

ENURESIS IN SOUTHWESTERN NIGERIAN CHILDREN: PREVALENCE, RISK FACTORS AND PARENTAL PERCEPTION OF TREATMENT

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Email: moses.abiodun@uniben.edu**ABSTRACT**

Background: Enuresis means discrete episodes of urinary incontinence in a child 5 years old. It is a social stigma among older children and adolescents with possible negative effect on their self-esteem and family life. **Method:** Enuresis was defined based on the International Children Continence Society diagnostic criteria. Structured questionnaire on basic patient information on enuresis and perceived treatment sub-scale with cronbachalpha of 0.85 was administered. Logistic regression identified predictors of enuresis. The level of significance of each test was set at $p < 0.05$. **Results:** Among the 600 participating households, 58.5% had children 5 year old with enuresis. The mean household prevalence of enuresis was 22.4% (95% CI: 11.51% - 33.25%). Most of the affected households (85.5%) had one bedwetting child but 9.1% of them had two while the rest had at least three bedwetting children 5 year old. Their urinary symptoms include frequency (74.7%), urgency (14.8%), straining (8.8%) and cloudy urine (6.8%). Recent stressors among the enuretics include major illness (42.7%), relocation (32.2%) and bereavement (9.1%). Perception of enuresis therapies was borderline (mean score = 3.54 ± 0.5). Risk factors include parental history of bedwetting (OR=3.26, 95%CI = 1.65-6.45), monogamous family setting (OR=2.92, 95%CI = 1.38-6.18) and living in a room and parlor apartment (OR=2.19, 95%CI = 1.07-4.50). **Conclusion:** There is a high burden of enuresis in the study setting, associated with some modifiable factors. However, there is a relatively low perception of appropriate care of the disorder highlighting the need for an awareness campaign on effective enuresis therapies.

Keywords: enuresis, prevalence, risk factors, treatment, parental perception**INTRODUCTION**

Enuresis is a potential social stigma especially among older children and adolescents with non-enuretic peers. It is defined as discrete episodes of urinary incontinence in a child 5 years old.¹ The International Children Continence Society (ICCS) limits the term enuresis to night-time wetting and classifies it into monosymptomatic and non-monosymptomatic enuresis.^{1,2} The latter has other lower urinary tract symptoms, besides bedwetting. Monosymptomatic enuresis is sub-classified into primary enuresis (PE) if no prior dryness attained and secondary enuresis (SE) with previous satisfactory dryness for at least six months.^{1,3} Nocturnal enuresis is a common childhood

problem affecting nearly one-fifth of five year olds but persisting into adolescence in only 1-2% due to a spontaneous resolution rate of about 15% per year.¹ It is commoner in males during childhood.¹ The majority of affected children have primary monosymptomatic enuresis. Prevalence of enuresis ranges from 33% among 5 year old children to 0.7% in late adolescence in a national survey in the United States of America.⁴ In a large British cohort, prevalence of enuresis varied from 30% to 9.5% in school-aged children.⁵ Srivastava et al found that the prevalence of nocturnal enuresis was 12.6% among school children in Lucknow, India.⁶ Fockemaet al⁷ reported its overall prevalence as 16.0% among 5-10 year old South African

children, while Aloniet al⁸ reported 26.3% among primary school children in Kinshasa, Congo. Prevalence of enuresis in studies done in Nigeria ranges from 21.3% to 40.8% using similar definition.⁹⁻¹² Studies in relatively younger age groups often find higher prevalence of enuresis consistent with its natural history.

Several studies have shown a genetic basis for enuresis. Concordance rate among monozygotic twins is twice that of dizygotic twins.¹³ Where one parent had a history of prolonged bedwetting, about one-half of the offspring was affected; where both parents previously bed-wetted, about three-quarters of their children would be affected.¹³ Gene mapping confirms enuresis locus on chromosome 13q in some Danish families with trans-generation bedwetting showing an autosomal pattern of inheritance and over 90% penetrance.¹⁴ Other suggested pathophysiologic mechanisms include delayed maturation of the micturition centre leading to un-inhibition of the detrusor muscle contraction, reduced antidiuretic hormone (ADH) secretion leading to nocturnal polyuria and low functional capacity of the bladder.¹⁵ A thorough genitourinary and other systemic reviews can identify underlying morbidities such as urinary tract infections, chronic kidney disease, sickle cell disease, diabetes mellitus and neurogenic bladder due to cerebral palsy or spinal cord lesions, predisposing to enuresis.¹⁶ Urinalysis and urine microscopy should be done, as well as ultrasonogram and urodynamic studies if indicated.¹⁶

