

Epidemiological Study of Enuresis in Children Aged 6-12 Years in Ismailia

M. Hassib El-Defrawi, S. A. Sobhy, A. El-Tony, A.K. Wilson and A. Atef

1004 children were randomly screened (aged 6-12 years) through a block design sampling procedures of Ismailia city districts. Families were interviewed at their residence and information about the sphincteric control status of their children (6-12 years) and related psychosocial and development factors were obtained. DSM-III-R criteria were used for diagnosis

124 children (12.3%) were found to suffer enuresis. Enuresis was a little bit higher in younger age group (14.6% in 6-8 year, than in older age group. (11.3% and 10.3% in age groups 8-10 and 10-12 years). There were no statistically significant differences between girls (13.1%) and boys (13.3%). In 73% of those enuretic children, there was no evidence of physical illness or abnormality. 53.2% of those children have secondary and 46.8% have primary enuresis. Over 60% of enuretic children have their enuresis problem before age 6 years, while 37% of parents of enuretic children reported that enuresis developed following exposure to a stressful life event. More than half of the families of enuretic children (52.8%) did not seek treatment for this condition, however, in those who sought treatment (57.2%), only 40% reported improvement with treatment received. In 29% of families of enuretic children there was a positive family history of enuresis. Enuresis was significantly associated with mother being a house wife ($P<0.01$), relationship with siblings being problematic ($P<0.05$), relationship with school teachers being problematic ($P<0.05$), and with the presence of economic problems in the family ($P<0.01$).

Our results suggest that enuresis is a common condition in our community and is probably determined by both biological and psychosocial factors particularly under unfavorable social and family circumstances.

(Egypt.J. Psychiat.,1994, 17:25-32).

Introduction

Enuresis is a common and extremely distressing chronic condition character-

ized by the involuntary passage of urine during sleep in children age four or older. According to ICD-10, enuresis would not ordinarily be diagnosed in a child under 5 years or with a mental age under 4 years. (WHO, 1992).

Epidemiological studies show that approximately 25% of children wet their beds once a week. (Shaffer, 1980). Of these, 20% will have become completely dry by their fourth birthday. However, of the children who are still wet at age four, only 6% will go on to

M. Hassib El-Defrawi, M.D. Assistant Professor, Department of Psychiatry,
S.A. Sobhy, M.D. Assistant Professor, Department of Community Medicine.

A.K. Wilson, M.D. Lecturer, Department of Psychiatry.

A. El-Tony, M.D. Assistant Professor, Department of Anesthesiology, and A. Atef, M.D. Lecturer, Department of Pediatrics, Suez Canal University.

become dry by their fifth birthday. The rate at which children spontaneously become dry will persist at this low level throughout childhood and adolescence (Shaffer, 1985).

Evidence from epidemiological studies convincingly document an association between enuresis and psychiatric disorders (Rutter et al., 1973, Essen and Peckham, 1976). The association does not vary greatly with age and is more marked in girls than boys. Unfortunately, there are no exact figures in the literature with regard to the percentage of enuretic children who are psychiatrically disturbed. Enuresis is probably determined by both biological and experiential factors acting separately or in conjunction including genetic, social, and learning factors is clearly genetically determined. 75% of all enuretics will have a first - degree relative who wet the bed after the age of five, and the concordance rate for enuresis is significantly higher in monozygous than in dizygous twins (Bakwin, 1961). Furthermore, enuresis occurs more often among children who are reared under unfavorable social and family circumstances.

On the other hand, Steinhausen and Göbel (1989) in a review of the clinical profile and the outcome of 386 enuretic children attending a child psychiatric clinic compared to 2404 other child psychiatric cases found no significant differences in a number of aspects including developmental, and family history, psychiatric diagnoses, specific delays in development at assessment and intelligence.

In Egypt, studies of enuresis in children have estimated the problem from as low as 0.7% of primary school - aged children (6-12 years) (El-Sherbini, et al, 1981), to 5-10% in hospitalized children (9-12 years) (Abdel Hamid, et al, 1984), and up to 36% of school - aged children

referred to a psychiatry clinic within the school health system (El-Defrawi and Mahfouz, 1992). However, most of these studies were based on clinical selected sample with small numbers. As part of interest of the Suez Canal Medical school in studying psychiatric and behavioral problems in children in Suez Canal area, the present study was launched to investigate the prevalence of enuresis in children, aged 6-12 years.

