

Nocturnal enuresis among secondary school students in Port Harcourt, Nigeria

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Abstract

Background: Enuresis is a common problem in children. The impact upon the lives of children and their families is often underestimated.

Aim: The study was to determine the prevalence, causes and effect of enuresis among students in Port Harcourt.

Methods : A survey of junior and senior students from 2 secondary schools in Port Harcourt Local Government area was done using self-administered questionnaire.

Results: A total of 491 students between the ages of 10-21 years were studied. There were 248 (50.5%) females and 243(49.5%) males. Nocturnal enuresis (NE) was reported in 124(25.3%) students; out of which 59(47.6%) had primary NE. NE was significantly more in males than in females and in those from polygamous homes($\chi^2=7.29$, $df = 1$,

$p<0.01$ and $\chi^2 = 7.5$, $df = 1$, $p<0.01$ respectively). There was no organic cause identified in 88 (71%) students. Non-organic causes of secondary NE include parental separation 12 (9.7%), divorce 16 (12.9%) and death in the family 4 (3.2%). Enuresis affected 75 (60.5%) of the students, as well as their parents. Fifty (40.3%) students felt embarrassed about bedwetting and in 27 (21.8%) students the parents were very angry and had to beat them. Treatment offered included prayers in 44 (35.6%) and waking at night in 15 (12.1%).

Conclusion: Enuresis is a common problem among secondary students in Port Harcourt. Secondary nocturnal enuresis is more prevalent, and stressful to both the sufferer and the parents.

Key words: Enuresis, Secondary School Students, Port Harcourt.

Introduction

Enuresis is defined as involuntary voiding of urine in a child aged 5 years or older^{1,5}. It may be nocturnal (nighttime) or diurnal (daytime), but for practical purposes, enuresis generally refers to nocturnal enuresis (bedwetting). Bedwetting is a common worldwide finding in school age children^{1,5}. The prevalence rate varies with age, the highest being at the age of 6 years with a steady fall to 1% in their teens^{1,2}. The incidence is slightly higher in United States of America compared to some European countries^{1,16-8}. Nocturnal enuresis may be primary (PNE) where the child has not achieved bladder control from infancy or secondary (SNE) where bedwetting occurs after a period of dryness for at least 6 months^{1,3,9,10}.

Nocturnal enuresis is multifactorial in origin, arising from a number of conditions^{10,16}. PNE is non-organic in up to 97% of cases^{17,19}. Stressful early life events can trigger bedwetting, particularly in those who had previously been dry for a long period^{17,19}. NE can be a distressing experience

for child and parents, requiring both non-pharmacologic and pharmacologic treatment. Although most parents are supportive in developed countries, up to 30% are intolerant towards their child^{20,21}. The impact upon the lives of children in under developed countries is often underestimated. We undertook this study to determine the prevalence, causes and effect of enuresis among students in Port Harcourt.

Methodology

The study was carried out among students from 2 secondary schools (one male and one female only) in Port Harcourt Local Government Area (PHALGA) of Rivers State. Selection of the study schools were done by multistage sampling technique from among the 35 government approved secondary schools in the local government area. The schools were initially stratified into federal, state and privately owned schools. The 21 state schools were further stratified into co-educational, male and female only schools.

The final selection of the one male and one female only schools was done by simple random sampling of balloting from the seven male only and six female only secondary schools.

The minimum sample size of 375 was calculated using the formula $(pxq)^2/SE$. The study population consisted of 491 students in both junior and senior classes of the selected schools. All classes from junior secondary one to senior secondary three were represented. One stream of each class was randomly selected for the study. Permission for the study was obtained from the Post Primary Schools Board as well as the Principals of the schools. Informed consent was also obtained from the students after explanations were given on the purpose of the study.

A self-administered questionnaire was used to obtain the information on the age, sex, parents' educational level, if bedwetting after 5 years, type of enuresis, risk factors, treatment offered and effect on child and parents. The questions were closed ended, and were filled by the students under the supervision of one of the authors. To ensure confidentiality, no names were recorded and teachers were not involved in filling the questionnaires.

Analysis of the data was mainly by simple descriptive method, and statistical significance was tested using chi-square. P value < 0.05 was considered significant.

