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RESEARCH ARTICLE

Nocturnal Enuresis Frequency in Children and Anxiety-Depression Risks of Parents

Ahu Demirci[1], İsmail Kasım[2], Esra Meltem Koç[3], Hilal Aksoy[4], Rabia Kahveci[2], Ömer Ertem[5], İrfan Şencan[2], Ali Atan[6], Oğuz Tekin[7], Adem Özkara[8]

ABSTRACT

Objective: In this study, we aimed to detect the prevalence of the monosymptomatic nocturnal enuresis (MSE) in the children attended to our clinics and to detect the relationship between enuresis and social tendencies, anxiety and depression risks of the parents.

Methods: Our study was performed with 133 children aged between 5-16 years and with their parents who admitted to Ankara Numune Training and Research Hospital outpatient clinics. The children's MSE were confirmed with voiding dysfunction scoring system scale. For the parents Hospital Anxiety and Depression Scale and Fatih Social Tendencies Scales (FSTS) were conducted.

Results: MSE frequency was found as 37.6% (n=50). Enuresis was observed more frequently in the crowded families with low socioeconomic status and low parent education level. Risk of MSE in children was found to be increased 5.5 times in whom parents have also MSE. High depression score of father was found to be related with MSE in child (p=0.038).

Conclusion: Enuresis is a condition that decreases the life quality of the children and their parents and increases the level of anxiety. Family physicians have important mission for prevention of the disease related with their biopsychosocial approach. *J Clin Exp Invest 2016; 7 (2): 150-156*

Key words: Enuresis, anxiety, depression, social tendencies

Çocuklarda Enürezis Nokturna Sıklığı ve Ebeveynlerin Anksiyete-Depresyon Riski

ÖZET

Amaç: Bu çalışmada, kliniğimize başvuran çocuklarda monosemptomatik enürezis nokturna (MEN) görülme sıklığını tespit etmeyi, enürezis ile ebeveynlerin anksiyete-depresyon riskleri ve sosyal eğilimleri arasındaki ilişkiyi saptamayı amaçladık.

Yöntemler: Çalışmamız Ankara Numune Eğitim ve Araştırma Aile Hekimliği polikliniklerine başvuran, 5-16 yaş arası 133 çocuk ve ebeveynleri ile yapıldı. Çocukların enürezis durumu İşeme Bozuklukları Semptom Skoru anketiyle, ebeveynlerin sosyal eğilimleri ve anksiyete-depresyon risk durumları sırasıyla Fatih Sosyal Eğilimler Ölçeği Erişkin Versiyonu ile Hastane Anksiyete ve Depresyon ölçekleri uygulanarak elde edildi.

Bulgular: Enürezis sıklığı %37,6 (n=50) olarak bulundu. Sosyoekonomik düzeyi ve anne-baba eğitim seviyesi düşük, kalabalık ailelerde enürezis daha sık olarak izlendi. Anne ya da babada MEN varlığı, çocukta MEN görülme riskini 5,5 kat artırmaktaydı. Baba depresyon risk varlığının çocukta enürezis üzerine etkisi anlamlı bulundu (p=0,038). Enürezisli çocukları olan anne babaların sosyal uyum ve statü, hedef ve idealler puanları daha düşük bulundu (p<0,05).

Sonuç: Enürezis çocuk ve ebeveynlerinin yaşam kalitesini azaltan, kaygı düzeyini artıran bir durumdur. Hastalık bilincinin oluşturulması ve farkındalığın arttırılması gibi küçük önlemlerle bu problemin önüne geçilebilmesi sebebiyle biyopsikososyal yaklaşımı temel alan aile hekimlerine önemli görevler düşmektedir.

Anahtar kelimeler: Enürezis, anksiyete, depresyon, sosyal eğilimler, aile hekimliği

[1] Muratpaşa 9 No'lu Aile Sağlığı Merkezi, Antalya, Türkiye
[2] Ankara Numune Eğitim ve Araştırma Hastanesi, Aile Hekimliği Kliniği, Ankara, Türkiye
[3] Sağlık Bakanlığı Sağlık Araştırmaları Genel Müdürlüğü, Ankara, Türkiye
[4] Pamukkale H. Cafer Özer Toplum Sağlığı Merkezi, Denizli, Türkiye
[5] Trabzon Merkez 88 No'lu Aile Sağlığı Merkezi, Trabzon, Türkiye
[6] Ankara Numune Eğitim ve Araştırma Hastanesi, Üroloji Kliniği, Ankara, Türkiye
[7] Ankara Eğitim ve Araştırma Hastanesi, Aile Hekimliği Kliniği, Ankara, Türkiye
[8] Hitit Üniversitesi Tıp Fakültesi, Aile Hekimliği AD, Çorum, Türkiye

