Nocturnal enuresis and its treatment among primary-school children in Oromieh, Islamic Republic of Iran

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سلس البول الليلي ومعالجته بين تلاميذ المرحلة الابتدائية في أورومية بجمهورية إيران الإسلامية

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الخلاصة: كان الهدف من هذه الدراسة هو تحديد مدى تواتر سَلَس البول الليلي ومعالجته بين تلاميذ المرحلة الابتدائية في بلدة أورومية في جمهورية إيران الإسلامية. وقد قام الأبَوَان بالإجابة على استبيان شمل 3500 تلميذاً تم انتقاؤهم خلال مرحلة التسجيل السنوي بالمدرسة خلال فصل الصيف عام 2004. وكانت نسبة تواتر سَلَس البول الليلي 7.7٪، ونسبة الذكور (8.6٪) أعلى منها في الإناث (6.7٪). وكانت أساليب المعالجة المستخدمة هي: الأدوية، والحدُّ من شرب المياه، والإيقاظ ليلاً للتبول، والإنذار بالسَلَس البولي وذلك بنسبة بلغت 57.8٪، و18.1 و2.6٪ من الحالات. وكان تكرار سَلَس البول الليلي في هذه الدراسة مشابهاً للدراسات السابقة مع اختلاف في طرق المعالجة.

ABSTRACT The aim of this study was to determine the frequency and treatment of enuresis among primary-school children living in Oromieh city, Islamic Republic of Iran. A questionnaire was answered by parents of 3500 selected students at the annual school enrolment in summer 2004. The frequency of nocturnal enuresis was 7.7%. Enuresis frequency was significantly higher among boys (8.6%) than girls (6.7%). Treatment methods used were: medication, water restriction, awaking for voiding and enuresis alarm in 57.8%, 18.1%, 11.5% and 2.6% of cases respectively. The frequency of nocturnal enuresis is similar to other studies but treatment methods were different.

L'énurésie nocturne et son traitement chez les enfants des écoles primaires d'Oromieh en République islamique d'Iran

RÉSUMÉ Dans cette étude, nous avions pour objectif de déterminer la fréquence et le traitement de l'énurésie chez les enfants des écoles primaires d'Oromieh (République islamique d'Iran). Les parents de 3500 écoliers sélectionnés lors de l'inscription annuelle à l'école, pendant l'été 2004, ont répondu à un questionnaire. La fréquence de l'énurésie nocturne était de 7,7 %. Elle était significativement plus élevée chez les garçons (8,6 %) que chez les filles (6,7 %). Les méthodes de traitement suivantes étaient utilisées : médicaments, restriction en eau, réveil de l'enfant pour la miction et système d'alarme dans 57,8 %, 18,1 %, 11,5 % et 2,6 % des cas. Dans cette étude, la fréquence de l'énurésie nocturne était similaire à celle révélée par d'autres études, mais les méthodes de traitement étaient différentes.

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Introduction

Nocturnal enuresis has been described as the involuntary voiding of urine during sleep, in the absence of congenital or acquired defects of the central nervous system or the urinary tract in a child aged 5 years or over [*1*]. For the great majority of children, the presence of nocturnal enuresis is a source of shame and embarrassment. It profoundly affects the child's life socially, emotionally and behaviourally and also impacts on the everyday life of his/her family [*2*]. The frequency of enuresis changes with age and its prevalence ranges widely in various countries [*3*]. A study revealed that only about one-third of the families of children with this frequently troubling problem seek help from a physician [*4*]. Various interventions are used to treat nocturnal enuresis [*5*]. A recent case–control study of self-esteem showed impaired self-esteem in children with nocturnal enuresis before treatment compared with control children. Patients improved to the level of controls after 6 months of treatment [*6*]. The study also showed that the degree of success was related to the type of treatment [*6*].

There is little research regarding prevalence of nocturnal enuresis and its treatment in the Islamic Republic of Iran. This study aimed to determine the frequency and types of treatment of enuresis among primary-school children in Oromieh city.

Methods

Sample

The population studied were primary-school children aged 7–12 years old who were enrolled at primary schools in Oromieh city, Islamic Republic of Iran. According to the estimated prevalence of enuresis and population size, a sample size of 3243 with confidence level of 95% was needed. Therefore 3500 students were selected for the study, randomly selected from all primary-school classes in the city. Every school and class received their sample size quota according to student numbers.

