Enuresis: point prevalence and associated factors among Turkish children

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SUMMARY: Öge Ö, Koçak İ, Gemalmaz H. Enuresis: point prevalence and associated factors among Turkish children. Turk J Pediatr 2001; 43: 38-43.

The aim of this study was to establish the prevalence and associated factors of enuresis nocturna and to better understand nocturnal bladder control in Turkish children.

A randomized epidemiological study was performed among primary school children, aged four to 12 years, living in Aydın, Turkey. After data collection via a self-administered questionnaire completed by the parents, data of 2,300 children were accepted for the analysis.

The overall prevalence of reported marked nocturnal enuresis (at least weekly) was 11.6 percent and of day wetting 0.8 percent. Enuresis was more frequent in boys than in girls. Age, family history of enuresis, large family size, urinary tract infections and low parental socioeconomic class were all statistically associated with reported enuresis nocturna. Familial history among the enuretics and non-enuretics was 40.7 percent and 9.5 percent, respectively. Of the enuretics, 11 percent were treated professionally, 65 percent were treated traditionally by the family and 25 percent sought no help to manage the enuresis. A reference age of 2.9 ± 1.6 years was calculated for nocturnal bladder control of the children studied.

These results suggest that prevalence of enuresis nocturna and development of bladder control in Turkish children are not so different from that seen in other European and Middle East countries, and that the most significant factors associated with enuresis are socioeconomic and familial ones. Turkish families do not have a high level of concern about enuresis, even in the older children. This study demonstrated that enuresis is a sizable problem in Turkey and that a great ignorance about enuresis by both parents and physicians exits.

Key words: enuresis, prevalence, children.

Enuresis nocturna (EN) is a common problem among children presenting to clinical settings. Due to its nature as a self-limiting disorder with no major health risks, many parents do not have a high level of concern about EN especially in younger children. Families commonly try to manage this problem with observation or traditional methods. Therefore, EN should be considered a more prevalent problem in the pediatric population than is seen in the clinical setting. The assessment of the epidemiology and natural history of EN by population-based studies will assist with better management of it according to the characteristics of different communities. More importantly, a reference age for nighttime bladder control according to all communities should be determined. Somewhere between two and four years of age, most children gain control of incontinence, and this corresponds to the time of toilet training[1]. The prevalences reported vary depending on the geographical areas involved[2-6]. The lack of epidemiological studies on the prevalence of EN from the Balkans and Middle East in the literature led us to conduct a prevalence study in Turkey, as the data from our country may reflect similar results seen from these areas.

The purpose of the study was to describe and analyze the profile of enuresis in schoolchildren living in Aydın, a western city of Turkey.

Material and Methods

A self-administered questionnaire was completed voluntarily by the parents (to minimize embarrassment to children) of 4,000 children for to 12 years old attending a primary school in Aydın. Figure 1 shows the distribution of the subjects according to age. The study consisted of 10 schools selected randomly.

After a 76 percent response rate, 2,300 completed surveys were accepted valid and evaluated for the study. The study group comprised 1,112 girls and 1,188 boys with a mean age of 8.9 ± 1.8 years. For statistical analysis chi-square and Fisher's exact tests were used and a p-value < 0.05 was considered as statistically significant. The indicated permissions for the study were obtained from appropriate committees.

