Prevalence of Bedwetting for Children in Mosul City

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Abstract

The mental and behavioral disorders, just as the other types of illnesses, creats significant economic difficulties for children, patients and their families. The main objective of this study was to determine the prevalence of bedwetting in Mosul city and some risk factors related to it. To achieve the above mentioned aim, a cross -sectional study design was adopted, some primary schools were chosen as a study setting. The questionnaire forms were sent to the selected families. Out of 600 questionnaires, (596) were received (99.3%). More than one tenth (13.8 %) of pupils aged 6-8 years were bedwetters, while boys were more affected than girls. The present study revealed that bedwetting is significantly influenced by multiple factors including gender, child's age group, family size, birth order, education of parents, socioeconomic status of the family and diseases of father; as stressful life events, in addition to sleep pattern and family history of having the same condition. Whereas mothers disease is poorly associated with the occurrence of bedwetting.

The present study shows that more than one tenth of the children suffered from bedwetting, which appeared in male children, small children, large family sizes, birth order, poor education of father and mother, and family history of holding the same condition.

Keyword: Nocturnal Enuresis, Bedwetting in children.

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Introduction

Enuresis is the loss of bladder control that leads to the release of urine. Nocturnal enuresis, also called bedwetting, happens during the night while the child is sleeping. Most of the time, the child has no control over this elimination, nor is he or she aware that it is happening. [1] Clinical bedwetting is a repeated voiding of urine into a child's clothes or bed; the voiding may be involuntary or intentional. The behavior of bedwetting must occur twice weekly for a period of at least 3 months or must cause distress or impairment in functioning to meet the diagnostic criteria for the diagnosis to be made. Also, the child must exhibit a developmental or chronological age of at least 5 years. Bedwetting is diagnosed only if the behavior is not due to a medical condition[2]. Although experts disagree as to the cause of bedwetting, medical theories, behavioral theories, and psychological theories are proposed. These theories range from genetic factors to biological factors, from premature toilet training to immature bladder, from sleep disorder to behavior problems, and from hormonal factors to stress factors. [1] The prevalence of bedwetting decreases with increasing age. Thus 82% of 2-year- old children, 49% of 3-year-old children, 26% of 4-year-old children, and 7% of 5-year-old children are reportedly enuretic on a regular

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basis. [3] Traditional treatment of bedwetting includes medication and behavioral therapy. There is not a best treatment per se for bedwetting. Treatment should be designed around the needs of the child and the resources of the family[1]. Drug therapy remains, by far, the most "prescribed" therapy for bedwetter. Child who wets the bed needs to develop a better response to a full bladder, and an enuresis alarm or nasal antidiuretic drug can be an effective way. Combination therapy was often more effective than single treatment. This problem can be stressful for the parents and other family members. Feelings of the parents may range from worry to frustration, sadness to anger, and even tiredness. [4] An important first step is to reassure the child that enuresis is usually temporary and very common. This will help minimize the emotional problems for understand that while wetting usually resolves in time. [5] There are several behavioral therapies used to eliminate nocturnal enuresis, many of which incorporate classical and/or operant conditioning, and positive and/or negative reinforcement. [1,6] Motivational therapy involves reassuring the parents who must remove the guilt associated with bedwetting and providing emotional support to the child.[7]

Objectives of the study

The objectives of this study are:

1. To determine the prevalence of bedwetting in children aged 6, 7 and 8 years.
2. To determine the possible risk factors for the development of bedwetting among study population.
3. To determine gender-and age-specific effects on the prevalence among study sample.

Method

In order to achieve the objectives of this study, the investigators used a questionnaire form depending on the diagnostic criteria from DSM-IV- TR, 2000 scale published by American Psychiatric Association, [8] which was checked by psychiatrists then sent to the families by primary schools about bedwetting.

