

## Original Article

### The prevalence of enuresis among primary school children in Zaria, Nigeria

<sup>1</sup>NH Mbibu, <sup>2</sup>EA Ameh, <sup>3</sup>AU Shehu, <sup>4</sup>RD Wammanda

<sup>1</sup> Urology Unit , <sup>2</sup>Paediatric surgical unit <sup>3</sup>Community medicine and <sup>4</sup>Paediatric units  
Ahmadu Bello University Teaching Hospital Zaria.

*Requests to Dr NH Mbibu Urology Unit, Ahmadu Bello University Teaching Hospital Zaria*

*E-mail: mbibu @ yahoo.co.uk*

#### Abstract

**Background** :Enuresis is a common but usually under reported developmental urologic disorder affecting children most commonly .There is evidence of affectation of normal development and social stigmatization of the enuretics apart from it being a real social nuisance. Among the African children this problem is often neglected and the preferred types of treatment are traditional methods. There may be serious implications in the child including ,emotional ,social and mental maladjustment.

**Method** This study was carried out during a six month period in four densely populated primary schools in Zaria.. Native African Children aged above 5 years were included in the study and children with history of neuro-psychiatric or obvious urologic disorders were excluded. A structured closed- ended questionnaire was administered to the target group.

**Results** . Enuresis was found in 214/1416(22.2%) of the children. The age range was 5-14 years with a median of 8 years. The male: female ratio of 2:1. 96.6 % (211/214) of affected children had nocturnal enuresis while (1.4%)3/214, had day time enuresis only. Both day time and nocturnal enuresis were seen in 2.8%(6/214) of the children.

75%(160/214) enuretics were mild-moderate and wetted bed less than 10 times /month. The ratio of the female to male ratio in this group was 1:1.

25.4%54/214) enuresis was severe and could not quantify the number of wet nights/month. Only 4/54(7.4%) children in the group considered severe were female the 50 others were male. 74.6%(160/214 ) of the children were enuretic from birth with no describable dry periods . 25.4%(54/214) enuresis commenced long after birth and symptoms were recurrent with long dry spells. In 200/214(88.%) children the mother had received conventional Ante Natal Care(ANC) and subsequent delivery was supervised in the Hospital while in 14/214(6.5%) of the children the mothers did not have ANC and delivery was un-supervised at home. There was no significant correlation between(ANC) ,mode of delivery and enuresis although two children delivered by caesarean section have severe enuresis among a group of 52 children with sever enuresis whose mothers had routine ANC before an uneventful delivery. (20/214) 3% had co –morbidity: asthma and epilepsy.

The majority of parents were mostly low income workers. Most patients were managed preferably by varied traditional techniques with usually unsatisfactory outcomes. Only (74/214) 43% performed above average in school.

**Conclusion:** Enuresis is a common and usually neglected urologic condition in our environment. The significant prevalence in the older child may have important implications on quality of the child's development.

**Health education** will encourage parents to present early to avoid crippling associated complications.

#### Introduction

Enuresis is the involuntary passage of urine during sleep occurring after the age which bladder control would normally be anticipated. It is a common urinary disorder in children and reportedly affects 15-20% of 5 year olds and 1-2 % of adolescents with or without treatment as often quoted in most Western series <sup>1,2,3</sup>. The male child seems to be more commonly affected where it tends to be more disabling with a high incidence of emotional stigmata.<sup>1</sup> There is tremendous increase in the understanding of the patho-physiology and epidemiology of this problem from

Western literature but it remains an often, neglected misunderstood problem in the African environment. Resort to orthodox treatment is late when mostly traditional options have not helped. This study was designed to study the prevalence and evaluate the socio-cultural implications of enuresis in native African school Children in Zaria ,a densely populated city in northern Nigeria populated by people with different socio-cultural backgrounds.

### Patients And Methods

This study was done over the 6 month period when schools were in full session (January–June 2001). It is a community based study involving 4 Primary schools in Zaria ( a densely populated city of about 1million people .The inhabitants of this city are a mix of people from various ethnic groups in Nigeria who work or study in Zaria. Zaria is dominated by the Hausa tribe who live in the thickly populated ancient Zaria city . Each of the schools selected has a population of about 2000 pupils in the primary section of the usually combined (primary and secondary) streams. There were about 5850 pupils in the four primary schools studied. Pupils below ( $\leq 4$  year) mostly in the nursery section of most schools and Non- African children(Arab, Europe) were excluded from the study. Also excluded were children with urological and neurological pathologies Pupils were interviewed using a structured questionnaire administered to the parents by the class Teacher who had been briefed on how to fill it. Parents consented and filled the forms voluntarily. The Questionnaire was designed to obtain information about Pupils bio-data , Mode and place of Delivery, Antenatal Care(ANC) if any. Past Medical History and treatment. Bed wetting, onset, time of day and any associated urinary symptoms. Treatment for enuresis and type received (orthodox or native ). Parents assessment of child's performance at school. Information about parents status and social background. History of enuresis by parent and their attitude to enuresis. 1620 questionnaires were administered only to children 5 years and above. The response rate to the questionnaire was 89.67%1416(1620).