Considering the significant psychosocial stress of enuresis on affected children and households, appropriate management is desirable. Any identified predisposing disorder should be treated. Behavioral therapy using enuresis alarm and positive reinforcement are often effective.^{16,17} Desmopresin is the preferred treatment for childhood enuresis that has not responded to initial non-drug therapies.¹⁸ Anticholinergics and imipramine may be effective in refractory cases.^{18,19} Due to limited relevant data on enuresis in our setting, this study evaluated its prevalence and risk factors as well as the perception of enuresis treatment among south-western Nigerian

households. This will help to ascertain the burden of the disorder and the need for appropriate interventions in the locale.

MATERIALS AND METHOD

Study Setting and Participants

The study was cross-sectional descriptive, carried out at the paediatric outpatient departments of the Mother and Child Hospitals (M&CHs) in Akure and Ondo town. These ultra-modern public facilities provide specialized free health care services to the state capital and suburbs as well as allied communities in neighboring states. The M&CHs are the busiest health facilities in Ondo State south-western Nigeria.

Ethical clearance was obtained from the Research and Ethical committee of the M&CH Akure. Verbal informed consent was obtained from the respondents, having explained the purpose of the study and emphasized that participation was voluntary. The minimum sample size was 385, determined by assuming a prevalence of 50% for enuresis in the setting, a 95% confidence interval and a sample error of 5%.²⁰ A total of 600 persons were recruited from the two institutions (300 from each M&CH). The participants were all consecutive consenting guardians/parents with children aged five year or more in their households, based on the ICCS diagnostic criteria.¹

Data Collection: A structured questionnaire (comprising sections on demographic information, clinical history and perceived treatment of enuresis) was administered to the parents. The questionnaire items were based on 'basic patient information on bedwetting in children' by Drutz et al.²¹ Parental perception of enuresis treatment was accessed on a five-point Likert sub-scale ranging from 'strongly agree' to 'strongly disagree', with Cronbach's alpha of 0.85. The socioeconomic classification of the participants was based on maternal education and paternal occupation.²² Risk factors for enuresis were assessed in their clinical history by asking for the presence of relevant genito-urinary system (GUS) and non-GUS symptoms as well as their genotypes. The researchers and two trained assistants conducted face-to-face interviews of the participants.

Data Analysis

The data were analyzed using IBM SPSS Statistics for Windows, Version 20.0. Armonk, NY: IBM Corp. Demographic data, GUS and non-GUS symptoms in enuretic children were presented on frequency tables. The household prevalence of enuresis was computed as the number of bedwetting children over total number of children

5 year old in each household, and expressed as percentage. Reversed scoring of the Likert scale was applied where appropriate. Weighted mean score was computed for perceived treatment options of enuresis. Adequate perception was defined with a mean score cut-off point of 3.5. Socio-demographic variables of bedwetting and non-bedwetting children in the participating households were compared using bivariate analysis. Multiple binary logistic regression analysis was done to identify independent predictors of enuresis. The level of significance of each test was set at $p < 0.05$.

RESULTS

Six hundred respondents representing 600 households took part in the study. The age distribution of the bedwetting children was as follows: 5-6 years (93.7%), 7-8 years (4.9%) and 9 years (1.4%), with a mean age of 5.2 ± 0.6 years. Their gender distribution was 50.5% and 49.5% for males and females respectively. The majority of these children was from a monogamous (65.0%) or polygamous (34.3%) setting and lived in flats (48.0%), room and parlor (44.8%) and single room (6.7%). Their socio-economic classification was as follows: upper (36.9%), middle (20.8%) and lower (42.3%). They were mainly of Yoruba (69.2%), Hausa (21.8%) and Ibo (8.0%) ethnicity. About two-thirds of the respondents, 405/600 (67.5%) were Christians, 31.8% were Muslims while 0.7% belonged to other religions.