Subjects and Method

1004 children aged 6 to 12 years residing in Ismailia City with their families were screened for the sphincteric control status. Those children were sampled through a random block design procedure where the city was divided into three districts, streets and houses were randomly chosen where families in these houses were interviewed if they have children between the age of 6 and 12 years. Parents were interviewed after explaining the nature of the study and were asked (usually the mother) about the child, his/her sphincteric control and some psychosocial factors. Children were physically assessed and examined to exclude organic causes for enuresis, (if present). Diagnosis of enuresis was based DSM-III-R criteria (American Psychiatric Association, 1987).

Psychosocial factors included educational status, family size, birth order, maternal age at child birth, educational and occupational status of parents, family income, economic problem, the responsible parent for the child, sleeping arrangement, rearing style and method of punishment, presence of congenital or chronic physical disorder, toilet training history, relation of onset of enuresis to a stressful life event, previous medical consultation for enuresis or treatment, child's response, other family members with history of enuresis, school performance, how child spends his leisure

time, relationships of child with school-mates, teachers, and child's satisfaction about parental treatment.

Results

Table 1 shows the sample characteristics, including age, sex, educational status, family size, maternal work and education, social and financial problems, parental responsibility, sleeping arrange-

ment, father educational status, and recreational activities. Parents were divorced or separated in 3% of the sample, one of the parents was dead in 4.5% of the sample, and in more than 40% of the sample father was a university graduate.

Table 2 shows the characteristics and clinical features of enuretic children. 73% of enuretic children were physically free, 4.1% have had history of urinary tract infection, 2.5% have neurological problems, 1.6% have congenital anomalies of the urinary tract, 0.8% have motor handicap, and 18% have other physical complains

Table 1
Sample Characteristic (N= 1004)

	N	%
Age		
6-8 years	369	36.8%
8-10 years	372	37.0%
10-12 years	263	26.2%
Sex		
Boys	556	55.4%
Girls	448	44.6%
Educational Status		
Out of school	22	2.2%
In school	982	97.8%
Father Education		
Illiterate	69	6.9%
Received Education	955	93.1%
Family Size		
≤ 5	581	57.9%
> 5	423	42.1%
Working Mother		
Yes	349	34.8%
No	655	65.2%
Presence of Social Problems		
Yes	132	13.1%
No	872	86.9%
Maternal Education		
Illiterate	188	18.7%
Received Education	816	81.3%
Father Education		
Illiterate	69	6.9%
Received Education	955	93.1%
Presence of Financial Problems		
Yes	204	20.3%
No	800	79.7%
Parental Responsibility		
Mother and Father	499	49.7%
Mother Only	437	43.5%
Father Only	34	3.4%
Other Adults	34	3.4%
Sleeping Arrangement		
With Others	909	90.5%
Alone	95	9.5%
Recreational Activities		
Yes	778	77.5%
No	226	22.5%

Table 2
Characteristics and Clinical Features of Children
Having Enuresis (N= 124)

	No	%
Onset		
Primary	69	53.2%
Secondary	58	46.8%
Previous Toilet Training		
Yes	91	73.4%
No	33	26.6%
Family History of Enuresis		
Yes	36	29%
No	88	71%
Medical Consultation		
Yes	73	58.9%
No	51	41.1%
Treatment Received		
Yes	59	47.6%
No	65	62.4%
Response to Treatment		
Yes	24	40.7%
No	35	59.3%
Enuresis in Family Member		
Yes	36	29%
No	88	71%

Table 3
Comparison of the Enuretic Children (U= 124)
with Non Enuretic (N= 880)