Data collection

This was a descriptive cross-sectional study. For each selected child a questionnaire was answered by one of the parents during annual enrolment in summer 2004. Data collection was done by interviews in cooperation with the school heath centre workers. All parents were asked if their child had suffered from nocturnal enuresis in the previous 6 months and, if so, what kind of treatment had been used. The study was approved by the research council of the University of Oromieh.

Primary nocturnal enuresis was defined as bed-wetting at least once a week in a child who has not had night-time bladder control for 6 months or more. We included cases who at the time of study had primary nocturnal enuresis. Secondary enuresis and diurnal enuresis without nocturnal enuresis were excluded from study. Treatments were categorized as enuresis alarm, medication, water restriction, awaking for voiding and untreated, based on the results of a pilot study and literature review. The children who had several methods of treatments were categorized under the most commonly used ones.

Data analysis

The chi-squared test was used for statistical analysis for calculating the frequency difference between the 2 sexes. A level of $P < 0.05$ was considered statistically significant.

Results

Samples were selected from 192 primary schools of Oromieh city. There were 47 759 children in the age group of 7–12 years according to the data for the year 2004 in these schools. There were 22 801 female and 24 958 male students in all schools. The final sample was 3500 students, 1671 females and 1829 males.

Out of the final sample, 270 children (7.7%) were reported by their parents as suffering from nocturnal enuresis. The frequency of enuresis was significantly higher among boys than girls: 158 (8.6%) versus 112 (6.7%) ($P = 0.032$) (Table 1).

Of the children with enuresis, 243 (90.0%) had used treatments. Treatment methods used by the patients' family are presented in Table 2. Medication, water restriction, awaking for voiding and enuresis alarm, alone or simultaneously, were used as treatment methods in 156 (57.8%), 49 (18.1%), 31 (11.5%) and 7 (2.6%) children with enuresis. Of the families who sought help for enuresis, 90% had consulted doctors.

Discussion

Enuresis is an important psychosocial and medical problem [*7*]. In our study the overall frequency of nocturnal enuresis was 7.7%, a similar rate to other reports in the literature [*8–12*]. The frequency was 8.6% in boys and 6.7% in girls and the difference between males and females was significant.

The frequency of reported nocturnal enuresis depends on its definition. In this study we included primary-school children with leakage of urine at least once a week. In one study conducted in the UK the overall prevalence of reported nocturnal enuresis was 18.9% but the value was reduced to 5.1% when the inclusion criteria were weekly incidences [*8*]. Demographic studies report a prevalence of nocturnal enuresis in at least 5%–10% of 6- to 7-year-old children, most often boys, in Sweden [*9*]. In Saudi Arabia, the overall frequency of enuresis was reported as 15% between 6 and 16 years [*10*]. Another study in north-west Turkey among primary-school children indicated that the rate of nocturnal enuresis prevalence was 8.9% overall, 9.7% in boys and 8.1% in girls [*11*]. In that study, primary nocturnal enuresis was defined as bed-wetting at least once a week in a child who had never had night-time bladder control for 6 months or more [*11*]. A questionnaire survey in the United Arab Emirates reported a prevalence of 5.5% among 6–12-year-olds. The researchers suggested that the low

Table 1 **Distribution of population and frequency of nocturnal enuresis by sex for 270 children in Oromieh city, Islamic Republic of Iran**

Sex	Population No.	%	Sample size No.	Enuresis cases No.	Enuresis frequency %
Female	22 801	47.7	1671	112	6.7
Male	24 958	52.3	1829	158	8.6
Total	47 759	100.0	3500	270	7.7

P ***= 0.032.***

Table 2 **Methods of treatment of nocturnal enuresis for 270 children in Oromieh city, Islamic Republic of Iran**

Treatment	No.	%
Medication	156	57.8
Water restriction	49	18.1
Awaking for voiding	31	11.5
Alarm	7	2.6
None	27	10.0
Total	270	100.0

rate observed could be due to the fact that the proportion of younger children in their sample was small, coupled with the use of questionnaires rather than interviews. It may be that the parents place less emphasis on the problem when a questionnaire is used [*12*].

