



Frequency of Enuresis Nocturna and Accompanying Factors in Primary School Children in Balıkesir (Türkiye) City Center

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ABSTRACT

Background: Enuresis Nocturna (EN) is a common problem in children and stresses the child and family. The aim of the study is to determine the frequency of EN in primary school children in Balıkesir city center and to investigate the demographic data, sociocultural levels and accompanying factors of enuretic children. The research data were collected from the parents of primary school age children schools in Balıkesir city center, which were allowed by the Provincial Directorate of National Education. Number of children (research universe) is 12,027. When multi-stage stratified-cluster sampling, which is one of the probabilistic sampling methods, is performed, it is aimed to reach 373 student families from 5 primary schools.

Results: The frequency of EN in primary school children in Balıkesir is 18% (n:468). When the enuretic and non-enuretic students were compared according to the frequency of some variables; Sacral hair, encopresis, urinary incontinence, running to the toilet suddenly, and the presence of EN in the parents were significantly higher in children with enuretics.

Conclusion: Physicians, teachers and families should keep in mind that EN is a complaint. This problem may disappear with the maturation of the child over time, or it may be the first symptom of an organic problem. According to the detailed anamnesis and the answers to the questions that have a purpose, it should be understood which type of problem should be addressed, and it should be kept in mind that in the presence of daytime findings, it is necessary to apply for further examinations.

Keywords: *Enuresis nocturna, Urinary incontinence, Children*

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Introduction

Enuresis Nocturna (EN) is a common problem in children and stresses the child and family. If a child has bedwetting more than 3 nights a week after the age of 5, it should be investigated ⁽¹⁾. The pathophysiology of EN is highly complex. The central nervous system and the sleep-wake cycle have a very important place in this ⁽²⁾.

The maturation of the central nervous system and urinary system occurs with the growth of the child. Urination in infancy is involuntary. When the child reaches the age of 3, the control of the voiding reflex occurs, and becomes able to void at the appropriate time and place. This maturation continues until the age of 5, and after this age, voiding disorders can be diagnosed ⁽³⁾. The bladder capacity of the child is expected to increase over time. However, it can be the first sign of the most organic problems that parents do not focus on because they will get better with time. Therefore, the detection of enuretic children is important in terms of early detection and treatment of urinary problems.

The aim of our study is to determine the frequency of EN in primary school children in Balıkesir city center and to investigate the demographic data, sociocultural levels and accompanying factors of enuretic children.

Method

This research in cross-sectional design was conducted between June and December 2021. The research data were collected from the parents of primary school age children in Balıkesir city center, which were allowed by the Provincial Directorate of National Education. The number of children (research universe) is 12,027. When multi-stage stratified-cluster sampling, which is one of the probabilistic sampling methods, is performed, it is aimed to reach 373 student families from 5 primary schools.

Research data were collected by questionnaire technique. The questionnaire was prepared by taking into consideration the Turkish Enuresis Guidelines (2010). Child's age, gender, living with parents, presence of sacral hair, sleep pattern, daily urination, poop incontinence, presence of urgency, history of urinary tract infection, presence

of another disease requiring follow-up, a history of psychosocial problems such as tics or nail-biting and receiving treatment for nighttime urination, educational and employment status of parents, history of awake urinary incontinence were recorded as independent variables used in preparing the questionnaire.

Dependent variables were determined as nighttime bed urination and nighttime urination in a night/month. The questionnaire form, which was prepared by using independent and dependent variables, consists of 23 open-closed questions.

The questionnaire forms were sent to the classroom teachers in the primary schools within the scope of the research, and they were requested to be delivered to the families of the students. A period of 10 days was given for the return of the data from the families.

Survey data were gathered in a database created in the SPSS 23.0 program and analyzed. In the statistical analysis, descriptive statistics and odds ratio were calculated, and t-test and Chi-Square tests were used from hypothesis tests. In the interpretation of significance, α was taken as 0.05. The definitions used in the study were used in accordance with the International Children's Continence Society (ICCS) guideline published in 2006.

Results

In the central districts of Balıkesir, a questionnaire was sent to 12,027 parents of students in the schools (5 schools) that were allowed for the study. 2604 people (21.65%) who answered the questionnaire within the allowed time were included in the study. 85.3% of the study data were collected from mothers.