Correspondence: Hilal Aksoy,
Pamukkale H. Cafer Özer Toplum Sağlığı Merkezi, Denizli Email: hilal.aksoy35@gmail.com

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INTRODUCTION

Enuresis is derived from the Greek word "Enoureia" that means to urinate in, to wet the bed. According to the DSM-V diagnostic criteria (Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition) enuresis is defined according to the following criteria:

• Repeatedly wetting the bed or clothes (involuntarily or intentionally)

• The behavior must continue for at least three consecutive months, occur twice a week, lead to a significant clinical problem or disorders in social, academic (occupational) or other important areas of functionality.

• The chronological age (or equivalent developmental level) must be at least five.

• This behavior must not be caused by incontinence resulting from the direct physiological effects of drugs (diuretic, antipsychotic or SSRI), polyuria or loss of consciousness.

• These symptoms should not be related to a general medical condition.

• All of the DSM-V criteria should be met to make the diagnosis [1].

With a practical approach, enuresis nocturna (EN) can be classified as uncomplicated (monosymptomatic) and complicated (non-monosymptomatic) EN. In uncomplicated enuresis, the only symptom is bed-wetting at night. In complicated EN findings such as daytime urgency and incontinence, frequency, and chronic constipation also accompany the nighttime bed-wetting [2].

Monosymptomatic enuresis nocturna (MSE) is a rather common condition in children. Its prevalence differs across age groups [3,4]. This condition may be the cause of shame for the child, anger and stress for the family and family physicians will encounter this condition often during their daily practices. Although the condition is easily diagnosed by parents and physicians, its treatment requires a complex approach.

The most important principles in the treatment of enuresis are properly identifying the expectations of the parent and child and referring patients when needed to. It must be clearly expressed that bed-wetting is not the child's fault and that bed-wetting must not be punished [5,6].

Studies that demonstrate the effect of the psychosocial condition of the family on the child's enuresis are rather limited [7-9]. Therefore, we aimed to identify the frequency of MSE, and to establish the relationship of the children's enuresis with the anxiety and depression conditions and social tendencies of their parents.

METHODS

The ethical approval for the study was obtained from the Ethical Board of the Ankara Numune Training and Research Hospital. The study included 133 children between the ages of 5 to 16 years and their parents (their mothers and fathers) that applied to the district family medicine polyclinics of the Ankara Numune Training and Research Hospital (Akyurt, Mamak, and Siteler District Polyclinics) between 01.12.2011 and 31.12.2011. Informed consent was obtained from the individuals that participated in the study or their legal guardians, and information about the socioeconomic and sociodemographic features of the children and their families was gathered using a structured questionnaire method. The Voiding Dysfunction Symptom Score (VDSS) questionnaire was used to determine the condition of the children's enuresis,and the social tendencies and anxiety depression risk conditions of the parents were determined using the Fatih Social Tendencies Scale Adult Version (FSTSAV) and the Hospital Anxiety Depression (HAD) scales.

Voiding Disorders Symptoms Score

The Voiding Dysfunction Symptom Score questionnaire consists of 13 questions and children that scored higher than 8.5 points were classified as children with enuresis. We only enrolled children with primary monosymptomatic enuresis (PMSE) into the enuresis group of our study, and children with secondary or non-monosymptomatic enuresis were excluded.

The Hospital Anxiety and Depression Scale

The HAD scale was administered to all of the mothers and fathers of the children included in the study (with and without enuresis) individually. In cases where both parents could not be contacted (death or any cause of losing contact with any of the parents) information was obtained from one parent. The HAD scale consists of 14 questions designed to determine the levels of anxiety and depression. The cut-off score for the anxiety sub-scale was set at 11, and it was set at 8 for depression. Those that scored above these scores were regarded to be atrisk, and those that scored below these scores were regarded as not at risk.

The Fatih Social Tendencies Scale Adult Version

The FSTSAV was administered to all of the mothers and fathers of the children (with and without enuresis) included in the study individually. In cases where both parents could not be contacted (death or any cause of losing contact with any of the parents) information was obtained from one parent. The scale consists of 22 questions and contains the following sub-headings: social adaptation and status, substance avoidance, violence avoidance, familial status, financial condition, aims and ideals.

