

Research Article

## A Study on Prevalence of Nocturnal Enuresis Among Rural Paediatric and Adolescent Population

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Available Online: 1<sup>st</sup> January, 2015

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### ABSTRACT

**Back ground:** Nocturnal enuresis is the third most stressful life event in school going children next to parental fights and divorce of the parents. It is the 2nd most common chronic condition behind allergic disorder. Involuntary urination after the age at which bladder control usually occurs, while an individual was asleep can be considered as nocturnal enuresis.

**Objective:** To assess the prevalence of nocturnal enuresis among the rural paediatric and adolescent population.

**Methods:** This was a cross sectional study and individuals of age 5-18 years were included in the study. Diagnosis was made by using Diagnostic and statistical manual of mental disorders (DSM-IV) criteria. Individuals with less than 5 years of age and individuals who were under the treatment with diuretics and general medical conditions like seizure disorder, diabetes, spina bifida were excluded from the study.

**Results:** A total of 328 individuals were screened for nocturnal enuresis. Among them, 42 individuals were found to be suffering with enuresis and the prevalence was observed to be 12.8%. Out of these 42 individuals, 29 (69%) were paediatrics and 13 (31%) were adolescents. Among the enuretic individuals, 8 (19%) were having the family history of enuresis. Majority (35.7%) of the enuretics were having the frequency of enuresis  $\geq 7$  times per week.

**Conclusion:** Females were more prone to enuresis than males especially in this rural area. More than 1/4<sup>th</sup> of the primary school going children was observed to be enuretic. Family history of enuresis played a significant role in our study which may influence the occurrence of enuresis in their future generations too. It is the responsibility of the health care professionals to educate the parents and the children about enuresis. We should educate them in such a way that enuresis is not the fault of the children or the caregivers. If our counselling succeeds it results in enhancing the parental relationship with their children.

**Key Words:** Enuresis, Paediatrics, Adolescents

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### INTRODUCTION

Nocturnal enuresis is the third most stressful life event in school going children next to parental fights and divorce of the parents<sup>1</sup>. It is the 2nd most common chronic condition behind allergic disorder<sup>2</sup>. Involuntary urination after the age at which bladder control usually occurs, while an individual was asleep can be considered as nocturnal enuresis. It is a genetically heterogeneous disorder which has been shown inheritance in family, twin and segregation analysis. Its prevalence was found to be 10% in six year old children, 5% in 10 year old children and 0.5-1% among the teenagers. Enuresis was considered to be normal at age  $\leq 5$  years<sup>3, 4, 5</sup>. The prevalence of this disorder decreases with age<sup>6</sup>. Males are prone to develop enuresis than females. This gender variation vanishes by adolescence<sup>7</sup>. Various transversal studies were available from all over the world but very few studies were available from India. Hence, we made an attempt to assess the prevalence of nocturnal enuresis among the rural paediatric and adolescent population.

### METHODS

This was a cross sectional study conducted during a medical camp at Reddyvari palle village of Kadapa district of Andhra Pradesh state in India. This study was approved by the institutional ethics committee of our institution and written informed consent was taken from the subjects involved in the study. All the aspects of confidentiality were assured to the subjects participated in our study. Individuals of age 5-18 years were included in the study and the diagnosis was made by using Diagnostic and statistical manual of mental disorders (DSM-IV) criteria that includes individuals with repeated urination into beds or clothes at night time which can be manifested by either a frequency of twice a week for at least three consecutive months or the presence of clinically significant distress or isolation from social activities, academic or occupational or other important areas of functioning. The individuals who met the above criteria were considered as the individuals suffering with enuresis. Individuals with less than 5 years of age and individuals who were under the treatment with diuretics and general medical conditions like seizure disorder,

Table 1: Gender and age wise categorization of individuals observed with enuresis and without enuresis among the total study population

Characteristics		Enuresis observed	Enuresis not observed	Adjusted odds ratio (95% CI)	<i>p</i> value
Gender	Male	10	146	0.29 (0.14-0.63)	0.0016*
	Female	32	140		
Age	Pediatrics	29	119	3.13 (1.56-6.27)	0.0013*
	Adolescents	13	167		

\*indicates statistically significant, CI- Confidence Interval

diabetes, spina bifida<sup>8</sup> were excluded from the study even though they met the above criteria.

*Statistical Analysis:* SPSS 21.0 was used to perform Statistical analysis. Fisher's exact test and chi square test were performed and p-values were obtained at 95% confidence interval.

