



## The socio-demographic characteristics of enuresis nocturna in childhood

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### ABSTRACT

**Purpose:** Urinary incontinence during sleep is a common condition in children aged five years and above, defined as enuresis nocturna. The purpose of this study was to evaluate the socio-demographic characteristics of children diagnosed with enuresis and its association with etiology, diagnosis and treatment.

**Materials and Methods:** 632 children diagnosed with primary enuresis nocturna were included in the study. After approval of the Ethics Committee was obtained, families of the children were interviewed and questionnaire forms were filled out retrospectively. The study was completed over a period of three months.

**Results:** 221 (34.9%) of the 632 patients included in the study were girls and 411 (65.1%) were boys. Mean age was 8.1 (5-16) years. 96 (15.1%) children had a family history of enuresis. Frequency of enuresis was every day in 236 (37.3%) children, several days a week in 317 (50.1%) children, once a week or less in 55 (8.7%) children, and once a month or less in 24 (3.9%) children. 32 (5%) children had no siblings, while 226 (35.7%) children had 1-3 siblings and 374 (59.3%) children had more than 3 siblings. 297 (46.9%) children had received treatment previously, and 35 (11.7%) of these had undergone waking up at night, 87 (29.3%) fluid restriction, 141 (47.4%) pharmacotherapy, and 34 (15.6%) psychotherapy. While 324 (51.2%) families had a positive attitude toward starting medications, 308 (48.8%) families were hesitant about starting drugs because of the associated adverse effects.

**Conclusion:** Low socio-economic level of the family, sleep disorders of the child and male gender were shown to be among factors contributing to the development of enuresis.

**Key words:** Children, enuresis nocturna, socio-demographic characteristics

### Introduction

Urinary incontinence during sleep is a common condition in children aged 5 years and above and is defined as enuresis nocturna [1]. Incidence of enuresis was reported at between 12.4% to 13% in a study carried out in Turkey [2]. Absence of a dry period after toilet training has been acquired is defined as primary enuresis nocturna (PNE). There is no lower urinary system symptom or bladder dysfunction other than

nocturia in these children followed with the diagnosis of monosymptomatic enuresis [3]. Many factors have been identified in etiology. Among these, genetic tendencies, sleep disorders, delays in neuromotor development, bladder functional disorders, and abnormality in the rhythm of release of antidiuretic hormone feature most prominently in the literature [4-8]. It has been suggested that increased ADH release is responsible for the decrease in urinary output at night in healthy indi-

viduals. It has been noted that increase in the amount of ADH that should be released at night is absent in a number of children with enuresis nocturna. Absence of this release causes a reduction in urine density and raises the amount of urine. It has been indicated pathogenetically that elevating the amount of urine brings about exceeding bladder capacity and, therefore, enuresis. This study aims to evaluate the socio-demographic characteristics of children diagnosed with enuresis and analyze their association with etiology, diagnosis, and treatment.

### Materials and Methods

632 patients diagnosed with primary enuresis nocturna were included in the study after obtaining the approval of the Ethics Committee, screening retrospectively and the filling out of questionnaire forms by interviewing their families. Gender, family history of enuresis, incidence of enuresis, concomitant encopresis or constipation, monthly family income, number of siblings of the enuretic child, age at receipt of toilet training, assessment of sleep, previous therapies, and perception of starting medications by the patients' families were evaluated with the questionnaires. The study was completed over a period of three months.

### Results

221 (34.9%) of 632 patients included in the study were girls and 411 (65.1%) were boys. The mean age was 8.1 years (5-16 years). 96 (15.1%) children had a family history of enuresis. Frequency of enuresis was every day in 236 (37.3%) children, several days a week in 317 (50.1%) children, once a week or less in 55 (8.7%) children and once a month or less in 24 (3.9%) children. In 89 (14%) children, enuresis was accompanied by chronic constipation and in 11 (1.7%) children with encopresis. Monthly family income was 335 USD in 371 (58.7%) children, 335-670 USD in 175 (27.7%) children and 670 USD TL or above in 86 (13.6%) children. Regarding number of siblings, 32 (5%) children had no siblings, while 226 (35.7%) children had 1-3 siblings, and 374 (59.3%) had more than 3 siblings. When toilet training was evaluated, 512 (81%) children had received toilet training between 2-5 years of age, and 120 (19%) children after 5 years of age. 118 (18.6%) children were light sleepers, 176 (27.8%) children had normal sleep, and 338 (53.6%)

children were heavy sleepers. 297 (46.9%) children had received treatment previously, and 35 of these (11.7%) had undergone waking up during the night, 87 (29.3%) fluid restriction, 141 (47.4%) pharmacotherapy and 34 (15.6%) psychotherapy. The families of 324 (51.2%) children had a positive attitude toward starting medications, while the families of 308 (48.8%) children were hesitant about starting medications because of the adverse effects.