Prevalence of enuresis

Among the 600 participating households, 58.5% had children 5 year old with enuresis. The mean household prevalence of enuresis is 22.4% (95% CI: 11.51% - 33.25%). A majority (85.5%) of the affected households had one bedwetting child, 9.1% of them had two while the rest had at least three bedwetting children 5 year old.

Clinical History of Enuresis

Among the 351 enuretic children, four-fifths (80.6%) had at least three episodes of bed-wetting per week and one-third (32.8%) had not previously achieved any period of satisfactory dryness. Also, 65.3% of those that were previously dry reported duration of dryness 6 months. Some recent stressful events that occurred among the enuretics include major illness (42.7%), relocation (32.2%) and bereavement (9.1%) while 12.3% had no recent strenuous experience. Nearly, two-thirds (64.1%) of them had parents who bed-wet in childhood, and 63.0% had bed-wetting peers 5 years, including relatives (44.2%). The haemoglobin genotypes of most of the bed-wetting children known to the participants were AA (82.2%) and AS (16.8%).

Table 1 shows the genito-urinary (GUS) and non-GUS complaints present in the bed-wetting children. Their urinary symptoms include frequency (74.7%), urgency (14.8%), straining (8.8%) and cloudy urine (6.8%) while the non-GUS complaints were excessive thirst (11.4%), snoring (8.0%) and peri-anal itching or redness (5.7%). The negative effect of bed-wetting on the child's academic performance and family was acknowledged by 41.8% and 7.2% of the participants respectively.

Table 1: Clinical symptoms among the bedwetting children (n = 351)

Symptoms*	Frequency (%)
Genitourinary	
High urine frequency (>8times/day)	262 (74.7)
Urgency to urinate	52 (14.8)
Straining (to initiate and maintain urination)	31 (8.8)
Weak urine stream	18 (5.1)
Intermittency(urinating in several discrete spurts)	27 (7.7)
Cloudy or smelly urine	24 (6.8)
Blood in urine	16 (4.6)
Genital or lower urinary tract pain	23 (6.6)
Holding maneuver when pressed (like leg-crossing)	15 (4.3)
Non-genitourinary	
Perianal itching or redness	20 (5.7)
Snoring during sleep	28 (8.0)
Staring spells or convulsion	25 (7.1)
Gait abnormality	20 (5.7)
Weight loss, fatigue	20 (5.7)
Excess thirst, need for night time drinking	40 (11.4)

*Some of the children had more than one symptom.

Perception of enuresis therapies

Participants' perception of non-pharmacologic therapies of enuresis was adequate, with a grand mean score of 3.54 ± 0.57 . About 81.7% of the participants had adequate perception of the suggested treatment options. Urination before going to bed was rightly perceived by 87.3% of the participants as a beneficial intervention in enuresis, while behavioral therapies such as reward systems and use of urine alarms were identified as possible treatment options by 72.3% and 44.2% respectively. Also, 70.8% and 38.7% of participants considered punishment and herbal therapies as inappropriate therapy of enuresis. Table 2 shows the mean scores of participants' perception of possible enuresis therapies.

Table 2: Participants' perception of possible therapies of enuresis

Statements on possible therapies of enuresis	Mean	SD	Interpretation
Non-pharmacological therapies			
Bedwetting child should be reminded to void before sleep	4.03	0.79	Strongly aware
The child should be punished for bedwetting	3.53	1.02	aware
The child should be rewarded for dry night	3.59	0.96	Aware
The child should take less fluid in the evening	3.92	0.80	Aware
Urine-alarm systems	3.33	0.99	unsure
Pelvic floor muscle contraction-relaxation exercise	3.50	0.87	unsure
Additional therapies			
Special drugs to relax bladder in some children	3.31	0.94	Unsure
Antibiotics for treating urine infections if present	3.75	0.90	Aware
Special surgical operation for some children	3.13	0.98	Unsure
High-fibre diet to treat constipation	3.66	0.88	Aware
Traditional methods	3.18	1.03	unsure
Daytime wetting requires the support of school teacher	3.50	0.96	Aware
Weighted Mean	3.54	0.57	Aware