Table 2: Age wise categorization of individuals diagnosed with enuresis

Age in years	No. of individuals with enuresis (%)
5 years	8 (19)
6 years	7 (16.6)
7 years	3 (7.1)
8 years	1 (2.4)
9 years	2 (4.8)
10 years	2 (4.8)
11 years	1 (2.4)
12 years	5 (11.9)
13 years	2 (4.8)
14 years	4 (9.5)
15 years	1 (2.4)
16 years	2 (4.8)
17 years	3 (7.1)
18 years	1 (2.4)

## RESULTS

A total of 328 individuals were screened for nocturnal enuresis out of which 156 were males and 172 were females. Among them, 42 individuals were found to be suffering with enuresis and the prevalence was observed to be 12.8%. Table 1 represents the gender and age wise categorization of the individuals observed with enuresis and without enuresis. According to our study, the prevalence was high in females when compared to males. The mean age for males and females was observed to be 13.8 years and 8.8 years respectively. Out of the 42 individuals diagnosed with enuresis 29 (69%) were paediatrics and 13 (31%) were adolescents. The prevalence

of nocturnal enuresis was observed to be high in 5 years old children when compared to other age groups (Table 2). Table 3 represents the gender wise categorization of the individuals diagnosed with enuresis. Among the 10 males diagnosed with enuresis 8 were adolescents and 2 were paediatrics and out of the 32 females diagnosed with enuresis 5 were adolescents and 27 were paediatrics.

Table 4 represents the categorization of the education level of the total study population. Among the 328 individuals, 72 were primary school going, 202 were high school going and 54 were college going students. Out of the 72 primary school going students, 23 were enuretic and among the 202 high school going students 13 were enuretic and among the 54 college going students 6 were observed with this disorder.

Table 3: Gender wise categorizations of the individuals diagnosed with enuresis

Gender	Pediatrics	Adolescents	Total (%)	<i>p</i> value
Male	2	8	10 (23.8)	0.0004*
Female	27	5	32 (76.2)	

\*indicates statistically significant

Figure 1 represents the family history of enuresis among the individuals diagnosed with enuresis. Among the enuretic individuals, 8 (19%) were having the family history of enuresis. Figure 2 represents the frequency of the nocturnal enuresis among the individuals diagnosed with enuresis. Majority (35.7%) of the enuretics were having the frequency of enuresis  $\geq 7$  times per week.

## DISCUSSION

Enuresis is a somatic problem in which psychological factors play a marginal role. Majority of the parents didn't agree with the above statement<sup>9</sup>. The amount of impairment correlated with the enuresis includes isolation of the child from the social activities, low self-esteem,

Table 4: Categorization of the education level of the total study population

Education	Enuresis observed	Enuresis not observed	Total (%)	Chi value	<i>p</i> value
Primary	23	49	72 (21.9)	31.1	<0.0001*
High school	13	189	202 (61.6)		
College	6	48	54 (16.5)		

\*indicates statistically significant

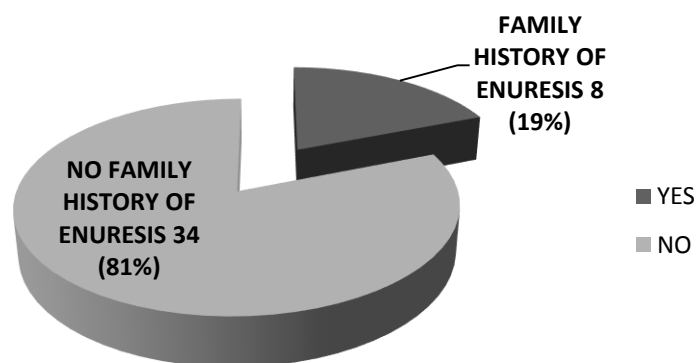


Figure 1: Family history of enuresis among the individuals diagnosed with enuresis