Our results revealed that enuresis alarms were used for only 2.6% of patients. Alarm treatment is the most successful treatment for bedwetting up to now, with initial and long-term success rates of 70%–90% and 50%–70% respectively [*13*]. Children successfully treated with an enuresis alarm are less likely to relapse compared with those treated with pharmacological intervention [*14,15*].

Our results showed that 90% of families who sought help for their children's problem consulted doctors. Differences in the management of children in different studies are related to several factors. One study showed that parents' views and traditional beliefs had a strong influence on subsequent management [*16*]. In Turkish families, only 19.8% of cases used medication for treatment of the disease. Parents preferred to wait for self-recovery or to use traditional methods [*11*]. In Australia only 34% of families of children with bedwetting sought professional help [*17*]. In Karachi, Pakistan, only 54% of children sought help for their problem, of whom 26% consulted doctors, 16% visited homeopaths while 11% used a *hakeem* (traditional practitioner) and home remedies [*18*]. The frequency of overall medical help-seeking in our study is more than earlier research, suggesting a high level of concern among parents in this city.

Conclusions

The frequency of enuresis among primary-school children in Oromieh city was similar to that reported in the literature. Despite a high rate of seeking professional help by parents in our study, the most commonly recommended regimen in the literature, the bed alarm, was used with less than 3% of bedwetting children. Further research is needed into methods for promoting effective quality enuresis treatments.

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References

1. Arvin AM. Enuresis. In: Behrman RE, Kliegman RM, eds. ***Nelson textbook of pediatrics***. London, WB Saunders, 2004:2077–9.

2. Landgraf JM et al. Coping, commitment, and attitude: quantifying the everyday burden of enuresis on children and their families. ***Pediatrics***, 2004, 113:344–4.

3. Schober JM et al. The impact of monosymptomatic nocturnal enuresis on attachment parameters. ***Scandinavian journal of urology and nephrology***, 2002, 38:47–52.

4. Thiedke C. Nocturnal enuresis. ***American family physician***, 2003, 67(7):1499–506.

5. Glanzener CM, Peto RE, Evans JH. Effect of intervention for treatment of nocturnal enuresis in children. ***Quality & safety in health care***, 2003, 12:390–4.

6. Longstaffe S, Moffat ME, Whalten JC. Behavioral and self-concept changes after six months of enuresis treatment: a randomized controlled trial. ***Pediatrics***, 2000, 105:935–40.

7. Akis N, Irgi E, Aytekin N. Enuresis and effective factors. ***Scandinavian journal of urology and nephrology***, 2002, 37:199–203.

8. Redsell SA, Collierv J, Evans J. Children presenting at UK community clinics—comparison with hospital-based samples. ***Scandinavian journal of urology and nephrology***, 2003, 37:239–45.

9. Hjalmas K. Enuresis in children. ***Brazilian journal of urology***, 2002, 28:232–49.

10. Ugurlap S et al. Frequency of enuresis, constipation and enuresis association with constipation in a group of school children aged 5–9 years in Malayata, Turkey. ***Turkish journal of medical science***, 2003, 33:315–20.

11. Unalack M et al. Enuresis nocturna: prevalence and risk factors among school age children in northwest Turkey. ***European journal of general medicine***, 2004, 1:21–5.

12. Eapen V, Mabrouk AM. Prevalence and correlates of nocturnal enuresis in the United Arab Emirates. ***Saudi medical journal***, 2003, 24(1):49–51.

13. Leerdam FJ et al. Alarm treatment is successful in children with day- and nighttime wetting. ***Scandinavian journal of urology and nephrology***, 2004, 38:211–5.

14. Dhanidharka VR. Primary nocturnal enuresis—where do we stand? ***Indian pediatrics***, 2000, 37:135–40.

15. Taneli C et al. Effect of alarm treatment on bladder storage capacities in monosymptomatic nocturnal enuresis. ***Scandinavian journal of urology and nephrology***, 2004, 38:207–10.

16. Chao SM et al. Primary monosymptomatic nocturnal enuresis in Singapore. Parental perspective in an Asian community. ***Annals of the Academy of Medicine of Singapore***, 1997, 26(2):179–83.

17. Cadwell Ph et al. Bedwetting and toilet training problems in children. ***Medical journal of Australia***, 2005, 182(4):190–2.

18. Mithani S, Zaidi Z. Bed wetting in school children of Karachi. ***Journal of the Pakistan Medical Association***, 2005, 55(1):2–5.