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Original Research Article

Prevalence and factors affecting nocturnal enuresis among primary school children in Baddi, Himachal Pradesh, India

Naveen Bansal*, Manju Bala Goyal

Department of Paediatrics, ESIC Model Hospital, Baddi, Himachal Pradesh, India

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***Correspondence:**
Dr. Naveen Bansal,
E-mail: drnaveenbansal87@gmail.com

ABSTRACT

Background: Enuresis is defined as involuntary urination beyond the age of 5 years. The present study was done to determine the prevalence of nocturnal enuresis and its associated risk factors in children in Baddi, Himachal Pradesh.
Methods: This was a prospective observational cross-sectional study done in children in the age group of 5-11 years over a period of 18 months. Nocturnal enuresis was defined using the DSM IV criteria. Data analysis was done using chi square test.
Results: The total sample size was 2144 and the prevalence of nocturnal enuresis was found to be 22.0% (n=472). There was statistically significant relationships between nocturnal enuresis and history of nocturnal enuresis in siblings ($p=0.0018$), history of deep sleep ($p<0.05$), history of perianal itching ($p<0.05$), history of urinary tract infection ($p<0.05$), poor academic performance ($p<0.05$).
Conclusions: Nocturnal enuresis is a result of complex interplay of multiple physiological and psychological factors. Parents need to be sensitised and educated regarding these causation factors for better prevention and treatment of nocturnal enuresis.

Keywords: Nocturnal enuresis, School children, Involuntary urination

INTRODUCTION

Enuresis is defined as involuntary urination beyond the age of 5 years during daytime or at night (>2 episodes/ week for 3 consecutive months).[1] Enuresis can be classified as nocturnal if involuntary urination occurs only at night or diurnal in which it occurs during daytime also. Enuresis can also be classified as primary enuresis if the child has never been dry at night and secondary enuresis if the child develops incontinence after remaining dry for 6 months or more.[2]

Many studies have been done to investigate the aetiology of enuresis, and it is seen that it has a multifactorial aetiology with a complex interaction of genetic, physiological and psychological factors.[3-5]

Enuresis can result in various behavioural and psychological problems including embarrassment and loss of self esteem which can affect the growth of the child.

However, it has been seen that enuresis is often under reported and many times the parents are not concerned about this problem.[6] The prevalence of enuresis in India ranges from 7.61% to 16.3%.[4,7-9] There is a lack of evidence regarding the prevalence of enuresis in children from Himachal Pradesh.

Hence, this study was done to ascertain the prevalence and risk factors for nocturnal enuresis in the industrial town of Baddi, Himachal Pradesh.

METHODS

The present study was a prospective, observational cross-sectional study, conducted at ESIC hospital, Baddi, Himachal Pradesh from July 2017 till December 2018. Children in the age group of 5-11 years who came to the paediatric OPD for any ailment were eligible for inclusion in the study. Parents of the children who consented for the study were administered a questionnaire to collect their socio-demographic data, concern of parents about enuresis and the possible risk factors involved in the aetiology of enuresis. Nocturnal enuresis was defined as involuntary urination beyond the age of 5 years during nighttime (>2 episodes/ week for 3 consecutive months) using the DSM IV criteria.[10] Data was analysed using chi square test. A p value of <0.05 was considered as statistically significant.

RESULTS

A total of 2144 children were included in the present study. Out of these, 1323 were boys and 821 were girls. A total of 472 (22.0%) children were diagnosed with nocturnal enuresis as shown in (Table 1).

The frequency of nocturnal enuresis among different age groups is shown in (Table 2).

Table 1: Gender wise distribution of cases.

Gender	Enuretic	Non enuretic	Total
Male	251 (19.0%)	1072 (81.0%)	1323
Female	221 (26.9%)	600 (73.1%)	821
Total sample size	472 (22.0%)	1672 (78%)	2144

Table 2: Frequency of nocturnal enuresis among different age groups.

Age group	Total sample size	Enuretic
5-7 years	729	204 (27.9%)
7-9 years	603	152 (25.2%)
9-11 years	812	116 (14.2%)

Table 3: Prevalence of various risk factors among the children.

