus* 2021;13:e17358.
9. Kosilov KV, Geltser BI, Loparev SA, Kuzina IG, Shakirova OV, Zhuravskaya NS, Lobodenko A. The optimal duration of alarm therapy use in children with primary monosymptomatic nocturnal enuresis. *J Pediatr Urol* 2018;14:447.e1-e6.
10. von Gontard A, Baeyens D, Van Hoecke E, Warzak WJ, Bachmann C. Psychological and psychiatric issues in urinary and fecal incontinence. *J Urol* 2011;185:1432-1436.
11. Glazener CM, Evans JH. Tricyclic and related drugs for nocturnal enuresis in children. *Cochrane Database Syst Rev* 2000: Cd002117.
12. Baek M, Park K, Lee HE, Kang JH, Suh HJ, Kim JH, Lee SD, Pai KS, Han SW, Park YH, Kim KD; Korean Children's Continence and Enuresis Society. A nationwide epidemiological study of nocturnal enuresis in Korean adolescents and adults: population based cross sectional study. *J Korean Med Sci* 2013;28:1065-1070.
13. Huang WJ, Liang YY, Yang Q, Ma X. Nocturnal enuresis in children: Parents' perspectives. *Nurs Open* 2022;9:2335-2341.
14. Radmayr C, Bogaert B, Burgu B, Dogan H, Nijman J, Quaedackers J, et al. EAU Guideline on Paediatric Urology, 2022.
15. Vogel W, Young M, Primack W. A survey of physician use of treatment methods for functional enuresis. *Journal of Developmental & Behavioral Pediatrics* 1996;17:90-93.
16. Akan S, Ürkmez A, Yildirim C, Sahin A, Yüksel Ö H, Verit A. Late-onset secondary nocturnal enuresis in adolescents associated with post-traumatic stress disorder developed after a traffic accident. *Arch Ital Urol Androl* 2015;87:250-251.
17. Haid B, Tekgül S. Primary and Secondary Enuresis: Pathophysiology, Diagnosis, and Treatment. *Eur Urol Focus* 2017;3:198-206.
18. Eray Ş, Tekcan D, Baran Y. More anxious or more shy? Examining the social anxiety levels of adolescents with primary enuresis nocturna: a controlled study. *J Pediatr Urol* 2019;15:343.e1-e5.
19. Bachmann C, Lehr D, Janhsen E, Sambach H, Muehlan H, von Gontard A, Bachmann H. Health related quality of life of a tertiary referral center population with urinary incontinence using the DCGM-10 questionnaire. *J Urol* 2009;182:2000-2006.
20. Egemen A, Akil I, Canda E, Ozyurt BC, Eser E. An evaluation of quality of life of mothers of children with enuresis nocturna. *Pediatr Nephrol* 2008;23:93-98.
21. De Bruyne E, Van Hoecke E, Van Gompel K, Verbeken S, Baeyens D, Hoebeke P, Vande Walle J. Problem behavior, parental stress and enuresis. *J Urol* 2009;182:2015-2020.