Results

A total of 491 students were studied, comprising of 248 (50.5%) females and 243(49.5%) males. They were aged 10 to 21 years. Table 1 shows details of the personal data of the 491 students. Two hundred and forty students in the junior classes (JS1-JS3) were between the ages of 10 and 15 years. Most of the students' parents had post primary education, and 368 (74.9%) were from monogamous families.

Prevalence of enuresis

One hundred and twenty-four (25.3%) students had nocturnal enuresis. Out of these, 29 (5.9%) also had daytime bedwetting. Eighty three (66.9%) of the students were bedwetting intermittently, being dry

some nights. Primary nocturnal enuresis (PNE) was seen in 59 (47.6%) students, and SNE in 65 (52.4%).

Characteristics of the enuretics and factors associated with enuresis

As shown in Table 2, enuresis was more prevalent among students aged 10-15 years and decreased with age. Ninety (72.6%) of the children with enuresis were junior students. Table 3 shows the factors associated with enuresis. Nocturnal enuresis was significantly more in males than in females ($\chi^2 = 7.29$, $df = 1$, $p < 0.01$) Parental educational level were not significantly associated with enuresis ($\chi^2=0.1$, $df = 1$, $p > 0.05$). Although most of the enuretics were from monogamous homes, polygamy significantly increased the prevalence of NE (38.8% versus 23.6%) ($\chi^2 = 7.5$, $df = 1$, $p < 0.01$).

Causes of enuresis

In 88 (71%) students there was no organic cause identified. Table 4 shows diseases indicated in 36 (29%) students with enuresis, out of which 33 (26.6%) had SNE. Non-organic causes of SNE include parental separation 12 (9.7%), divorce 16 (12.9%) and death in the family 4 (3.2%).

Treatment offered

Treatment offered included use of herbs 3(2.4%), alarms to wake child up 5 (4.0%), drugs 14 (11.3%), prayers 38 (30.7%), waking at night 18(14.5%) and gifts/rewards 3 (2.4%). Forty three (34.7%) students did not receive any form of treatment.

Effect of enuresis on the patient and parent's response

Among the students who bedwet, 50 (40.3%) felt embarrassed about it, 7 (5.6%) had poor academic performance, 7 (5.6%) had difficulty socializing with friends and 7 (5.6%) occasionally slept away from home. Combination of the social problems occurred in 4 students.

Seventy three (58.9%) students reported that their enuresis affected their parents. Twenty seven (21.8%) students noted that parents were very angry and had to beat them. Parental annoyance was reported by 16 (12.9%), withdrawal of gift in 8 (6.4%) and verbal abuse in 6 (4.9%).

Table 1. Students Socio-Demographic Characteristics (N=491)

Variable	Total number	%
Age (years)		
10-12	85	17.3
13-15	183	37.3
16-18	189	38.5
>19	34	6.9
Year of schooling		
1 st -3 rd	238	48.5
4 th -6 th	224	45.6
No response	29	5.9
Father's educational level		
None	16	3.3
Primary	40	8.1
Post primary	199	40.5
Post secondary	236	48.1
Mother's educational level		
None	13	2.6
Primary	68	13.9
Post primary	229	46.6
Post secondary	181	36.9
Family setting		
Monogamy	368	74.9
Polygamy	67	13.6
No response	56	11.4

Table 2. Characteristics of 124 students with enuresis

Variable	N=124	% of N
Age		
10-15	93	75.0
16-18	29	23.4
>19	2	1.6
Year of schooling		
1 st -3 rd	90	72.6
4 th -6 th	30	24.2
No response	4	3.2
Sex		
Male	74	59.7
Female	50	40.3
Father's educational level		
None/Primary	15	12.1
Post primary/secondary	109	87.9
Mother's educational level		
None/Primary	22	17.7
Post primary/secondary	102	82.3
Family setting		
Monogamy	87	70.2
Polygamy	26	13.6
No response	11	11.4

Table 3. Influence of some variables on the prevalence of enuresis

Variables	Enuresis (N=124)	Total (N=491)	% of variables	P value
Sex				
Male	74	243	30.5	<0.01
Female	50	248	20.2	
Father's educational level				
None/Primary	15	56	26.8	>0.05
Post primary/secondary	109	435	25.1	
Mother's educational level				
None/Primary	22	81	27.2	>0.05
Post primary/secondary	102	410	24.9	
Family setting				
Monogamy	87	368	23.6	<0.01
Polygamy	26	67	38.8	
No response	11	56	19.6	