Statistical Analysis

The SPSS (Statistical Program for Social Sciences) 15.0 package program was used to perform the statistical analysis of the study results. Descriptive statistical methods were used to analyze the data in accordance with normal distribution and expressed using mean, standard deviation or median (IQR - Interquartile Range), minimum and maximum values. Categorical variables were expressed using numbers and percentages. To assess the relationship between the presence of enuresis and the variables cross tables were created and the chi-square analysis was performed. The Mann-Whitney-U test was used to evaluate the Fatih Social Tendencies Scale Adult Version. Statistical significance was set at $p < 0.005$.

RESULTS

Among the 133 children in our study, 57.1% (n=76) were male and 42.9% (n=57) were female. The mean age of the boys was 8.30 ± 2.25 years and the mean age of girls was 7.65 ± 2.15 years.

While 72.2% of the information about the children was provided by the mothers, only 19.5% was provided by the fathers. The ratio of information obtained from the child himself/herself was 4.5%. Parallel to the mean age of the children information was gathered about, approximately 70% of them were in elementary school.

The evaluation of the marital status of the parents of the children included in the study revealed that the parents of 96.1% of the children lived together, the parents of 4 children were divorced or lived separately, and the father of one child had deceased.

The voiding dysfunction symptom score questionnaire was used to determine the condition of enuresis in children. It was seen that enuresis was present in 37.6% (n = 50) of the children and 62.4% (n = 83) of the children did not have enuresis. When examined with respect to gender, enuresis was identified in 28 of the 76 boys (36.8%) and 22 of the 57 girls (38.6%). When the relationship between gender and having enuresis was evaluated using the chi-square test, no significant relationship was identified ($p = 0.083$).

While it was observed that the mother and father of 46% of the children with enuresis also had enuresis, the frequency of enuresis in the children of parents that did not have enuresis was 13.3%. The relationship between the presence of enuresis in the child and its presence in the mother or father was found to be highly statistically significant ($p<0.001$) (OR: 5.6 CI: 95%, 2,4 - 12,9). This shows that the presence of enuresis in the parents increases the risk for enuresis in their children by 5.5 times. The likelihood of having enuresis was found to be statistically significant in the siblings of children with enuresis ($p=0.002$) (OR: 3.9; CI: 95% 1.6-9.6). The presence of EN in one of the siblings increases the risk of enuresis in the other child by 4 times. The presence of EN in any of the family members increases the risk for EN in children by 6.8 times ($p<0.001$) (OR: 6.8; CI: 95% 3.1-15.1) (Table 1).

A statistically significant correlation was detected between the number of individuals living in the house and the presence of enuresis ($p= 0.005$). In cases in which more than 5 people lived in the house, the frequency of enuresis increases by 2.8 times (OR: 2.8; 95% CI: 1.4 - 5.8).

Table 1. Enuresis in family members according to the status of enuresis in children

	Enuresis in siblings		Enuresis in mother or father		Enuresis in a family member	
	No n (%)	Yes n (%)	No n (%)	Yes n (%)	No n (%)	Yes n (%)
No enuresis	74 (89.2)	9 (10.8)	72 (86.7)	11 (13.3)	68 (81.9)	15 (18.1)
Enuresis	34 (68.0)	16 (32.0)	27 (54.0)	23 (46.0)	20 (40.0)	30 (60.0)
Total	**108 (81.2)**	**25 (18.8)**	**99 (74.4)**	**34 (25.6)**	**88 (66.2)**	**45 (33.8)**

A statistically significant relationship was identified ($p < 0.001$) when the number of the child's siblings was compared with the presence of enuresis. The risk for enuresis is approximately 5 times higher in children with three or more siblings (OR: 4.8 95%; CI: 1.9-12.3).

The evaluation of the relationship between the child having his/her own room and the presence of enuresis showed that the rate of enuresis was 28.8% (n=19) in children who had their own rooms and 46.3% (n=31) in children who did not have their own rooms. When the difference between was analyzed using the chi-square test it was identified that the difference is statistically significant (p= 0.037).

The socioeconomic income level and its relationship with enuresis was compared, and a significant difference was detected (p= 0.001). To determine which group caused this difference, paired intergroup comparisons were performed, and it was determined that the significant difference was caused by the groups with socioeconomic income levels under 650 TL and over 3000 TL ($p < 0.001$).

The educational level of the father and its relationship with enuresis in the child was compared, and a statistically significant difference was detected (p= 0.006). Intergroup paired comparisons performed to determine which group was the source of this difference revealed a statistically significant difference in the comparison of elementary and university level education (p= 0.002).