First part information is related to socio-demographic data of the samples. Other information was related to some risk factors like sleep type and family history of the same condition, while third part contained the scale published by American Psychiatric Association. [8] Selection of the pupils and their families was performed using random sampling technique. The schools were chosen by multistage cluster sampling design to represent the different geographical zones of Mosul city, left and right bank of the river Tigris. From each school, pupils aged six to eight years were randomly selected. Out of (600) questionnaire forms sent to the selected families, (596) were received back (the response rate was 99.3%). Data collection was conducted during a four-month period (1st of November 2006- 28th of February 2007). Examining the distribution of variables was done using descriptive statistics. Age group, gender, education level of mothers and fathers, diseases of fathers and mothers, socioeconomic strata, sleep type and family history of the same condition were the risk factors studied. The data were examined by Chi-square. The P value of >0.05 was considered significant and reflected the difference or statistical association between the affected and unaffected child by that type of abnormal behavior. [9]

Results

Table (1) portrays the demographic characteristics of the study population (children), gender distribution depicts that for each (202) male, there are (100) female (M:F ratio 2.02:1). Regarding age, almost (49.8.1) were children 6years of age and (25.7.1) were among the age of 7 years, and (24.5.1) were 8 year of age.

Table (1): Socio-demographic characteristic of children.

	Child Sample	***No.***	***%***
Gender	*Male*	*399*	*66.9*
	Female	*197*	*33.1*
Age	*6 years*	*297*	*49.8*
	7 years	*153*	*25.7*
	8 years	*146*	*24.5*

Out of 596 pupils aged six to eight years, 13.8% were bedwetters. These results showed that bedwetting is consistently more frequent among boys than among girls (7% and 6.7%, respectively). The effect of the square of the gender value is significant (X^2= 10.627, p< 0.001) (Table 2).

Table (3) portrays the bedwetting prevalence according to age. It shows decline in prevalence rate with increasing age (4.4% at six years, 475% at seven years and 4.4% at eight years)with significant differences (X^2 = 7.961, p < 0.019).

Table (4) revealed the prevalence of bedwetting according to some risk factors. Family size and birth order factors depict that children who lived in large families had more liability to develop bedwetting, as highly significant differences (P<0.001) were found between the prevalence of bedwetting in pupils due to these risk factors (X^2= 7.961 & X^2= 24.712, respectively).The same table points to the significant relationship between bedwetting and mother's and father's education (X^2=14.702 and X^2=23.609, respectively). In relation to socioeconomic status, the same table shows that about two third of the survey sample had low socioeconomic level, the lowest prevalence of bedwetting was among children of families with high socioeconomic status. Same table reveals a significant association with deep sleep at P< 0.000, X^2= 49.061. Finally, the table indicates that the majority of bedwetters had a family history of bedwetting with a significant value at P< 0.000, X^2=30.779.

Table (2): Prevalence of bedwetting according to gender.

Bedwetting	***Gender***				***Total***		***X^2***	***P- Value***
Phenomena	***Male***		***Female***					
	No	***%***	***No***	***%***	***No.***	***%***	*10.627*	*0.001*
Bedwetters	*42*	*7*	*40*	*6.7*	*82*	*13.8*		
Non-bedwetters	*357*	*59.9*	*157*	*26.3*	*514*	*86.2*		
Total	*399*	*66.9*	*197*	*33.1*	*596*	*100*		

Table (3): Prevalence of bedwetting according to age.

Age	***Bedwetters***		***Non - bedwetters***		***Total***		***X^2***	***P-value***
	No.	***%***	***No.***	***%***	***No.***	***%***		
6 years	*29*	*4.9*	*268*	*45.0*	*297*	*49.8*	*7.961*	*0.019*
7 years	*27*	*4.5*	*126*	*21.1*	*153*	*25.8*		
8 years	*26*	*4.4*	*120*	*20.1*	*146*	*24.5*		
Total	*82*	*13.8*	*514*	*86.2*	*596*	*100.0*		

Table (4): Prevalence of bedwetting according to risk factors taken into account in the population sample.

Family size	***Bedwetters***		***Non - bedwetters***		***Total***		***X^2***	***P-value***
	No.	***%***	***No.***	***%***	***No.***	***%***		
3	*3*	*0.5*	*23*	*3.9*	*26*	*4.4*	*7.961*	*0.019*
4	*25*	*4.2*	*60*	*10.1*	*85*	*14.3*		
5+	*54*	*9.1*	*431*	*72.3*	*485*	*81.4*		
Total	*82*	*13.8*	*514*	*86.3*	*596*	*100*		
				Birth Order				
1	*1*	*0.2*	*65*	*10.9*	*66*	*11.1*	24.712	0.000
2	*18*	*3.0*	*68*	*11.4*	*86*	*14.4*		
3	*29*	*4.4*	*218*	*36.6*	*247*	*41.4*		
4	*11*	*1.8*	*84*	*14.1*	*95*	*15.9*		
5	*1*	*0.2*	*16*	*2.7*	*17*	*2.9*		
6+	*22*	*3.7*	*63*	*10.6*	*85*	*14.3*		