### Results

Enuresis was found in 214/1416(22.2%) of the children. The age range was 5-14 years with a median of 8 years. For the distribution of enuresis by age, 160/214(75. %) were aged between 5-10 years 54/214(25 %) were age above 10 years. 142/214(66.3 %) were male and 72/214(36.8%) were female with a male: female ratio of 2:1. 211/214( 96.6 %) of affected children had nocturnal enuresis while 3/214(1.4%) only boys, had day time enuresis only. 6/214(2.8%)had both day time and nocturnal enuresis. Of the severity of enuresis 65%(139/214) wetted their bed less than three, times a month and were considered mild while 9.8%(21/214),were moderate; (wetted bed more than 10 times a month) . 54/214( 25.4%)

could not quantify the number of wet night, and were wet all the nights were considered severely enuretic. The ratio of male to female enuretics in the large( mild/moderate) groups was 1:1. 54 children had severe enuresis and 4/54(7.4%) of them were female and 50 male. Of the onset of enuresis 160/214(74.6%) were enuretic from birth .54/214(25.4%) became enuretic some time long after birth and had recurrent symptoms with long dry spells. Mode of delivery was studied to see if there was any correlation between mode of delivery and enuresis. 200/214(88.%) pupils were delivered in a hospital and mother had received routine Ante natal care(ANC) .14/214(6.5%) of the children were born at home un-supervised, with no history of ANC . Two of the children one male one female were delivered by caesarean section .There was no significant correlation between mode of delivery and enuresis although the only two children delivered by caesarean in this study have severe enuresis,52 others with severe enuresis had normal ANC followed by uneventful delivery

### Traditional therapies

Parents reported therapeutic protocols in their traditional settings.

In one setting treatment was by sitting the children in turns on a truncated anthill (fig 1) usually selected for the treatment ritual for enuresis .

In the red ant bite method red ant was applied to the perineum to bite several times. In some settings the traditional healer administered forcefully a herbal preparation to the child that was usually not so tasty. Some herbal preparations were used as 'sitz bath'.

The Herbal sitz bath are hot and are frequent cause of perineal burns where it is frequently practiced. These techniques are punitive in their action as mostly pain is inflicted hoping the child submits and stops wetting bed. However parental beliefs are of a mythical force that heals enuresis..

### Outcome of Traditional therapies

Outcomes were studied as it applies to all types of traditional

therapies.160/214(75%) have never gained control . 54/214(25%) have gained control with treatment despite recurrent symptoms

### Co-Morbidities

Concurrent illnesses seen with enuresis, 20/214(9.3%) had concurrent medical conditions and Eleven children were known epileptics since birth 4 were asthmatics and 5 had undiagnosed recurrent haematuria.

Table 1: Parents social grouping

Occupation	No (%)
Petty Trading	86(63.2)
Businessman	54(42.1)
Artisan	46(19.3)
Teacher	6(0.70)
BANKER	6(0.53)
Health workers	8(0.35)
Pharmacist	4(0.18)
Medical Doctor	4(0.18)
Nurse	2(0.09)
Medical records officer	2(0.08)
Total	214

The father had previously had enuresis in 58% of all fathers and 28% of mothers had been affected. Both parents were affected in 14% of parents

**Parents Marital Status**

Married 186/214(84%)  
 Single 22/214(10.3%)  
 Divorced 6/214 (0.28%)  
 .Most parents are married but there are some single and divorced mothers.

**Parents Health concerns about Enuresis**

Not a threat to life and 169//214(79%)  
 May threaten life 19/214(8.89%)  
 Self- limiting. 19/214(8.89%)  
 Not aware of hospital treatment(7/214(12.%)  
 Enuresis was often perceived as a benign self limiting disease with no threat to life.

**Child's Academic performance**

The child's achievement in school was assessed from the parents view point if they were among  
 i, Good Top 10 in class  
 ii, Satisfactory if the child was in a position 11-20 in class  
 iii, Average if the child was between 21-30 and poor if they were in the last ten in class .  
 There were averagely 45-50 children in a class and the last three examinations were used for assessment were:  
 Good.32/214(14%),  
 satisfactory 42/214(19.6%) ,  
 Average 71/214(33%)  
 Poor 8/214(3.7%) not able to cope with academic work.  
 There was no opinion from 60 parents.