The comparison of the educational level of the mother and its relationship with enuresis in the child yielded similar results to the educational level of the fathers, and a statistically significant difference was identified (p= 0.023). Intergroup paired comparisons performed to determine which group was the source of this difference revealed a statistically significant difference in the comparison of elementary and university level education (p= 0.009).

Interestingly, the comparison of the depression risk assessment in fathers and its relationship with the presence of enuresis in children revealed that risk for depression in the father had a statistically significant effect on the presence of enuresis in the child (p= 0.038).

The statistical analysis of variables that may be associated with the presence of enuresis in children is presented in Table 2.

Table 2. Relationship between enuresis in children and sociodemographic characteristics (p values)

Variable	Enuresis in child
Gender	0.836
Enuresis in mother or father	<0.001
Enuresis in siblings	0.002
Enuresis in a family member	<0.001
Toilet is inside/outside the house	0.672
Type of heating system of the house	0.092
Breastfeeding	0.672
Breastfeeding duration	0.737
Number of people living at home	0.005
Number of siblings	<0.001
The lack of child's own room	0.037
Income level of the family	0.001
Education level of father	0.006
Education level of mother	0.023
Maternal anxiety risk assessment	0.840
Paternal anxiety risk assessment	0.838
Maternal depression risk assessment	0.204
Paternal depression risk assessment	0.038

Although 68% of the families that were interviewed stated that enuresis presents a problem for the child and the family, only 56% expressed that they requested treatment. Statistically, only 34% of these families had applied to a doctor and the majority (66%) had not. It is more common for the families of boys to perceive enuresis as a problem than the families of girls. Similarly, enuresis is punished in boys more than it is in girls.

When the relationship between the mothers of children with EN and mothers of children without EN was evaluated according to the FSTSAV, it was seen that the mean social adaptation and status values of mothers of children with EN were lower, this difference was statistically significant (z=-2.745; p= 0.006). In a similar manner, the mother's aims and ideals scores were lower in mothers of children with EN and these scores were statistically significant (z=4.185; p<0.001) (Table 2).

When the fathers of children were evaluated according to the FSTSAV, similar to the mothers, their social adaptation and status, aims and ideals, and financial condition scores were statistically significantly lower than the same scores of other fathers of children without EN (Table 3-4).

Table 3. Differences between mothers who have a child with enuresis or not according to the Fatih Social Tendencies Scale Adult Version

	z	p
Social adaptation and status	-2.745	0.006
Avoidance of substance	-0.985	0.365
Avoidance of violence	-1.586	0.113
Status of family	-1.488	0.137
Economic condition	-1.572	0.116
Goals and ideals	-4.185	<0.001

Table 4. Differences between fathers who have a child with enuresis or not according to the Fatih Social Tendencies Scale Adult Version

	z	p
Social adaptation and status	-2.554	0.010
Avoidance of substance	-0.794	0.426
Avoidance of violence	-1.372	0.169
Status of family	-2.769	0.005
Economic condition	-1.965	0.049
Goals and ideals	-3.746	<0.001

DISCUSSION

EN is a frequent condition that is easily diagnosed by parents and families. However, its treatment requires a complex approach. Forming disease consciousness, increasing awareness and small precautions are important steps in overcoming this problem.

The prevalence of EN differs according to age and gender. In the study conducted by Carman and colleagues with 1309 patients, 47.8% (626) of which were male and 52.2% (683) were female, the prevalence of EN was found to be 25.5% and 58.7% of the patients with EN were male and 41.3% were female. They calculated the male/female ratio as 1.42 and established that enuresis is significantly more common in males than it is in females [10]. In one other study conducted in Şanlıurfa, it was stated that 56.7% of the children were male, and 43.3% were female [11]. Yurtcu and colleagues identified the frequency of primary and secondary enuresis as 15.7% in their study that included 1556 students, and they identified that 64.3% of the enuretic cases were primary, and 35.7% were secondary [12]. Birican and colleagues identified that 53% of the children with primary enuresis were male, and 47% were female [13]. In a study conducted by Butler and colleagues with 1260 enuresis patients, it was observed that enuresis was significantly more common in males than it was in females, and the study conducted by Serel and colleagues showed that the frequency of enuresis was significantly higher in males than it was in females [14-15]. The general prevalence of our study is consistent with literature. However, it differs from literature with its male/female ratio. This may be due to our small number of patients. Actually, the facts that boys take longer to mature, that developmental delay is more common in boys, and that they adapt to toilet training with greater difficulty than girls, enuresis is expected to be seen more often in boys than in girls [16-18].