Total	*82*	*13.8*	*514*	*86.2*	*596*	*100.0*		
				Mother's education				
Illiterate or no formal education	*15*	*2.5*	*65*	*10.9*	*80*	*13.4*	*14.702*	*0.002*
Primary and intermediate	*46*	*7.7*	*370*	*62.1*	*416*	*69.8*		
Secondary	*8*	*1.3*	*50*	*8.4*	*58*	*9.7*		
University	*13*	*2.2*	*29*	*2.9*	*42*	*7.0*		
Total	*82*	*13.8*	*514*	*86.2*	*596*	*100.0*		
				Father's education				
Illiterate or no formal education	1	0.2	34	5.7	35	5.9	23.609	0.000
Primary and intermediate	44	8.2	393	65.9	442	74.2		
Secondary	19	3.2	49	8.2	68	11.4		
University	13	2.2	38	6.4	51	8.6		
Total	82	13.8	514	86.2	596	100.0		
				Social-economic status				
Low	*32*	*5.4*	*333*	*55.9*	*365*	*61.2*	*24.166*	*0.000*
Intermediate	*27*	*4.5*	*122*	*20.5*	*144*	*25.0*		
High	*23*	*3.4*	*59*	*9.9*	*82*	*13.8*		
Total	*82*	*13.8*	*514*	*86.2*	*596*			
				Mother's disease				
Organic	*13*	*2.2*	*68*	*11.4*	*81*	*13.6*	*6.034*	*0.110*
Psychological	*27*	*4.5*	*124*	*20.8*	*151*	*25.3*		
Organic psychological	*0.0*	*0.0*	*17*	*2.9*	*17*	*2.9*		
No disease	*42*	*7.0*	*305*	*51.2*	*347*	*58.2*		
Total	*82*	*13.8*	*514*	*86.2*	*596*	*100.0*		
				Father's disease				
Organic	*8*	*1.3*	*61*	*10.2*	*69*	*11.6*	*47.202*	*0.000*
Psychological	*29*	*4.9*	*188*	*31.5*	*217*	*36.4*		
Organic psychological	*20*	*3.4*	*21*	*3.5*	*41*	*6.9*		
No disease	*25*	*4.2*	*244*	*40.9*	*269*	*45.1*		
Total	*82*	*13.8*	*514*	*86.2*	*596*	*100.0*		
				Type of sleep				
Deep	*63*	*10.6*	*184*	*30.4*	*247*	*41.4*	*49.061*	*0.000*
Shallow	*19*	*3.2*	*330*	*55.4*	*349*	*58.6*		
Total	*82*	*13.8*	*514*	*86.3*	*596*	*100.0*		
				Family history of Enuresis				
Present	*71*	*11.9*	*278*	*46.6*	*349*	*58.6*	*30.779*	*0.000*
Not present	*11*	*1.8*	*236*	*39.6*	*247*	*41.4*		
Total	*82*	*13.8*	*514*	*86.2*	*596*	*100.0*		

Discussion

The importance of bedwetting as a public health problem had been emphasized by Sanborn[2] who decided that the motivation for treatment of a child with bedwetting problem is the presence of externalizing effect (causing discomfort to others) or internalizing effect (causing discomfort within the child). Health plans have not covered mental and behavioral disorders as much as other illnesses, creating significant economic difficulties for patients and their families, hence increasing suffering countries and the difficulties grow.[10] In the present study, bedwetting was found in 13.8% of children. This figure is lower than that found by other studies carried out in the developed countries [5,11,12] by Louthrenno et al.; Michael & Jacobson; and Thiedke, who reported that 15-20% of children still wet the bed while sleeping at 5 years of age, and approximately 5-10% still wet the bed while sleeping at 10 years of age. This difference may be due to the fact that mothers denied the presence of the problem of bedwetting with their children because they believe that this will stigmatize him/her, especially mothers with a limited level of education. Regarding gender distribution in bedwetting, the present study revealed that the male-female ratio was 1.5: 1. This ratio was also noted by Louthrenoo et al. [11] in Chiang Mai. The present study recorded that bedwetting was a commonly recorded event among children of six years of age and it decreased as the age increases. This high prevalence of bedwetting was also reported in other countries like UK and USA. At five years of age, 15-25 % of children wet the bed, with each year of maturity the fraction of bed wetter declines by 15%. Hence, 8% of 12-year- old boys and 4% of 12-year-old girls are enuretic, and only 1-3% of adolescents are still wetting their beds. [12]

