

Nocturnal Enuresis among Nigerian Children and its Association with Sleep, Behavior and School Performance

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Objective: To study the association of nocturnal enuresis with sleep, behavior and school performance.

Methods: Hospital-based, cross-sectional descriptive study of 216 children (≥ 6 -year-old) using structured questionnaire and behavioral tools.

Results: Prevalence of enuresis was 37.0%. Nocturnal enuresis was significantly associated with abnormal behaviour ($P=0.049$) and poor sleep hygiene ($P<0.05$). School performance was not associated with enuresis.

Conclusion: Children with nocturnal enuresis were at an increased risk of behavioral problems and poor sleep hygiene.

Keywords: Association, Behavioral disorders, Bed wetting, Co-morbidity.

Enuresis is a distressing condition, often manifesting as emotional problems including withdrawal and/or over-activity [1-3]. Psychosocial problems may develop due to peer-pressure [4], and social activities involving sleepovers may be avoided [5]. Some caregivers are overly concerned resulting in several harmful traditional practices; others do nothing even when medical help is required [6,7]. In spite of perceived risk of psychosocial problems associated with enuresis, there are only a few reports of the association between enuresis and behavioural problems. To our knowledge there has been no study addressing this association in Nigeria. Thus, this study was done to study the association between enuresis, sleep hygiene, behaviour and school performance.

METHODS

This was a cross-sectional study of a convenience sample of ≥ 6 -year-old children who presented at children outpatient clinic of Federal Teaching Hospital Abakaliki, Ebonyi state in South-eastern Nigeria for non-chronic ailments. Those with chronic medical conditions, or taking some form of medication for enuresis were excluded. Minimum sample size of 234 was obtained using 23.2% prevalence obtained in a previous study and the total outpatient attendance of 1652 with the degree of accuracy set as 0.05 [8]. Subjects kept a diary for enuresis. Caregivers were subsequently interviewed in a confidential and non-threatening environment. School report and Teachers' Rutter score were obtained on

follow-up visits. Socioeconomic classification was done using Oyedeji's criteria [9]. Rutter's behavioural Scale (B2) [10] for children (Teachers scale) as validated for Nigerian Children by Iloje [11] was used to assess presence of behavioural disorder. BEARS criteria [12] and a consistent reported abnormality of >1 /week in the past 6 months was considered indicative of poor sleep hygiene.

Institutional Ethics Committee approved the study. Informed consent was obtained from all participating families. SPSS version 20 was used for data analysis using the Chi-square and results presented as frequencies. Significant variables were subjected to logistic regression. Level of significance was accepted as $P<0.05$.

RESULTS

Of the 216 children assessed, 80 (37%) had enuresis. Of these, 53 (66.2%) of caregivers had made attempts at stopping enuresis; frequent night waking 51 (96.2%), denial of fluids 40 (75.5%), and punishments 25 (47.2%). Only 17.5% ($n=14$) had sought orthodox help. Majority of caregivers were unconcerned (60.6%, $n=66$). Abnormal behavior was observed in 50 (23.1%) participants while 26 (12.4%) had poor academic performance.

More males had enuresis 54 (67.5%, $P=0.028$), and frequency of enuresis decreased with increasing age ($P<0.001$). There was a significant association between enuresis and behavioral disorders ($P=0.026$) as well as

WHAT THIS STUDY ADDS?

- Behavioral disorders were more common amongst enuretic children.
- No association was found between enuresis and school performance.

with sleep hygiene. Ingestion of a heavy meal just before sleep was significantly associated with enuresis (**Table I**). There was no statistically significant relationship between academic performance of participants and enuresis ($P=0.057$).

DISCUSSION

There was a high prevalence rate of enuresis in our study population. Majority of caregivers do not seek orthodox help rather, they make poor attempts which may reinforce negative feelings in the child. Behavioral disorders and poor sleep hygiene were more common amongst enuretic children. There was; however, no association between enuresis and school performance in current study.

Parental report used in the study suggests that under-reporting is unlikely. The cross-sectional nature of the study was a limitation. A longitudinal study of a cohort of children may have revealed other comorbidities which may contribute to the occurrence of enuresis and behavioral disorders.

A common practice of not seeking orthodox help for enuresis was found in the present study which was also reported by Etuk, *et al.* [15]. This finding shows the enormity of poor health-seeking behavior, which is a determinant of child health in Nigeria and other resource-poor countries. Most caregivers made poor attempts at curbing enuresis. Such attempts have been shown to reinforce negative feelings in the child without any positive effects in reducing the frequency of enuresis. Frequent night-wakening may impair good sleep resulting in day time sleepiness of a child, also punishment for a child with enuresis may worsen the psychological state of the emotionally ill child. It therefore shows the need for increased education of the community on proper care of enuretic children.

TABLE I ASSOCIATION OF ENURESIS WITH SLEEP HYGEINE

Variable	Odd Ratio (95% CI)
Bedtime problem	0.41 (0.38, 0.46)
Excesive daytime sleepiness	0.59 (0.52, 0.67)
Night awakenings	0.97 (0. 73, 1.22)
Ingestion of a heavy meal just before sleep	2.54 (1.92, 3.17)

The finding of a significant association between enuresis and behavior is in contrast to a report from Istanbul where no significant differences were found [6]. The difference could be because the authors had used caregivers perception [6], while Rutter behavioral scale (B2) was used in the current study. There was no association between enuresis and academic performance. Therefore, other confounding variables such as the cognitive ability and school absenteeism of the pupils may have accounted for school performance.

An interesting finding was the association between enuresis and poor sleep hygiene; it offers both an insight into the quality of parental care and opportunity for intervention. Children who had enuresis were found to have more bedtime problems, excessive day-time sleepiness, and more frequent night awakenings. It was also found that enuresis was commoner in children who had heavy meals just before they slept than in those whose supper consists of a light snack. Of all the sleep hygiene variables, ingestion of heavy meals just before sleep was noted to be the variable predictive of enuresis on logistic regression. This is not surprising since heavy meals are often accompanied with fluid intake. Therefore, in children with enuresis enquiry about their sleep hygiene could help to determine contributing practises like late and heavy dinners.

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