Predictors of enuresis

On bivariate analysis, household size, type of family and living arrangements were significantly different between the bedwetting and non-bedwetting cohorts ($p < 0.05$). Also, maternal educational level differs significantly between bedwetting and non-bedwetting cohorts ($p < 0.001$). Their socio-economic class distribution was similar; Table 3. Higher proportions of children with enuresis than the unaffected children had parents who bed-wetted in childhood (67.4% vs. 24.5%, $p < 0.001$) as well as bedwetting peers (52.1% vs. 43.2%, $p = 0.031$).

On multiple logistic regression (Table 4), predictors of enuresis comprise parental history of bedwetting (OR=3.26, 95%CI = 1.65-6.45), monogamous family setting (OR=2.92, 95%CI = 1.38-6.18), maternal secondary level of education (OR=0.37, 95%CI = 0.23-0.58) and living in a room and parlor apartment (OR=2.19, 95%CI=1.07-4.50).

Table 3: Comparison of demographic features of bedwetting and non-bedwetting children

Demographic features	Bedwetting, n(%)	Non-bedwetting, n(%)	Tests (χ^2)*	P-value
Social class				
Upper	120(35.1)	101(41.4)	2.451	0.294
Middle	69(20.2)	43(17.6)		
Lower	153(44.7)	100(41.0)		
Mother's Education				
Primary	36 (11.7)	31 (19.5)	23.888	<0.001
Secondary	217 (70.2)	75 (47.2)		
Tertiary	56 (18.1)	53 (33.3)		
Household size				
6	347 (100.0)	246 (98.8)	4.202	0.040
> 6	0 (0.0)	3 (1.2)		
Type of Apartment				
Single room	14 (4.0)	25 (10.0)	8.929	0.012
Room and parlor	155 (44.8)	111 (44.6)		
Flat/others	177 (51.2)	113 (45.4)		
Type of Family				
Monogamous	175 (50.4)	211 (84.7)	74.770	<0.001
Polygamous	172 (49.6)	38 (15.3)		
Parents bed-wetted				
Yes	221 (67.4)	23 (24.5)	55.160	<0.001
No	107 (32.6)	71 (75.5)		
Bedwetting peer				
Relative	146 (46.1)	33 (49.3)	6.953	0.031
Neighbour	165 (52.1)	29 (43.2)		
Others	6 (1.9)	5 (7.5)		

Table 4: Multivariate logistic regression analysis for enuresis by selected demographic features

Demographic features	Frequency (%)	OR	95% C.I.	P-value
Peer bed-wet				
Relative	146 (46.1)	0.62	0.12	3.28 0.57
Neighbours	165 (52.1)	0.63	0.12	3.40 0.59
Others	6 (1.9)	1.00		
Parents bed-wetted				
Yes	221 (67.4)	3.26	1.65	6.45 <0.001
No	107 (32.6)	1.00		
Mother's Education				
Primary	36 (11.7)	0.91	0.50	1.67 0.76
Secondary	217 (70.2)	0.37	0.23	0.58 <0.001
Tertiary	56 (18.1)	1.0		
Type of Family				
Monogamous	175 (50.4)	2.92	1.38	6.18 0.01
Polygamous	172 (49.6)	1.00		
Type of apartment				
Single Room	14 (4.0)	0.69	0.12	3.78 0.67
Room and parlor	155 (44.8)	2.19	1.07	4.50 0.03
Flat/Others	177 (51.2)	1.00		