	Enuretic Children Children (N= 124)		Non Enuretic Children Children (N= 880)		χ^2	P value
	N	%	N	%		
Age						
6-8 years	54	43.5%	315	35.8%	4.49	0.106
8-10 years	42	33.9%	330	37.5%		
10-12 years	24	2.6%	236	26.7%		
Sex						
Boys	74	59.7%	482	59.8%	0.87	0.35
Girls	50	40.3%	398	45.2%		
* Working Mother						
Yes	30	24.2%	319	36.3%	6.45	0.01
No	94	75.8%	561	63.7%		
* Relationship with Siblings						
Accepted	87	70.2%	692	78.6%	4.01	0.05
Problematic	37	29.8%	188	21.4%		
Relationship with Schoolmates						
Accepted	98	79%	793	90.1%	12.27	4.59
Problematic	26	21%	87	9.9%		
* Relationship with School Teachers						
Accepted	114	76.7%	847	96.3%	3.93	0.05
Problematic	10	23.3%	33	3.7%		
Relationship with Responsible Parent						
Mother & Father	52	41%	444	50.5%	4.84	0.18
Father	3	2.4%	31	3.5%		
Mother	65	52.4%	370	42.0%		
Others	4	3.2%	35	4.0%		
Sleeping Arrangement						
Sleeps alone	9	7.3%	86	9.8%	0.54	0.46
Sleeps with others	115	92.7%	794	90.2%		
Use of Leisure time						
Recreation	91	73.4%	688	76.2%	1.2	0.28
No	33	26.6%	192	21.8%		
* Economic Problems						
Yes	36	29%	168	19.1%	6.03	0.01
No	88	71%	712	80.9%		
Social Problem						
Yes	17	13.7%	115	13.1%	0.01	0.96
No	107	86.3%	765	86.9%		
Family Incom/person						
< 60 I.P.	76	61.3%	475	54.0%	2.06	0.15
> 60 I.P.	48	38.7%	405	46.0%		

* Statistically Significant.

and problems. In 60% of the sample, onset of enuresis was before age 6 years, in 37% onset between 6-10 years, and in 3% onset after 10 years of age. 14.5% of enuretic children were punished for bed wetting.

Table 3 shows comparison of enuretic and nonenuretic children on some psychosocial factors. There were no statistically significant relationship between enuresis and many of the studied psychosocial factors. Only factors related to mother being a housewife problematic relationship with siblings and teacher and presence of economic problems were statistically significant.

Discussion

To our knowledge, our study is the first epidemiological study carried out in the Suez Canal Area, and perhaps in Egypt. Our sample was randomly drawn from the population of children aged 6-12 years in Ismailia, therefore, the findings could be generalizable to enuretic children in the general population.

We have found that enuresis is widely spread in children under the age of 12 years and reaches over 10% of this population.

This higher rate could be explained by the fact that in developing countries developmental disorders are widely spread and enuresis being largely a developmental disorder occurs at a common rate. It occurs equally in both sexes, not in agreement with Rutter et al (1973) who reported that enuresis is more common in boys than girls after age 7 (Oppel et al, 1968). Enuresis is probably determined by both biological and experiential factors acting separately or in conjunction. Many theories have been put forward to explain the condition. Our findings that the genetic component represents only 29% in the form of family history of enuresis in siblings or rela-

tives is supported by Shaffer (1985) and Steinhausen and Göbel (1989). However, our sample was a randomly selected one rather than clinical samples which might be loaded with hereditary and developmental factors.

Our findings suggest that enuresis could occur commonly ($P < 0.01$) in children who have their mothers not working (e.g. housewives). This finding is of some interest, because it is possible that working mothers encourages early toilet training or seek treatment for such condition early because they enhance independence in their children at an earlier age. On the other hand, mothers staying at home might be implicitly enhancing or allowing dependency and regression and are late in toilet training their children. It could be also an expression of the socioeconomic and educational status of the mother.

The present study revealed that enuretic children are at greater risk for having problems within the family, with siblings ($P < 0.05$) and at school with school teachers ($P < 0.01$) than noneuretic children. This could be explained by the fact that enuresis being a developmental disorder might be associated with high risk of having other developmental, behavioral and psychiatric disorders. This finding, however, is of some interest because a large number of enuretic children are seen in child psychiatry clinics in public and private practices outside and within the school health systems (Shaffer, 1985; Shaffer et al, 1983, 1984). However, despite the significant increase in the rate of psychiatric disorders among enuretic children, the mechanism involved in this association remains obscure.