Variable	Present among Enuretic	Present among Non enuretic	p value
H/O enuresis in sibling	79/472 (16.7%)	190/1672 (11.3%)	0.0018
Parents living separately	195/472 (41.3%)	268/1672 (16.0%)	p<0.05
H/O Caesarean section	136/472 (28.8%)	468/1672 (27.9%)	p=0.73
Absence of breast feed	66/472 (13.9%)	269/1672 (16.0%)	p= 0.26
Poor academic performance	305/472 (64.6%)	456/1672 (27.2%)	p<0.05
Birth weight <2.5 kgs	77/472 (16.3%)	220/1672 (13.1%)	p=0.07
H/O perianal itching/ worms	246/472 (52.1%)	298/1672 (17.8%)	p<0.05
H/O Urinary tract infection	58/472 (12.2%)	120/1672 (7.1%)	p<0.05
H/O deep sleep	275/472 (58.2%)	545/1672 (32.5%)	p<0.05

The prevalence of various risk factors among the children is shown in (Table 3). The risk factors found to be significantly associated with nocturnal enuresis included a history of enuresis in sibling(s) (p=0.0018), in children of parents living separately (p<0.05), poor school performance (p<0.05), history of perianal itching or worms (p<0.05), history of urinary tract infection (p<0.05) and in children living with history of deep sleep (p<0.05). However, nocturnal enuresis was not found to be associated with history of caesarean section (p=0.73), lack of breast feed (p=0.26) or low birth weight (p=0.07). Parents of 317 (67.3%) children diagnosed with nocturnal enuresis were not concerned about the condition and didn't seek any medical opinion for the same.

DISCUSSION

DSM-IV criterion for nocturnal enuresis was used for this study among children aged 5-11 years. The prevalence of nocturnal enuresis was 22.0% (n= 472). The reported prevalence was more as compared to other studies done in different parts of India.[4,8,11] The reported prevalence was similar with reported prevalence from Congo (26%) and Nigeria (21.3%) but lower as compared to studies from Jamaica (50%) and Morocoo (35.0%).[6,12-14] The prevalence was higher as compared to Bangkok (3.9%) and Finland (8.2%).[15,16] These differences can be attributed to different sociodemographic characteristics and different sample sizes and selection criteria.

The prevalence of nocturnal enuresis in girls was significantly higher as compared to boys (26.9% vs 18.9%; p<0.05). The prevalence of nocturnal enuresis tended to decrease with increasing age and it was 27.9% in the age group of 5-7 years while it was 14.2% in the age group 9-11 years. This result is similar to various other studies.[1,3,17] Nocturnal enuresis was more common among children with a positive history of nocturnal in siblings (p<0.05) and this was in agreement with various other studies.[3,17-19]

This may indicate its genetic inheritance, as nocturnal has been linked to regions on chromosome 8, 12 and 13 in a previous study.[20] History of urinary tract infection was significantly associated with nocturnal enuresis ($p<0.05$) which is in agreement with various other studies.[17,21] It is postulated that recurrent urinary tract infection in these patients is the result of ureterovesical reflux due to the contraction of the proximal ureter and the pelvic floor muscles.[17,21]

Presence of deep sleep and a difficulty in waking up at night was also significantly associated with nocturnal enuresis ($p<0.05$) which was in agreement with various other studies in which it is postulated to be one of the most important factor for the occurrence of nocturnal enuresis.[19,22]

No significant association was seen between nocturnal enuresis and absence of breast feed ($p=0.26$), caesarean section ($p=0.73$), low birth weight ($p=0.07$). Children of parents living separately were seen to have a higher rate of nocturnal enuresis ($p<0.05$). Also, children with poor academic performance were found to have a higher prevalence of nocturnal enuresis ($p<0.05$), highlighting the role of psychological factors in the occurrence of nocturnal enuresis.

A limitation of the present study was that the severity of nocturnal enuresis was not investigated. However, this is the first such study on nocturnal enuresis to be conducted in Himachal Pradesh. Further studies with larger sample sizes need to be done to confirm and compare the findings of the study.

CONCLUSION

The causation of nocturnal enuresis is multifactorial. A complex interplay of physiological and psychological factors is responsible for nocturnal enuresis. Sensitisation and education of parents regarding these risk factors is essential for prevention as well as proper management of nocturnal enuresis.

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