### Discussion

Enuresis nocturna, common in childhood, is a pathology that needs treatment and can lead to psychological problems if left untreated. Its etiology has not been fully elucidated. Familial tendency, psychological and environmental factors, sleep disorders, neurological and hormonal disorders, pathologies associated with the bladder, and impairment in ADH release are among the primary factors that play a role in its etiology [9,10]. Studies have shown that enuresis is more frequent in boys than girls [9,11].

In a study by Serel et al. carried out on 5724 children, the prevalence of enuresis was 14.3% in boys and 7.6% in girls [12]. On the other hand, in a study of Gümüş et al., the prevalence was 16.9% in boys and 10.6% in girls [13]. Interestingly, in work by Gür et al., the prevalence was 12.2% in boys and 12.7% in girls and they reported no significant difference in enuresis prevalence between genders [2]. Also, in the work presented here, it was found that the condition was more common in boys compared to girls, consistent with most of the literature.

When genetic and familial factors are analyzed, it is seen that the presence of enuresis in the family increases the rate of this pathology in the child, varying between 43% and 77%. In the study of Gontard et al., this rate was found to be 63.2% [14]. Öge et al. found 40.7% of enuretic children had a family history and in children who did not have enuresis, this rate was 9.5% [15]. Similarly, in this study, 15.1% of the cases had a definitive family history. These results are lower than that of the literature and may be associated with a parent's family not wishing to report the actual family history.

Studies have shown that the number of family members and siblings a patient has is associated with enuresis. In one study that compared children with 3

siblings or less with those with 4 siblings or more, the incidence of enuresis was higher in the group with more siblings [2]. In Safarinejad et al.'s investigation, there was a significant correlation between the number of family members and enuresis [16]. In the current study, an increased number of siblings and consequently family members was indeed found to increase the incidence of enuresis, consistent with previous findings.

In a review of literature, enuresis is more common in the low socio-economic and socio-cultural groups [11,13,17-19]. In the present work, the families of 446 (86.3%) children had a monthly income of 2000 TL or less, below the poverty line; therefore, it was found that there was a direct relationship between low socio-economic level and the prevalence of enuresis.

Involuntary contractions of the bladder tend to improve after 2 years of age. Therefore, beginning toilet training at an early age causes an increase in the incidence of enuresis [20]. Similarly, here, enuresis was more common in those that started toilet training at an early age compared to the other group.

Previous research has demonstrated that enuresis nocturna is linked to attention deficit and hyperactivity syndrome [21,22]. In this study, while this was not observed, the accompanying disorders were chronic constipation in 89 children and encopresis in 11 children.

One of the elements thought to influence enuresis etiology is the existence of a sleep disorder. However, a marked change was not found in a study that evaluated children with sleep electroencephalography [23]. Yet, in work carried out by Wille, 71% of patients with enuresis were heavy sleepers, while this rate was found to be 7% in non-enuretic cases [24]. Here, more than half of the children were heavy sleepers, slightly lower than what is presented in the literature but consistent overall.

With enuresis nocturna, the mainstay of therapy is behavior and alarm therapy, as well as drug therapy that is recommended either alone or as a supplement to the other aforementioned therapies when necessary [25-27]. The rate at which parents sought out a physician's help for treatment of enuresis was 17.2% in a study by Özden et al. carried out in Ankara, 20.8% in a study carried out in Istanbul, and 33% in a study carried out by Bozlu et al. in Mersin [28-30]. Comparatively, this rate reaches 28% in the USA and Ireland and 48% in New

Zealand [31]. In this study, the number of children who admitted to a physician and receiving treatment was 297 (46.9%). We assumed that the reason why this rate was higher than the other cities (as well as the USA and Ireland) was based on the fact that the families here were more aware. Of these, 35 children underwent waking up during the night therapy, 87 fluid restrictions, 141 pharmacotherapies, and 34 psychotherapies. The families of 324 (51.2%) children regarded drug therapy positively, while the families of 308 (48.8%) children were hesitant about starting drugs because of the adverse effects.

In conclusion, the results of that have been presented from this study indicate that families should become more aware about enuresis, and determining the socio-economic level and genetic tendency of the family, identifying the concomitant diseases of the child, and providing detailed information will increase the efficacy of the treatment. It is the authors' belief that future studies are warranted on the subject.

#### Conflict of interest statement

The authors have no conflicts of interest to declare.

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