There were no statistically significant differences as regard primary vs. secondary enuresis. This in contrast to the selected samples in Abou Zekry and

T. Farid (1990) where 85% have primary and 15% were secondary enuresis.

In our study, about 60% of parents consulted a medical authority for the wetting problem, 47% have received treatment and only 40.6% have responded to treatment. It is possible that only those enuretic children with significant behavioral problems were those who have been consulting pediatricians. On the other hand about 40% of parents did not find the condition needs consultation and this could be due to the lack of health orientation or ignorance about the normal developmental milestones or just simple denial and neglect. In support of the last assumption is that only half of those who sought medical advice (47.6%) continued to a treatment phase, this could be due to the factor that in lower socioeconomic status in developing countries there are more serious health problems than enuresis and possibly due to the common folklore believes that the cause for bed wetting is associated with either exposure to cold or excessive drinking.

Our last finding is that enuresis was significantly associated with economic problem in the family. This finding may contribute to the biopsychosocial etiology of enuresis, where economic familial problems might be reflected as a low socioeconomic status and may unfavorably interact with other developmental factors or biological vulnerabilities in these children. This could be because parents themselves are not available for toilet training, or children are distressed by family economic problems or because of the lack of social learning factors under such unfavorable economic circumstances.

In conclusion, the present study indicates that enuresis occurs in high rates in children 6-12 years of age and is associated with some risky etiological factors. Child health programs directed at this

vulnerable school - aged children should put into consideration educating parents about early detection and proper training and treatment, furthermore, enuretic children should be assessed for other possible psychiatric problems and delays. Liaison child psychiatry clinics should collaborate with pediatricians to establish enuresis clinics where enuretic children will receive a comprehensive treatment.

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Étude Épidémiologique de L'énurèse Nocturne Chez les Enfants de 6 à 12 ans

Cette étude comprend 1004 enfants de 6 à 12 ans de ville d'Ismailia. Les enfants sont passés au crible et évalués concernant la présence d'une relation entre l'énurèse nocturne et les problèmes développementaux et psychosociaux.

Les résultats ont démontré que 124 enfants (12.3%) souffrent de l'énurèse nocturne, 46.5% d'eux avec une énurèse primaire, et 53.2% secondaire. Plus de 60% ont leur énurèse avant l'âge de 6 ans et 37% ont eu la maladie après être exposés aux événements difficiles, tandis que 29% ont l'énurèse familiale. L'énurèse n'a pas été liée à aucun des facteurs développementaux ou psychosociaux. Nos résultats suggèrent que l'énurèse est un trouble commun probablement déterminé par des facteurs biologiques et psychosociaux.

دراسة وبائية لبوال الفراش (التبول اللاإرادي) في أطفال من

سنة في مدينة الاسماعيلية ١٢ - ٦ سن

قام الباحثون بدراسة وبائية لتقضى معدل انتشار اضطراب بوال الفراش (التبول سنة في ١٢ - ٦ اللاإرادي) من خلال مسح عينة عشوائية عددها (١٠٠٤) لأطفال من سن مدينة الاسماعيلية بالإضافة إلى دراسة العوامل النفسية الاجتماعية والنمائية والسلوكية المرتبطة باضطراب البوال في الأطفال

٪ من ٢, ٥٣٪ يعانون من بلل الفراش، وأن ١٢, ٣ طفلاً (١٢٤) وقد أظهرت النتائج أن ٪ من هؤلاء ٢٩٪ لديهم بوالاً ثانوياً، واتضح أن ٤٦, ٨ هؤلاء الأطفال لديهم بوالاً أولياً و الأطفال البوالين لديهم تاريخاً أسرياً لحالات تعاني من بلل الفراش في الاخوة والأقارب، ٪ من الأطفال البوالين قد تعرضوا لأحداث حياة ضاغطة قبل ظهور بوال ٣٧٪ وظهر أن ٪ على أي علاج لهذه الحالة، أما ٥٢, ٨ الفراش، ولم يحصل أكثر من نصف هؤلاء الأطفال (٪ فقط، وقد ظهر وجود ارتباطاً دالاً احصائياً بين ٤٠ هؤلاء الذين عولجوا فقد تحسن منهم وجود بوال الفراش وبين كون الأم لا تعمل (ربة منزل) ووجود مشاكل سلوكية مع الاخوة في المنزل ومع المدرسين في المدرسة والمعاناة من المشاكل الاقتصادية في الأسرة وتشير نتائج الدراسة أن ظاهرة اضطراب بلل الفراش موجوده بنسبة كبيرة من الأطفال في مجتمع مدينة الاسماعيلية وتستحق مزيد من الاهتمام والدراسة