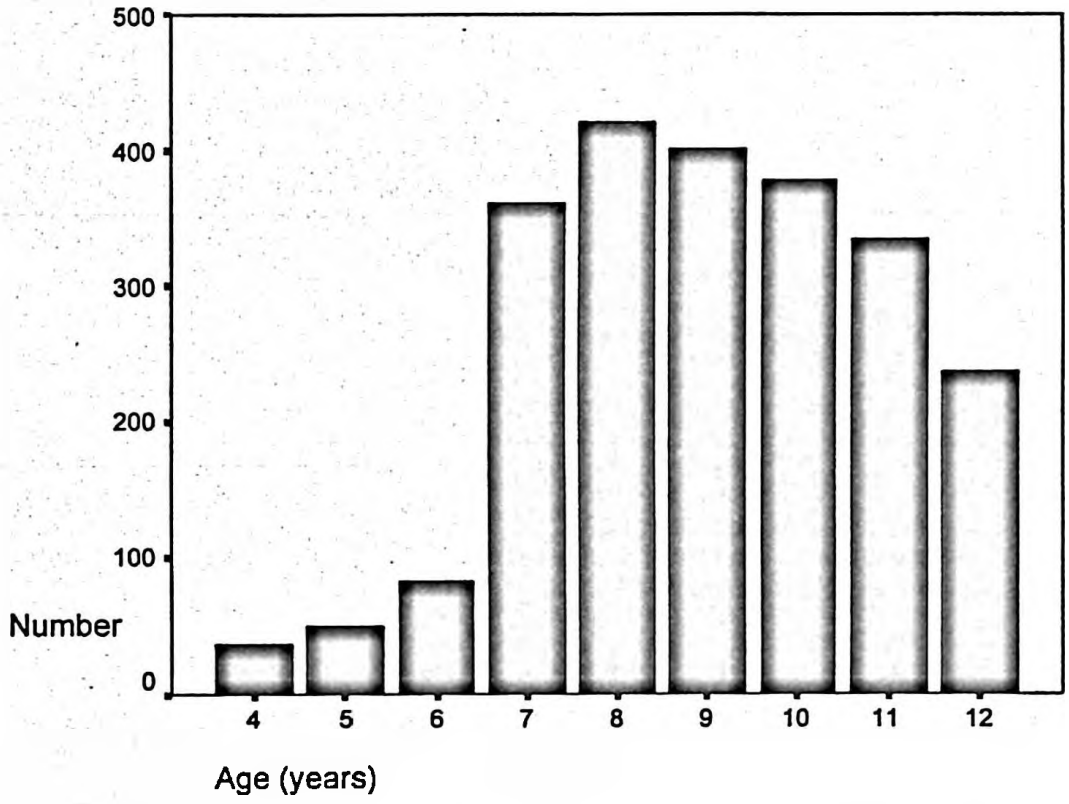

Fig. 1. Distribution of the subjects according to age.

The questionnaire was comprised of three parts. The first part was designed to investigate risk and precipitating factors, and the second part was planned to determine type and prevalence of enuresis. The aim of the third part was to describe treatment modalities for EN among parents and physicians.

Primary EN was defined as bed-wetting at least once a week in a child who had never had nighttime bladder control for a period greater than six months. Secondary enuresis was considered "when the child has been toilet trained for at least six months after the age of bladder control, and bladder control is subsequently lost"[7].

Results

Prevalence of Enuresis

The overall prevalences of enuresis nocturna and diurna was 11.6 (267) and 0.8 percent[19], respectively; none of the subjects had diurnal wetting without night wetting. Overall, EN was more prevalent in boys than in girls ($p < 0.05$). The properties of EN according to gender are shown in Table I.

The highest prevalence overall was observed at eight years of age, with a rate of 15.7 percent. Because of the small number of subjects four and five years of age, no statistical comparison

with the prevalence rate at the age of eight years could be done. The higher prevalence seen at eight years of age than at ages six and seven was statistically significant, but when reevaluated excluding the day-wetters and secondary enuretics, the prevalence between these ages were similar. A more steady decline in prevalence of enuresis by age was present in girls, while a notable increase was observed around the ages of seven to nine years in boys. EN was primary in 87 percent and secondary in 13 percent of cases. The distribution of secondary enuresis among boys and girls was similar (48.5 versus 51.5%), and the onset of secondary enuresis was observed more commonly (69%) around the ages of seven to nine in both genders. Secondary enuresis was more frequent (72%) in children whose parents had low educational and socioeconomic levels. Figure 2 demonstrates the prevalence rates in boys and girls separately according to age. Enuresis prevalence was more dominant in boys at every age, except at the age of six years. At the age of 12, enuresis prevalence among boys and girls was 8.2 and 4.0 percent respectively.

Table I. Properties of Enuresis by Gender

Gender	Number	Enuresis nocturna (%)	Primary Monosymptomatic EN (%)	Secondary Monosymptomatic EN (%)	ED (%)
Boys	163	13.7	11.7	1.3	0.6
Girls	104	9.4	6.8	1.5	1
Total	267	11.6	10	1.5	0.8
p-value		< 0.01	< 0.01	NS	NS

NS: non-significant; ED: enuresis diurna.