DISCUSSION

This study found a high burden of enuresis in the setting with over half of the participating households having bedwetting children, comparable to prior report of enuresis prevalence as 40.8% by Adekambi et al among primary school children in South-West Nigeria.⁹ Esezoboret al²³ in Lagos, Paulet al¹¹ in Port Harcourt and Iduoriyekemwen et al¹⁰ in Edo state reported 28.3%, 23.2% and 21.3% respectively. The lower prevalence of enuresis in the latter studies may be due to the higher mean ages of their participants reflecting the declining prevalence of enuresis with increasing age in childhood due to spontaneous resolution.¹ The mean household prevalence of 22.4% obtained in this survey is consistent with the prevalence of enuresis in the latter studies. Also, it is similar to the average prevalence in foreign studies.⁴⁻⁸ We found that in a majority of the affected children, bedwetting occurred at least thrice a week. In contrast, Mbibu et al¹² described most of the children in their series as mild-moderate enuretics who wetted bed less than 10 times per month. About one-third of enuretics in our study had never

been dry unlike the report by Mbibu et al¹² that three-quarters of their enuretics had no describable dry periods. Nonetheless, parental interview may not be the best instrument to detect daily voiding symptoms in children.²⁴

Common genitourinary (GUS) complaints among the bedwetting children were frequency, urgency and cloudy urine which might suggest urinary tract infection (UTI).²⁵ However, this does not necessarily imply a higher incidence of UTI among enuretics than their non-enuretic peers. It can be due to over-reporting of urinary symptoms by the bed-wetting children. Kwaket al²⁶ reported significant discrepancies in lower urinary tract symptoms between their questionnaire and keeping a bladder diary in children with nocturnal enuresis. Iduoriyekemwen et al¹⁰ reported that 26.6% of enuretic children compared to 17.9% of non-enuretics had bacteriuria in their series, but the difference was not statistically significant. Also, Cayanet al²⁷ studied 106 children with mono symptomatic primary nocturnal enuresis and controls; they found that the incidence of urinary

infection was similar in children with and without nocturnal enuresis. Nonetheless, urinalysis and urine culture are important screening tests in childhood enuresis.¹Hence, our participants were counseled on the need for urinary testing in the symptomatic children.

The most prevalent non-GUS symptoms among the bedwetting children specified by our participants include excessive thirst and snoring, perhaps due to underlying metabolic disorder and adenoidal hypertrophy respectively.^{28,29} Also, the peri-anal itching among the enuretics may be due to ammoniacal dermatitis or pin-worm infestation.³⁰ The negative impact of enuresis on child's academic and family life was widely acknowledged by our participants consistent with a prior study that reported a higher prevalence of mild reading difficulty among children with primary nocturnal enuresis than controls.³¹ Also, the adverse effect of enuresis on schooling may be partly due to other possible comorbidities like snoring present in the children. In a meta-analysis, Galland et al³² found a clear link between sleep-disordered breathing and poor academic performance in school-age children, especially in language, math and science. Also, peer stigmatization may adversely affect bedwetting children.³³ Further studies involving the evaluation of cognition and academic performance of bedwetting children are needed to clarify the possible relationship among these variables in the study setting.

The overall awareness of possible therapies of enuresis was high (81.7%) among our participants, similar to an earlier report by Etukset al³⁴ that 80.2% of bedwetting children received some forms of treatment. About four-fifths of our participants were aware that urination before going to bed was a beneficial intervention in enuresis and over two-thirds considered beating of bedwetting children as inappropriate. Likewise, Adekanbiet al³⁵ in Sagamu, south-west Nigeria reported that about two-thirds of caregivers applied some forms of home remedy to their enuretic wards, 27.7% restricted water intake at night, while only 8.7% of them beat children for bedwetting. Nearly, two-thirds of our participants considered herbal therapies as effective in enuresis, unlike the 8%

reported by Etukset al³⁴ in Calabar; this may be partly due to cultural differences. Our participants were unsure of the effectiveness of urine alarm in the treatment of enuresis, similar to earlier reports of low uptake of this therapy.^{7,34} This possibly reflects on-availability of the device and poor health-seeking behaviour in the communities.¹² Nonetheless, there is a need for further enlightenment of the community on enuresis management.