The usual impression that bedwetting is more common among children of large families is confirmed in the present study as 22 out of 82 bedwetters were later- born children. However, this is significantly associated with bedwetting.

The birth of younger siblings may be regarded a factor causing bedwetting among the older siblings. This may be due to reversion to infantile habits as a result of unhappiness or feeling of the insecurity in addition to jealousy, domestic friction and excessive strictness, this played a strong stress factor on these children. Generally speaking it is well -established that literacy is a major important factor for health, it enables parents to understand their children problems and the way to solve such problems. That is why current efforts focus on increasing the number of those attending and completing secondary school education which affects their child mental health in an indirect way in his/her later life. [13] Although Sanborn[1] did not study whether there was any significant relation between bedwetting and the level of parents' education. This study revealed that the level of education of parents plays a significant role in the child's bedwetting. The illiterate parents and those with primary, intermediate level of education may punish their children, which may aggravate the problem. There is a wide agreement on the importance of the low socioeconomic level of the family as a stress factors causing bedwetting in the present study.

This result is supported by a study done in USA by BUPA Health team. [4] This study also deals with parental diseases as a stress factors affecting bedwetting, which found that father's diseases are significantly associated with this problem, that is; excessive punishment of the children with bedwetting leads to lately achieving bladder control. An interesting point has been reported by Thiedke[12] that when both parents were enuretic, their offspring had a 77% risk, declined to 43% when one parent was enuretic, and to 15% when neither parents were enuretic. Other investigators found a positive relation between family history and bedwetting as it plays a role in 65-85% of children with bedwetting. They recorded that if the father was enuretic, the relative risk for the development of bedwetting among his offspring was 7.1; and if the mother was enuretic, the relative risk was 5.2.[3]

The present study also recorded that deep sleep was highly significant to bedwetting. At the same time, other studies carried out in USA attributed bedwetting to deep sleep of the children. [3]

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مدى انتشار التبول الليلي للأطفال في مدينة الموصل

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الملخص:

للاضطرابات النفسية والسلوكية الأهمية نفسها التي تحظى بها الأمراض الأخرى من حيث تأثيرها الكبير في الاقتصاد المتعلق بالأطفال، والوالدين وعائلاتهم. الأهداف الرئيسة من الدراسة هي تحديد مدى انتشار التبول الليلي لدى الأطفال في مدينة الموصل وبعض عوامل الخطورة. ولتحقيق هذه الأهداف، تم أخذ مقطع عرضي لبعض المدارس الابتدائية كي تكون موقعاً لإجراء البحث. واستخدمت استمارة استبيانية وأرسلت إلى العائلات المشمولة بالدراسة. وقد تم استرجاع 596 استمارة من أصل 600؛ أي ما نسبته (99.3%).

وأثبتت الدراسة أن أكثر من عشر العدد(13.8%) من تلاميذ المدارس، الذين تتراوح أعمارهم بين 6–8 سنوات كانوا يعانون التبول الليلي، وكان الذكور أكثر معاناة من الإناث. كما أشارت الدراسة إلى أن مجموعة من العوامل، مثل: جنس المولود الذكر، والأعمار الصغيرة، وحجم العائلة الكبير، وتسلسل الطفل في العائلة، وثقافة الوالدين، والمستوى المعاشي، ومرض الأب كضغوط نفسية في العائلة، ونمط النوم، ووجود المرض في العائلة، كانت ذات تأثير معنوي في التبول الليلي. وأشارت الدراسة أيضاً إلى أن مرض الأم كان له علاقة قليلة ليس له دالة معنوية مع حدوث هذه الحالة.

الكلمات الدالة: التبول الليلي عند الأطفال، الموصل.