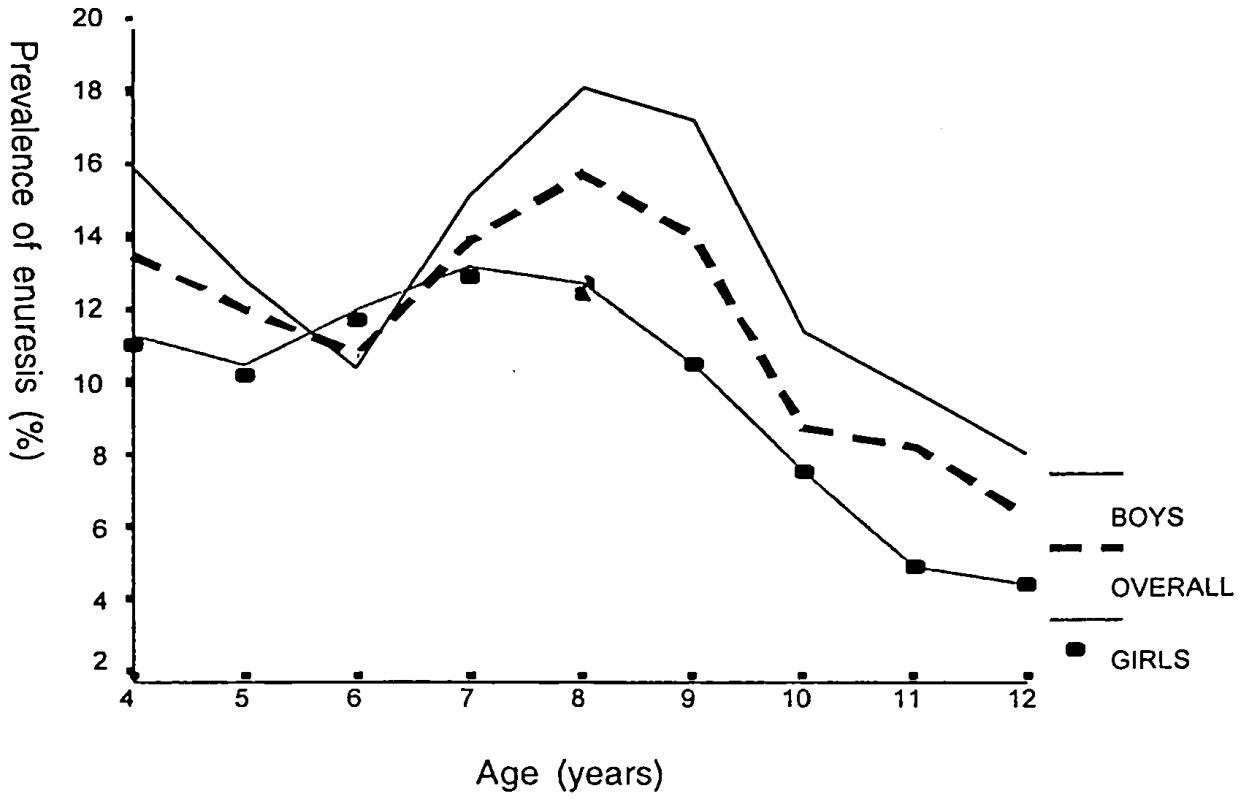

Fig. 2. Prevalence rates in boys and girls according to age.

Of the enuretics, 58 percent reported wetting more than three times per week and 29 percent noted wetting every night. Six percent of girls and 8.5 percent of boys were wetting only once a week. Wetting frequency was similar among boys and girls, with an average of four nights per week in both groups.

Night-time Bladder Control

In light of data noted by the parents, the age of gaining nocturnal bladder control was earlier in girls than in boys ($p < 0.001$). Among the current non-enuretics, 93 percent were toilet trained before the age of five, and this rate reached 97.8 percent at the age of seven. The mean age for nocturnal bladder control was 2.9 ± 1.6 overall, and a t value of 3.62 was calculated according to Student's t test. The mean ages of night-time bladder control in boys and girls were 3.1 ± 1.6 and 2.8 ± 1.5, respectively. The development of bladder control was strongly associated with the level of parental education ($p < 0.001$). In subjects with no family history of enuresis, nocturnal bladder control began earlier in comparison to ones with a history of enuresis among their siblings or parents ($p < 0.05$).

Factors Associated with Enuresis

Positive family history of enuresis was found to be the most significant factor associated with enuresis ($p < 0.001$). The rates of a reported enuresis history among the parents or siblings of enuretics and non-enuretics were 40.5 and 9.5 percent, respectively. No significant difference was obtained when the history of enuresis was reevaluated according to history of parents or siblings separately. The rate of documented urinary tract infections was significantly higher in enuretics (18.5%) compared to the non-enuretic (85%) population ($p < 0.05$). Urinary tract infection was found in 42 percent of day-wetters and of these, 40 percent of cases were recurrent. Low socieconomic status, low parental education and large family size were the other significant enuresis-related factors ($p < 0.05$). There was no factor showing significant difference according to primary or secondary onset of enuresis.