The frequency of EN in primary school children in Balıkesir is 18% (n:468). When the enuretic and non-enuretic students were compared according to the frequency of some variables; The presence of sacral hair, encopresis, urinary incontinence, running to the toilet suddenly and parental EN histories were found to be significantly higher in enuretic children (Table I).

When the age distribution of enuretic school-age children according to gender was examined, it was observed that the mean age of boys was higher in

Table 1. Differences according to some variables in all cases

	Enuretic (%)	Non-enuretic(%)	Significance
Sacral hair growth	5.1	2.8	*
Waking up difficulty	33.3	9.0	*
Encopresis	7.7	3.9	*
Parental History	35.9	16.9	*
Urinary incontinence	23.1	2.8	*
Urgency	64.1	37.1	*

Table 2. Differences according to some variables in enuretic children

Variant		n	p
Gender	Girl	144	0
	Boy	324	
Sacral hair growth	Yes	24	10
	No	444	
Waking up difficulty	Yes	156	0
	No	312	
Number of voids during the day	4≤	144	0
	5≥	324	
Encopresis	Yes	36	0
	No	432	
Urgency	Yes	300	0
	No	168	
Psychosocial problems	Yes	132	0
	No	336	
Parent's EN history	Yes	168	0
	No	300	
Urinary incontinence	Yes	108	0
	No	360	
Number of enuretic nights in a month	3≤	348	0
	4≥	120	
Number of enuresis per night	1	372	0
	2≥	96	
Has your child been treated for enuresis before?	Yes	60	0
	No	408	

enuretic children and enuresis continued up to a higher age than girls. While the mean age of boys in our series was 7.70 ± 1.51 years, enuretic it 7.25 ± 1.69 years in girls ($t:2.88$, $p:0.000$). Enuretic school-age children were evaluated according to some variables and are presented in Table 2. According to these variables, a significant increase was observed in these variables, especially in cases where monosymptomatic EN was not considered (sacral hair, urinary incontinence, encopresis, urgency, etc.) ($p < 0.001$).

While EN is present in all children of illiterate mothers, EN is seen between 14.3% and 26.7% in other education levels. The two most common accompanying factors in enuretic children are

family history (35.9%) and difficulty in arousal (33.3%).

The effect level of different variables in enuretic children was investigated by logistic regression and the interpretation of the results is presented in Table 3. Logistic model was found to be statistically significant at the 1% level. The prediction success of the model is 86.1%. As seen in this table, encopresis, urinary incontinence, sacral hair growth, urgency and positive family history are the most effective factors in EN. While night urination is 69% higher in those with tic, night urination decreases by 12% when the child gets older, and night urination decreases by 16% when the education of the mother is increased by one level. Girls urinate at night 70.1% less than boys.

Table 3. The effect of some problems on enuresis in enuretic children

Variable	odds ratio
Enkopresis	5.15
Urinary incontinence	4.39
Sacral hair	4.25
Urgency	2.66
Parental history of EN	2.51
Psychosocial problems	1.69
Age	0.88
Mother's education level	0.84
Gender	0.29

Discussion

EN is the most common and most important voiding disorder of childhood. Its frequency varies according to geography, seasons and age. According to the ICCS, children older than 5 years of age and who have bedwetting more than 3 nights a week should be evaluated for treatment ⁽²⁾.

EN is perceived as an innocent problem in many societies and is predicted to improve over time. Many children who do not have clinical manifestations and do not have urinary tract infections begin to stay completely dry towards adolescence ⁽⁴⁾. However, the underlying cause in a significant portion of enuretic children may be due to an organic problem ⁽⁵⁾. Enuresis is a symptom, not a diagnosis. After medical evaluation, other underlying urological problems may be suspected and further investigation may be initiated. Enuresis is generally associated with poor school performance and poor quality of life, self-esteem, and psychosocial development ⁽⁶⁾. For these reasons EN should be investigated and treated.

In the etiology of EN, waking disorders, low bladder capacity and excessive bladder activity at night, and increased urine volume at night are shown. Concomitant problems have an important place in the etiology of enuresis and resistance to treatment. At the beginning of these are neuropsychiatric problems such as attention deficit and constipation ⁽⁵⁾. When examined in terms of psychosocial problems, it is seen that boys are affected more, so the problem of staying wet is more important for boys ⁽⁷⁾.