In our study, the relationship between having enuresis and the frequency of enuresis in the mother or father or the siblings were found to be statistically significant. In the study conducted by Miskulin in Croatia the frequency of enuresis in the families of children with enuresis was found to be 68.6% and in an epidemiologic study conducted in Turkey by Oge and colleagues the frequency of enuresis in the family histories of children with and without enuresis was identified as 40.7% and 9.5% respectively [19-20]. With this point of view, our study is consistent with literature.

When we evaluated the relationship between the presence of enuresis and the location of the toilet (inside or outside the house) and the methods used to heat the environment the child lives in we did not detect a statistically significant difference. However, these findings could not be compared to literature due to the lack of data in general literature.

In Dundar's study, no significant relationship was detected between enuresis and the number or order of siblings. In Toros's study, no significant difference was detected between enuresis and the number of siblings [18,21]. On the other hand, in our study, we detected a significant difference in families with three or more children when compared to families with two or fewer children, and our study differs from literature in this aspect.

When the number of people living in the house was compared with enuresis, similar to the study by Carman, it was shown that the frequency of enuresis increases as the number of people in the family increases [10].

When the child having his/her own room and its relationship with enuresis was assessed, a significant difference was detected. Enuresis is less common in children who have their own rooms. However, no

comparisons could be performed as there is no study in literature in this direction.

Studies conducted have shown that enuresis is more common in families with low socioeconomic income and educational levels [10,20-24]. This was also observed in our study. Similar to the example of EN, conditions such as low income and educational levels increase the frequency of biological diseases, this reflects on individuals and systems as morbidity, mortality, and life quality, the same biological conditions may bring additional financial burdens to individuals and systems. Thus, certain national approaches could be suggested. Besides this, the priorities of preventive medicine may differ in regions with low socio-cultural and economic statuses.

It is known that EN can be a difficult condition for families. The evaluation of its effect on families showed that families with low socioeconomic levels approach enuresis more normally and believe that it will pass over time, and families with high socioeconomic levels consider enuresis to be a disease that requires treatment [10,20]. Our study has also demonstrated that low socioeconomic levels had no significant effect on parents and in this aspect, our study has similar results with the study conducted by Oge and Carman and it is consistent with literature. However, this condition causes the child to feel shame and anxiety and also makes them lose their self-esteem and self-respect. Some enuretic individuals that do not receive treatment until adolescence may develop permanent psychiatric pathologies.

Data that shows there is a relationship between enuresis and the parents' social tendencies and anxiety development risk. The first study directed to the mothers of children with enuresis belongs to Haque and colleagues [7]. Haque et al., asked the families of children with enuresis to fill in the "approach to enuresis" form and as a result, 61% of the families identified enuresis as an important health problem. Egemen et al., compared the mothers of 38 healthy children and 28 children with enuresis, and they observed that the mothers of children with enuresis had lower levels of life quality and higher depression scores [8]. However, no statistically significant difference was detected between the groups with respect to anxiety. Sahtiyanci et al., evaluated the mothers of 40 children with enuresis before and after treatment and identified that the depression score had dropped after treatment when compared to the scores before treatment, however, this regression was not statistically significant [9]. While our findings of the depression risk contradict the study by Sahtiyanci et al., they are similar to the study results of the study by Egemen et al. We did not find any large-scale studies directed to the anxiety or depression development risk of the fathers of children with enuresis in the literature scan. Similarly, comparisons could not be performed because there are no studies in literature that demonstrate the relationship between the social tendencies of mothers and fathers and enuresis in the child. Additionally, it may be expected that empowering people in their social environments could lead to a decrease in the frequency of EN and similar diseases. The relationship between these factors and many parameters such as maternal and infant mortality rates is well known. Large-scale studies conducted in this direction are required.

Enuresis is an important health problem between the ages of 5 to 16, and it affects the child and the parents psychosocially. Today, EN can be treated using behavioral or medical treatment. However, the most important role of informing and guiding the patients correctly falls to the physicians.

When the anxiety-depression development risks of the parents and its relationship with enuresis was examined, it was seen that the risk for depression development was statistically higher in fathers that only had kids with enuresis than it was in fathers that did not have children with enuresis. No significant difference was detected in any of the other parameters except the depression risk of fathers between the parents of children with and without enuresis; this may be due to the small number of patients included in the study and biased answers given by the parents. We believe that this relationship can be established better by widening the scope of this study by carrying it out in multiple centers and by including families and children from different socioeconomic levels. Additionally, family physicians have the opportunity to follow individuals in their own environments as a characteristic of the discipline. Family physicians assess patients not only according to their biological complaints, but they also assess their psychological and social worries or their current situation. The importance of this role of family physicians in public health stands out in the results of this study.

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