Management of Enuresis

Among the enuretics, only 11 percent were reported to have received medical treatment for enuresis, and of them, 75 percnet had no family history of enuresis, Imipramine and oxybutynin were the drugs most commonly (85%) used by the physicians. Sixty-four percent of families were trying to manage this problem traditionally. Table II shows the methods used in the management of enuresis.

Table II. Treatment Methods

Method	Percent
Awaking to void	52
Diapers	19
Fluid restriction	15
Medication	11
None	25

Discussion

Enuresis nocturna is a common problem in the pediatric population[8-10]. The present study has demonstrated that enuresis is a more crucial problem than seen in the clinical setting. The outcome of this surveillance from Turkey was consistent with the large spectrum of prevalence rates documented in many previous reports from Europe and the Middle East[3,6,8,11-13]. In our study, the prevalence was high, although enuresis was considered as only wetting at least once per week. Our results were similar with the results of a previously reported study which screened children living in a different area of Turkey[8].

Age, as expected, was a significant factor associated with the prevalence of enuresis. However, we did not find a decline in the prevalence by increasing age as rapid as estimated. The highest prevalence was at the age of eight years and, around the ages of seven to nine years, enuresis was generally more prevalenet. The highest prevalence at the age of eight years was due to addition of secondary enuresis which occurred more commonly around this age and to over-representation of day-wetters. The data in the present study is not sufficient to discuss the prevalence among the ages of four and five due to the small number of subjects in this age group. The slightly increasing rates around the ages of eight to 10 found in two reports from Asia supported our result, although the younger group was seven years old in both of those studies[11,14].

Of the enuretics, 40.5 percent had a history of enuresis among their parents or siblings compared with 9.5 percent among non-enuretics. This finding supports the role of heredity as an important factor associated with enuresis[15].

We calculated the reference age of nocturnal bladder control for Turkish children as 2.9 years, and girls were more likely to get toilet trained earlier than boys. As seen in the literature, in our study enuresis was more prevalent among boys than girls. Since it has been suggested that EN is primarily a maturational delay, it could be expected that boys would demonstrate this delay more dominantly than girls[16-18].

As previously reported, we also found that large family size and low socioeconomic status were significant factors related to enuresis[19,20]. As children of well educated parents have a lower prevalence of enuresis in and are also toilet-trained earlier, it is difficult to state with certainty whether stressful life conditions or the parents' low educational status is more responsible for enuresis. On the other hand, the correlation between secondary onset of enuresis and low parental socioeconomic level supports the effect of stress factors on enuresis.

The history of urinary infection was higher in enuretic children than in non-enuretics. This association points to a possibility of abnormalities in the urinary tract or nervous system of the enuretic children.

The present data showed that 65 percent of enuretic children were managed primarily within the family, and Turkish families were more prone to use traditional treatments for enuresis. Remedial methods comprised of restriction of fluid intake, usage of diapers, and waking of the child during sleep to void. As a result, it is clear that EN was not of great concern to Turkish families, even in the older children. Twenty-five percent of enuretic children received no help to manage their enuresis. Some families with high education levels are probably successfully treating enuresis via the traditional methods, as some were being used adjacent to modern treatment modalities. However, in low educational and socioeconomic status families, enuretics have less opportunity for modern treatment. Only anticholinergics or imipramine was used in the professional management of enuresis. Of the parents of medically treated enuretics, 75 percent had no history of enuresis. This data shows that inexperienced parents have more concern about enuresis than the ones who have family history of enuresis.

Enuresis nocturna is not perceived as a serious problem in our country even by physicians. The major reason is that enuresis is assumed harmless and self-limited, and the prejudice is common among families as well as physicians[5,6,21]. According to a recent research, however, this is not true[22]. In children aged seven years, more than five percent report enuresis, and in the adult population one percent[9,10]. Hence, many enuretic children will remain as bedwetters unless treated. Compared with other chronic illnesses, paroxysmal nocturnal enuresis (PNE) has a greater negative effect on the child's mental and social health[22,23]. Parental skepticism may also exist toward the modern therapeutic possibilities; this finding has been reported before[24]. As the child grows older, parents are more likely to seek medical help due to anxiety of an unknown serious disorder and to reduced parental tolerance[25,26]. It must be pointed out that treatment of enuresis is justified as soon as the child suffers a sense of failure and inferiority[27].

In conclusion, the prevalence of EN in Turkish children is not so different from that seen in other European countries, and the most significant factors associated with enuresis are socioeconomic and familial ones. Turkish families do not have a high level of concern about enuresis. There is also no great attention to the disorder given in the professional field, and modern treatment used is limited. Special attention should be given to this community problem, especially by parents and professionals.

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