In studies of sleep quality in enuretic children, it has been observed that these children have poor quality and fragmented sleep and are more difficult to wake up than non-enuretic children. However, the mechanism by which enuresis develops has not been determined yet ⁽⁸⁾. In the case of irregular sleeping time, EN was seen 6.74 times more. This situation can be interpreted as the role of the biological clock in the pathogenesis of EN more than previously thought ⁽⁹⁾. In our series, 33.3% of enuretic children were found to have arousal problems.

The presence of sacral hair, sleep quality, presence of encopresis, parental history, urinary incontinence, and urgency were found to be significantly higher in children with enuretic compared to those who non-enuretics. This suggests that a detailed history and physical examination is necessary in the presence of EN. In the presence of these variables, it is seen that children should be monitored and examined more closely in terms of organic problems.

In our study, it was found that enuretic children were mostly boy, had enuresis more than once in a night and mostly had a urgency, while sacral hair was detected in a few cases. Considering and treating children with sacral hair, urgency and incontinence, as monosymptomatic EN is an unnecessary waste of time for both the child and the family. In the presence of these variables, children should be evaluated in terms of other functional voiding disorders (overactive bladder, dysfunctional voiding, etc.). These children should be followed in specialized centers rather than primary health care institutions.

In our study, it was determined that the variables that most affected EN were encopresis, urinary incontinence, sacral hair growth and urgency. Living with parents and the presence of urinary tract infection do not make a difference in enuretic school-age children.

The rate of treatment of children with familial predisposition is low depending on the family's experience. As the mother's education increases, the child's access to treatment becomes easier, but psychological problems are more common in the child and family. Although the majority of the mothers in our series were university graduates, these mothers did not receive any treatment for their children (84.6%) for enuresis. 46.2% of the

mothers had a history of EN in childhood. This suggests that EN is perceived as a normal condition that must be experienced at some stage in life, rather than a condition that needs to be treated. Hesitations about sharing information may have been effective in the high rate of mothers with university degrees (66.7%). It can be thought that mothers at other educational levels do not have appropriate opportunities to present data.

EN rates according to maternal education level show that; Children of educated mothers have significantly fewer children with EN. EN is more common in children of families with low socioeconomic status and maternal education. This negativity in the socioeconomic situation also negatively affects the acquisition of information about the family's impact on EN and the future of their child. In these families, it may be thought that access to information is more difficult due to limited resources. The need for investigation arises when the problems in children of these families go beyond nighttime urination. The probability of EN in obese children was found to be higher than in non-obese children. For this reason, it is necessary to examine children with EN in terms of nutrition and lifestyle ⁽¹⁰⁾.

Whether EN is primary or secondary, monosymptomatic or non-monosymptomatic, and the presence of additional problems (urgency, urinary incontinence, encopresis, sacral hair growth, psychosocial problems, etc.) should be examined in detail and a treatment plan should be made accordingly ⁽¹¹⁾. Monosymptomatic-primary enuresis can be treated in primary care. However, in order to understand which child is in this group, it should be possible to take a detailed history and perform adequate examinations. Detailed information should be given to the family, and they should be involved in the treatment. Secondary and tertiary care services should focus more on non-monosymptomatic voiding dysfunctions. In the presence of tethered cord syndrome, vesicoureteral reflux, bladder dysfunctions and pelvic floor problems, advanced interventions may be necessary, so evaluation should be made in tertiary healthcare facilities.

The continuation of consanguineous marriages, low planned and prepared pregnancy rates, and failure to reduce spina bifida rates are still a public health problem. Spina bifida is found in a significant

proportion of children with EN who also have sacral hair growth, sudden urgency, and daytime urinary incontinence, and this problem is preventable ⁽¹²⁾.

As a result, it was determined that it is seen with a frequency of 18% in primary school children in Balıkesir. The frequency in Balıkesir city center is compatible with other provinces of Türkiye. This frequency is an important public health problem that cannot be ignored. Physicians, teachers and families should keep in mind that EN is a complaint. This problem may disappear with the maturation of the child over time, or it may be the first symptom of an organic problem. According to the detailed anamnesis and the answers to the questions that have a purpose, it should be understood which type of problem should be addressed, and it should be kept in mind that in the presence of daytime findings, it is necessary to apply for further examinations. In children with a family history, symptoms of constipation, and waking problems, the functional bladder capacities should be determined with the voiding volume chart and a treatment plan should be made according to the ratio of the required bladder capacity.

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