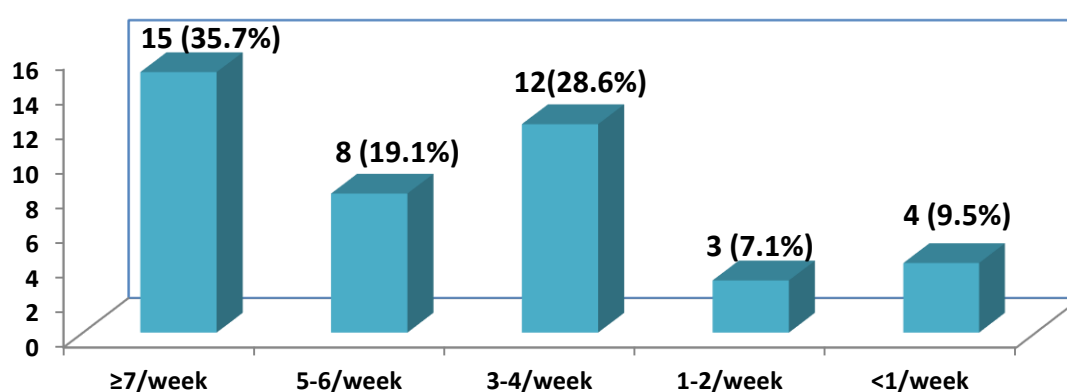


Figure 2: Frequency of the nocturnal enuresis among the individuals diagnosed with enuresis.

and the degree of social ostracism by peer, punishment and the rejection of the parents or care takers. Enuresis in children prevents them integration with environment and they will be afraid of going to school camps, sleeping in others houses etc<sup>10, 11</sup>.

The aetiology of nocturnal enuresis was unclear. Sadly, most of the children with enuresis feel that they still wet the bed because there is something wrong with them. Anyway most of them feel that bedwetting is a punishment. According to a recent survey, approximately 22% of the parents of enuretic children thought that reason for enuresis is laziness. But we should not consider that as a major reason. There are three reasons why children may still need to urinate at night that includes (i) imbalance in the bladder muscles i.e. the muscle that contracts to squeeze the urine out is stronger than the sphincter muscle that holds the urine in, (ii) the size of the bladder is too small to hold the normal amount of urine, (iii) production of urine is more than their normal size bladders can hold<sup>12</sup>. Among all the individuals diagnosed with enuresis, most of the individuals have strong family history of bedwetting, suggesting an inherited factor. Inherited genes are one of the reasons for incontinence. In 1995, Danish researchers reported that they found a site on human chromosome 13, which is partly responsible for bedwetting<sup>8</sup>. If both the parents were enuretic, 77% of their children were found to be enuretic. If one of the parents

was enuretic, 44% of their children were observed to be enuretic. If the parents are not bedwetters, 15% of their children will be bedwetters. Some of the experts considered that some undetermined genes also involved in the incontinence<sup>13, 14</sup>. In our study, about 19% of the enuretics were having the family history of enuresis.

Anti diuretic hormone (ADH) produced by the body can slow down the making of urine. Because of the higher production of ADH during sleep, there is less need to urinate at night. If the sufficient amount of ADH is not produced by the body during night, then making of urine may not be slowed down, which leads to overfilling of the bladder<sup>15, 16</sup>. Sometimes anxiety causing events can also be the reasons for bedwetting in children at the age of 2-4 years. Examples of Anxiety causing events are anger of the parents, unfamiliar social situations and overwhelming family events such as the birth of the brother or sister. Incontinence is also an anxiety causing event. Another anxiety related reason for bedwetting is stronger bladder contractions leading to leakage in the daytime may cause embarrassment and anxiety which leads to wetting in the night. In our study, especially in the adolescence anxiety causing events are the main reason for enuresis. Some investigators empirically observed that in some children number of bed wettings increases in winter and decreases in the summer<sup>8</sup>.

The drug Imipramine can be used to treat bedwetting. It acts both on the brain and urinary bladder<sup>16</sup>. Behavioural therapy is effective, for those children who do not overcome with medication<sup>17</sup>. Maintaining the calendar of wet and dry nights helps to determine the effects of interventions. Avoid foods and drinks like caffeine that may contribute to incontinence. Bladder training exercises help the children with enuresis by increasing the gaps between the trips to the bathroom<sup>18</sup>.

## CONCLUSION

Females were more prone to enuresis than males especially in this rural area. More than 1/4<sup>th</sup> of the primary school going children was observed to be enuretic. Family history of enuresis played a significant role in our study which may influence the occurrence of enuresis in their future generations too. Among the adolescents who were observed with enuresis, females were more in number when compared to males and the main reason for enuresis in them are the anxiety causing events. They were feeling that it is a punishment for them. In most of the children nocturnal enuresis can be usually resolved on its own. The impact of bedwetting can be reduced by using bed protection and washable/disposable products, using room deodorizers, thoroughly washing the child before dressing and using of emollients to prevent chafing. It is the responsibility of the health care professionals to educate the parents and the children about enuresis. We should educate them in such a way that enuresis is not the fault of the children or their caregivers. If our counselling succeeds it results in enhancing the parental relationship with their children.

## ACKNOWLEDGEMENTS

Authors wish to acknowledge all the subjects who involved in the study for their kind cooperation.

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