Enuresis is sometimes associated with a recent strenuous event especially in a previously dry child.¹Stressful events identified among enuretics in this study include major illnesses, relocation and bereavement. Parental bedwetting history was associated with more than a three-fold increase in the likelihood of enuresis in the offspring, consistent with a previous report by Esezoboret al²³ in Lagos that predictors of enuresis include having a sibling (OR 2.20 (1.58-3.06)) or parent (OR 3.14 (2.13-4.63)) with enuresis. The high concordance rate among monozygotic twins and trans-generational enuresis in Danish families support the genetic basis for enuresis.¹⁴ Moreover, some potentially modifiable factors were associated with enuresis in this study. Living arrangements of the participants influenced the occurrence of enuresis in the households, perhaps related to poor lighting or uneasiness of access to the convenience at night. Single rooms may be protective encouraging waking up of children to urinate but unhealthy due to crowding.

Although this is a hospital-based study relying on memory recall of the respondents, its strength includes its multisite nature. A follow-up study of possible underlying systemic disorders among enuretics in the setting is desirable.

CONCLUSION

There is a high burden of enuresis with its negative impact in the study setting, associated with possible genetic and some modifiable environmental risk factors. There is need to increase the level of awareness on effective enuresis therapies in the communities.

REFERENCES

1. Robson WLM (2016). Enuresis. Medscape. Available : <http://emedicine.medscape.com/article/1014762-overview#a2>. Accessed November 7, 2016
2. Nevéus T, von Gontard A, Hoebeke P, Hjälmås K, Bauer S, Bower W, et al. The standardization of terminology of lower urinary tract function in children and adolescents: report from the Standardisation Committee of the International Children's Continence Society. *J Urol* 2006; 176(1):314-24.
3. Robson WL. Clinical practice. Evaluation and management of enuresis. *N Engl J Med* 2009; 360(14):1429-36.
4. Byrd RS, Weitzman M, Lanphear NE, Auinger P. Bed-wetting in US children: epidemiology and related behavior problems. *Pediatrics* 1996; 98(3 Pt 1):414-9.
5. Butler RJ, Heron J. The prevalence of infrequent bedwetting and nocturnal enuresis in childhood. A large British cohort. *Scand J UrolNephrol* 2008; 42(3):257-64
6. Srivastava S, Srivastava KL, Shingla S. Prevalence of monosymptomatic nocturnal enuresis and its correlates in school going children of Lucknow. *Indian J Pediatr* 2013; 80(6):488-91
7. Fockema MW, Candy GP, Kruger D, Haffejee M. Enuresis in South African children: prevalence, associated factors and parental perception of treatment. *BJU Int* 2012; 110(11 Pt C):E1114-20
8. Aloni MN, Ekila MB, Ekulu PM, Aloni ML, Magoga K. Nocturnal enuresis in children in Kinshasa, Democratic Republic of Congo. *Acta Paediatr* 2012; 101(10):e475-8
9. Adekanmbi AF, Ogunlesi TA, Fetuga MB, Oluwole FA, Alabi AD, Kehinde OA. Prevalence and Risk Factors for Enuresis in Children. *Nigerian Hospital Practice* 2011; 7: 3-4
10. Iduoriyekemwen NJ, Ibadin MO, Abiodun PO. Survey of childhood enuresis in the Ehor community, the Edo State, Nigeria. *Saudi J Kidney Dis Transpl* 2006; 17(2):177-82.
11. Paul NI, Alikor EAD, Anochie IC. Prevalence of enuresis among primary school children in Port Harcourt. *Nig J Paed* 2012; 39(1): 18-21.
12. Mbibu NH, Ameh EA, Shehu AU, Wammanda RD. The prevalence of enuresis among primary school children in Zaria, Nigeria. *Nig J Surg Res* 2005; 7 (1-2): 182-186.
13. Nørgaard JP, Djurhuus JC, Watanabe H, Stenberg A, Lettgen B. Experience and current status of research into the pathophysiology of nocturnal enuresis. *Br J Urol* 1997; 79(6):825-35.
14. Eiberg H, Berendt I, Mohr J. Assignment of dominant inherited nocturnal enuresis (ENUR1) to chromosome 13q. *Nat Genet* 1995; 10:354-356
15. Thiedke CC. Nocturnal enuresis. *Am Fam Physician* 2003; 67(7):1499-506.
16. Aneja S. Nocturnal enuresis. *Indian J Pediatr* 2002; 69(8):707-12.
17. Glazener CM, Evans JH. Simple behavioural and physical interventions for nocturnal enuresis in children. *Cochrane Database Syst Rev* 2004; CD003637.
18. Neveus T, Eggert P, Evans J, et al. Evaluation of and treatment for monosymptomatic enuresis: a standardization document from the International Children's Continence Society. *J Urol*. 2010; 183(2):441-7
19. Glazener CM, Evans JH, Peto RE. Tricyclic and related drugs for nocturnal enuresis in children. *Cochrane Database Syst Rev* 2003; CD002117.
20. Araoye MO (Ed). *Research Methodology with statistics for Health and Social Sciences*. Ilorin: Nathadex Publishers 2004; 118-22.
21. Drutz JE, Tu ND. Patient information: Bedwetting in children. UpToDate 21.2. Available : <http://www.uptodate.com/contents/Bedwetting-in-children-patient-information>. [Accessed January 14, 2015].
22. Olusanya O, Okpere E, Ezimokhai M: The importance of social class in voluntary fertility in developing countries. *West Afr J Med* 1985; 4(4):205-12.
23. Esezobor CI, Balogun MR, Ladapo TA. Prevalence and predictors of childhood enuresis in southwest Nigeria: Findings from a cross-sectional population study. *J Pediatr Urol* 2015; 11(6):338.e1-6.
24. de Jesus LE. Parental interview may not be the best instrument to detect daily voiding symptoms. *J Pediatr Urol* 2016; 12(3):187
25. *Urinary Tract Infection in Children: Diagnosis,*