Fig2 parents1- Father 2- Mother 3- Both Parents

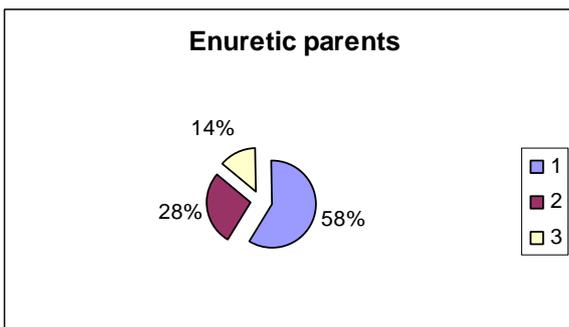


Fig2 Ant Hill For therapy

## Discussion

Enuresis is probably the most common developmental disorder in children<sup>1</sup>. Nocturnal enuresis (NE) is the commonest and most studied and understood form of enuresis<sup>2</sup>. The prevalence of NE is difficult to estimate because of the variations in its definition and social standards and attitudes to it<sup>3</sup>. It has been defined as the involuntary voiding of urine on at least two nights per month for at least three consecutive months beyond the age at which bladder control is normally attained (4-6 years) in the absence of congenital or acquired defects of the urinary tract<sup>4</sup>. Approximately 15–20% of normal children still wet at night at age of 5 years with spontaneous resolution rate of about 15% per year. At age of 15 years 1–2% will still wet the bed<sup>2,4,5</sup>. In this study the prevalence of enuresis is 22.2% similar to prevalence rate of 20.2% in a recent study in Assuit Egypt<sup>6</sup>. Studies involving handicapped children in Special Education Schools showed a high prevalence rate of 25%<sup>7</sup>. There is a male to female ratio of 2:1 not too different from 3:2 quoted from studies from USA and the Scandinavian countries and 1.4:1 in Assuit Egypt<sup>6</sup>. In this study 96.6% of children had nocturnal enuresis while 3% had day time enuresis. 75% of enuresis were primary<sup>1</sup> and 25% were secondary. This compares with the similar observations in Egypt and Sweden<sup>6,7,8</sup>. In his study involving 12570 Korean children in elementary school Lee observed that diurnal wetting was found in 13.7%<sup>9</sup> of children. Diurnal wetting affected 3% of the children in this study whereas combined (day and night) wetting was found in 6% of our children. Combined enuresis describes more the degree of bothersomeness from enuresis and does not necessarily correlate with some underlying pathology.<sup>10</sup> The age commonly affected in this study was the range (5-10 years) including 75% of children meanwhile others (25%) were above aged 10. In a study in USA the commonest age (43%) affected were between 5-7 years. Enuresis was considered a burden and bothersome if it was frequent enough to interfere with the child's life pattern. 25.4% of children wetted bed every night. This is marked evidence of bother though most of the children voided between 3 and 10 times a month. Academic performance and emotional stability may be affected by

enuresis<sup>1,2</sup>. Children have been proven to be socially maladjusted and emotionally unstable and academic performance adversely affected by enuresis in previous studies<sup>1</sup>. Most studies have reported enuresis to occur frequently in children with a lower socioeconomic status<sup>1,9</sup>. The distribution in this study shows that parents of 87% of the pupils were in the lower status of the socio-economic classification. In most hospital based studies it is reported that the enuretic child from the lower socioeconomic class will present early to hospital and is more compliant with the drugs where the higher class presents usually later and does not comply with therapy. 5.6% of children in our study are from the Higher social class homes; with a good parental education but none of the children have ever gone to hospital for treatment. Social status does not therefore appear to influence choice of orthodox hospital care for the enuretic child in our setting. There were as many as 79% of parents who do not believe enuresis should be treated aggressively or is a threat to life. The first line of treatment was usually to consult the traditional healer. The traditional setting has a set of well organized therapeutic protocols peculiar to each traditional setting usually deep rooted and handed over by oral tradition. Therapeutic devices are meant to intimidate the child and punish him enough to stop wetting bed. The traditional anthill (Fig1) therapy is popular in one such setting the anthill is truncated during therapy and the child is forced to and is usually bitten by a mouthful of the ants. There is no evidence of complete cure in any one method but long dry spells characterize most techniques though it is difficult to separate this fact from normal observations of dry spells in the normal biology of enuresis<sup>2</sup>. Treatment regimes in orthodox care are currently guided by the Guidelines provided by ERIC (Enuresis Resource and Information Centre)<sup>1</sup> usually are reward oriented and seek to change child's behaviour with or without the use of drugs. Initial success may be defined as 14 consecutive dry nights to be achieved within a 16 week treatment period<sup>1</sup>. There may be relapse, continued success or complete success during treatment. The parent attitude to enuresis appears to be influenced by the past history of enuresis in the parent. A positive family history of primary enuresis was