Table 4. Organic problems identified in 36 students with enuresis

Predisposing factors	No (% of 124)
Road traffic accident	9 (7.3)
Sickle cell disease	8 (6.5)
Urinary tract infection	8 (6.5)
Helminthic infestation	6 (4.8)
Diabetes mellitus	3 (2.4)
Constipation	2 (1.6)
Total	36 (29)

Discussion

The high prevalence rate of nocturnal enuresis found in this study is comparable to the rate of 25% reported among school children in Lagos²². In epidemiological surveys undertaken in Great Britain, Holland, New Zealand and Ireland, lower prevalence rates of enuresis was noted compared to our study²³. The difference in the methodology used in both studies may have accounted for the difference in their prevalence rates.

This study supports the knowledge that enuresis is more prevalent in the younger age group and decreases with age. Greater proportions of the enuretics in our study were between 10 and 15 years of age. We also noted a higher prevalence of secondary nocturnal enuresis. This contrasts with some studies who found more of PNE^{2,8}. Stressful events have been reported to act as trigger to secondary bedwetting^{2,8,17-19}, as well as some organic problems such as urinary tract infection, road traffic accidents etc^{2,8,24,26}. Although majority of the students we studied were from monogamous homes, 38.8% of those from polygamous homes had enuresis compared to 23.6% from monogamous families. This explains why parental separation and divorce were the common non-organic causes of SNE in this study. It is well documented in the literature that SNE occur after such personal or familial disturbances^{2,8,17-19}.

The present study supports the higher prevalence of enuresis in males as found in most studies^{1,5,8}. Bedwetting has been reported to be more in the first born children, and those from lower socioeconomic classes^{2,8}. This study did not find any influence of parents' educational level on the prevalence of enuresis. PNE has been noted to be non-organic, with the likelihood of a significant psychopathology in less than 10%^{1,8}. Organic problems were reported in 29% of the enuretics in this study, out of which 26.6% had SNE. This agrees with reports that SNE is more likely to be associated with an organic cause than PNE^{1,4,24,26}. Urinary tract infection has been reported in 5-10% of children

with enuresis, usually diurnal type^{21,26}. Also diabetes mellitus, diabetes insipidus and chronic renal failure may cause enuresis due to presence of polyuria. Poorly adjusted sickle cell disease may also cause enuresis due to urinary concentrating defect and stress from illness.

The treatment of enuresis is both pharmacologic and non-pharmacologic. The understanding of the pathophysiology of enuresis i.e. low nocturnal vasopressin, bladder instability and lack of arousal from sleep to full bladder sensation would guide the drug treatment modalities^{2,4,10}. The non-pharmacologic treatment includes behavioural modification and use of alarm. In considering the form of treatment it is most appropriate to consider the parent and child's preferences, as well as parental intolerance. Parental intolerance is associated with high drop out or early withdrawal from treatment if alarm is used^{20,21}. Alarms are most successful for older co-operative children above 7 years. Standard wearable moisture sensor enuresis alarms are not available in our environment and so table alarms were used in 4.0% of cases. Behavioural modification used in this study was waking at night, gift/rewards and prayers. The role of prayers on the treatment of enuresis has not been documented, however the spiritual connotation of diseases in the African setting makes prayer an important aspect of treatment. It is important to note that behavioural modifications are not effective when used alone.

Drug therapy is limited to older children without success to non-pharmacologic treatment, those with urgent need to achieve dryness due to social reasons or those whose self-esteem are being eroded^{1,5,8}. Fourteen (11.3%) students reported the use of drugs for the management of their enuresis.

Enuresis can be a distressing experience for the child and may lead to social isolation, emotional distress and a loss of self-esteem^{1,5}. In this study 40.3% of the students were embarrassed about their enuresis, and some had difficulty socializing with friends. The effects of the problem on the parents vary, with 21.8% of cases using punitive measures and 4.9% verbal abuse. Studies have shown that punishments are not entertained in the management of enuresis because they adversely affect the psychological development of the child^{1,5,27}.

In conclusion, this study has shown that nocturnal enuresis is common in school children in Port Harcourt. SNE is more prevalent, and are caused by some organic and non-organic

conditions, especially disrupted family structure (parental separation or divorce). NE is also associated with emotional and behavioural problems affecting both the sufferer and the parents.

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