

## Research Article

# Nocturnal enuresis and its treatment among primary-school children in Taif, KSA

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**Received:** 24 September 2013

**Accepted:** 16 October 2013

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### ABSTRACT

**Background:** The aim of this study was to determine the frequency and treatment of enuresis among primary-school children living in Taif city, KSA.

**Methods:** An interview with parents of 2701 selected students at the annual school enrolment in summer 2012.

**Results:** The frequency of nocturnal enuresis was 7.81 %. There were no significant between boys (7.33%) and girls (8.42%). Treatment methods used were: enuresis alarm, water restriction, medication, and awaking for voiding in 56.9%, 14.7%, 5.7% and 5.7% of cases respectively.

**Conclusions:** The frequency of nocturnal enuresis is similar to other studies but treatment methods were different.

**Keywords:** Nocturnal enuresis, Prevalence, Taif

## INTRODUCTION

Enuresis is a frequent symptom and condition among school children.<sup>1-3</sup> Definitions conform to the standards recommended by the International Children's Continence Society: Enuresis means intermittent incontinence while sleeping. Intermittent incontinence (II) is urine leakage in discrete amounts. It can occur during the day (daytime incontinence- DI) and/or night (nocturnal incontinence or enuresis- NI) and it is applicable to children who are over five years old.<sup>4,5</sup>

The etiology of enuresis is not completely understood. Several pathophysiological mechanisms have been proposed, including bladder dysfunction, small functional bladder capacity, abnormal vasopressin levels, nocturnal polyuria, and abnormal sleep patterns.<sup>6</sup> Chronic renal failure, constipation, diabetes insipidus, diabetes mellitus, hyperthyroidism, pinworm infection, psychological stress, seizure disorders, sickle cell disease and urinary tract infections were recorded in secondary enuresis.<sup>6</sup>

Although common, NI is still a misunderstood and undertreated childhood condition.<sup>7</sup> Intermittent incontinence is both psychologically and physically distressing, and if left untreated, has considerable psychological ramifications on children as they get older.<sup>7-9</sup> Enuretic children will often avoid peer activities for fear of overnight invitations. Additionally, many children who suffer from NI exhibit behaviours such as low self-esteem, withdrawal, decreased ambition, and increased anxiety. These children are often low achievers within the school system and become a problem for their family and school.<sup>10</sup> The condition may also lead to teasing or bullying. Considering this, during the past few years, it has been emphasized that early screening and treatment can help enuretic children to improve their quality of life.<sup>7</sup>

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 Taif city.

## METHODS

### Sample

The population studied were primary-school children aged 7-12 years old who were enrolled at primary schools in Taif city, KSA. The sample size was calculated (at 80% power of study, 95% confidence level and 5% level of significance) as 710 which were increased to 867 to overcome any refusal, dropping out or invalid response. The objectives of the study were explained to the local educational authorities to get a permission to carry out the study. Students were selected by a systematic random sampling technique from students' list as every tenth one.

### 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 2012. Data collection was done by interviews in cooperation with the school health 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 College of Applied Medical Science, Taif, KSA.

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 that 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

Sample of the current study were selected from 31 primary schools of Taif city. There were 34900 children in the age group of 7-12 years according to the data for the year 2012 in these schools. There were 18560 female and 16340 male students in all schools. The final sample was 2701 students, 1200 females and 1501 males.

The total prevalence of enuresis was (7.81 %) as reported by their parents suffering from nocturnal enuresis. The frequency of enuresis was significantly higher among girls than boys: 110 (8.42%) versus 101 (7.33%) ( $P = 0.05$ ) (Table 1).

Treatment methods used by the patients' family are varied among the sample of the current study which are presented in Table 2. Enuresis alarm 120 (56.9%), water restriction 31(14.7%), Medication 12 (5.7%), awaking for voiding 12 (5.7%) were used as treatment methods, 36 (17.1) hadn't consulted any doctors.

**Table 1: Frequency of nocturnal enuresis in Taif, KSA.**

Sex	Population number	%	Sample size number	Enuresis cases number	Enuresis frequency percentage
Male	16340	46.82	1501	110	7.33
Female	18560	53.18	1200	101	8.42
Total	34900	100	2701	211	7.81

**Table 2: Methods of treatment of nocturnal enuresis in Taif, KSA.**

Treatment	Number	%
Alarm	120	56.9
Water restriction	31	14.7
Medication	12	5.7
Awaking for voiding	12	5.7
None	36	17.1
Total	211	100

## DISCUSSION

Nocturnal enuresis is crucial to be diagnosed and treated as soon as possible, as it can result in many psychological consequences such as low self-esteem, shame and embarrassment which affect how they interact with their friends and families.<sup>11</sup>

Nocturnal enuresis may cause secondary emotional and social problems in children who continue to wet their beds. Although enuretic children seem to have many accompanying psychological problems, it must be investigated whether these problems are the results or etiological factors of enuresis.<sup>6</sup>

In our study the overall frequency of nocturnal enuresis was 7.81%, a similar rate to other reports in the literature.<sup>12,13</sup> The frequency was 7.33% in boys and 8.42% in girls.

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.<sup>12</sup> 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.<sup>13</sup> In that study, primary nocturnal enuresis was defined as bedwetting at least once a week in a child who had never had night-time bladder control for 6 months or more.<sup>13</sup>

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 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.<sup>14</sup>

Our results revealed that enuresis alarms were used for 56.9% of patients. Alarm training with pad and buzzer appears to be a suitable method of treatment for children younger than 8 years. The totals of success for children aged 5, 6 and 7 years were 70% (n = 7/10), 73% (n = 29/40) and 90% (n = 55/61), respectively.<sup>15</sup> enuresis Alarm treatment are less likely to relapse compared with those treated with pharmacological intervention.<sup>16</sup>

Our results showed that 82.9% 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.<sup>17</sup> In the current study, 5.7% only of patients used medication when compared to Turkish families, 19.8% of cases used medication for treatment of the disease.<sup>13</sup>

## CONCLUSIONS

The frequency of enuresis among primary school children in Taif city was similar to that reported in the literature. The most commonly recommended regimen is alarm. Further research is needed into the proper methods for promoting effective quality enuresis treatments.

*Funding: No funding sources*

*Conflict of interest: None declared*

*Ethical approval: The study was approved by the research council of college of applied medical science, Taif, KSA*

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DOI: 10.5455/2320-6012.ijrms20140218

**Cite this article as:** Al-Zahrani SS. Nocturnal enuresis and its treatment among primary-school children in Taif, KSA. *Int J Res Med Sci* 2014;2:91-4.