available in 17% of fathers and 7.2 % of mothers. Non was enuretic in adulthood. The etiology of the enuresis is not clear<sup>9</sup> but in the Africa traditional settings enuresis is explained by myths . Insufficient wakening has been demonstrated repeatedly mentioned in nocturnal enuresis and it appears not to allow adequate awareness for 9.3% of enuresis. The polysymptomatic enuretic should be assessed thoroughly. Convulsions are an important factor in polysomatisation of enuresis<sup>1,5,8</sup>. 10% of children had epileptic convulsions and 2.6% had asthma. The association of enuresis and epilepsy is not clear but its documented that 40% of enuretic children when evaluated have electroencephalograms that are compatible with epilepsy or delayed maturation of the central nervous system<sup>1,9</sup>. There was past history of hematuria in 4.3% of enuretics but have been treated for bilharziasis. Urinary tract infection is not a regular feature of enuresis and an incidence of 1.2% is quoted.<sup>10</sup> In endemic areas a schistosoma bladder may present with instability and voiding disorders with enuresis<sup>1,5</sup>. The child's performance at school was studied by accepting the parents simple comparison with other siblings and overall performance at school. 71% of parents believed their children were poor performers at school.

centrally mediated inhibition of voiding<sup>2,9,10</sup> Additionally there is a correlation of the sleep pattern of the child with the levels of nocturnal Arginine vasopressin (AVP) which appears decreased in the enuretic child compared to controls.<sup>10</sup> In this study the presence of some comorbidities make enuresis polysymptomatic in Whereas 7.1% were as good as other sibs. 3.6% could not cope with school work. Enuresis is thought to affect potential for learning by its association with psychosocial maladjustment emotional instability,<sup>4,10</sup>. The child may be withdrawn with feeling of social outcasting.<sup>10</sup> The children were not assessed clinically in this study to evaluate neuro and urological disorders. This forms the second part of this study were the children will be assessed and appropriate treatment regimes recommended early to avoid morbidities associated. Active and continuing parent education is advocate. **In conclusion** Enuresis is an important but neglected urologic problem It may have a significant impact on the child's growth and development. The prevalence of enuresis is 22.2% in our environment. The enuretic child has to be identified and treated early and definitively in the hospital to avoid the crippling complications of enuresis

## References

1. Mark SD, Frank JD. Nocturnal enuresis. *British J of Urology* 1995;75:427-434
2. Koff SA. Enuresis. In Walsh PC, Gittes RF, Permuter AD, Stamey TA (Eds). *Campbell's Urology*, 7<sup>th</sup> Ed Philadelphia WB Saunders CO ; 1998 chap 66 pp 2055-2068
3. Rushton FG. Enuresis. In *Clinical Paediatrics urology* Kelali PP, King LR, Beliman AB Eds Philadelphia WB Saunders 3<sup>rd</sup> Ed 1992: 365-83
4. Buttler R J. Establishment of working definition in nocturnal enuresis. *Arch Dis Child* 1991; 66, 267-271
5. Hanafin S. Socio-demographic factors associated with nocturnal enuresis. *Br J nursing* 1998,7: 403
6. Abdel Latif AM, Osman E, Abdelaziz A, Shaker S and Nageib N. Pattern of Primary nocturnal enuresis in primary school children (first grade) In city African. *Journal Of urology* 2004;10:20-29
7. Roma RJ, Li L, Chinn S. Determinants of nocturnal enuresis in England and Scotland in the '90s. *Dev med child neurol* 1997;48: 184
8. Husamnn DA. Enuresis. *Review urology*, 1996; 48;184
9. Lee SD, Sohn DW, Lee J Z, Park NC, Chung MK. An epidemiological study of enuresis in Korean children. *Br Journal Urol Int* 2000; 85: 869
10. Hunsballe JM, Hansen TK, Rittig S, Petterson EB, Djurhuus JC. The efficiency of DDAVP release to the circadian rhythm of urine output in patients with persisting nocturnal enuresis. *Clinical Endocrinol* 1998; 49: 793-801
11. Oredsson AF, Jorgenson TM. Changes in nocturnal bladder capacity during treatment with the bell and pad for monosymptomatic nocturnal enuresis. *J urol* 1998;160: 166-169
12. Wojcik LJ, Kaplan GW. The wet child. *Urol. clin North Am* 1998;25:735