- Treatment and Long-term Management. NICE Clinical Guidelines, No. 54. National Collaborating Centre for Women's and Children's Health (UK). London: RCOG Press; 2007. Available: <https://www.ncbi.nlm.nih.gov/books/NBK50609/>. [Accessed: December 9, 2016].
26. Kwak KW, Park KH. Clinical inconsistency of lower urinary tract symptoms between questionnaire and bladder diary in children with nocturnal enuresis. *J Urol*. 2008; 180(3):1085-9
 27. Cayan S, Doruk E, Bozlu M, Akbay E, Apaydin D, Ulusoy E, Canpolat B. Is routine urinary tract investigation necessary for children with monosymptomatic primary nocturnal enuresis? *Urology* 2001; 58(4): 598-602.
 28. Stipancic G, Sepec MP, Sabolic LL, Radica A, Skrabic V, Severinski S, Tiljak MK. Clinical characteristics at presentation of type 1 diabetes mellitus in children younger than 15 years in Croatia. *J Pediatr Endocrinol Metab* 2011; 24(9-10): 665-70
 29. Alexopoulos EI, Malakasioti G, Varlami V, Miligkos M, Gourgoulisanis K, Kaditis AG. Nocturnal enuresis is associated with moderate-to-severe obstructive sleep apnea in children with snoring. *Pediatr Res* 2014; 76(6): 555-9
 30. Gunawardena NK, Chandrasena TN, de Silva NR. Prevalence of enterobiasis among primary school children in Ragama, Sri Lanka. *Ceylon Med J* 2013; 58(3):106-10
 31. Esposito M, Carotenuto M, Roccella M. Primary nocturnal enuresis and learning disability. *Minerva Pediatr* 2011; 63(2):99-104.
 32. Galland B, Spruyt K, Dawes P, McDowall PS, Elder D, Schaughency E. Sleep Disordered Breathing and Academic Performance: A Meta-analysis. *Pediatrics* 2015; 136(4):e934-46
 33. Wolfe-Christensen C, Veenstra AL, Kovacevic L, Elder JS, Lakshmanan Y. Psychosocial difficulties in children referred to pediatric urology: a closer look. *Urology* 2012; 80(4):907-12
 34. Etuk IS, Ikpeme O, Essiet GA. Nocturnal Enuresis And Its Treatment Among Primary School Children In Calabar Nigeria. *Nig J Paed* 2011; 38(2):78-81.
 35. Adekanmbi AF, Oluwole FA, Ogunlesi TA, Alabi AD, Fetuga MB. Perception and Home Remedies for Nocturnal Enuresis. *Trop J Nephrol* 2011; 6(2): 115-119.