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## A Survey for Nocturnal Enuresis in Thai Students and Their Families

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**Abstract :** This survey of nocturnal enuresis in Thai students was performed in five elementary schools in Bangkok, comprising 1,804 students and their 1,356 siblings aged 6 to 12 years old, to evaluate the prevalence rate and other associated factors of enuresis in Thai students and their families. Among these 3,160 children, there were 9.34% of male enuretics and 7.78% of female enuretics who were wet at least twice weekly.

**เรื่องย่อ :** การสำรวจปัญหาปัสสาวะรดที่นอนในนักเรียนไทยและครอบครัว  
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การสำรวจปัญหาปัสสาวะรดที่นอนของนักเรียนไทยในโรงเรียนชั้นประถม 5 โรงเรียนในกรุงเทพมหานคร ประกอบด้วยเด็กนักเรียน 1,804 คน และพี่น้อง 1,356 คน ที่มีอายุ 6-12 ปี เพื่อประเมินปรากฏการณ์และหาปัจจัยร่วมที่สำคัญอื่นๆ เกี่ยวกับอาการปัสสาวะรดที่นอนในเด็กนักเรียนไทยและครอบครัว ในเด็กทั้งหมด 3,160 คน พบว่ามีปัสสาวะรดที่นอนอย่างน้อย 2 คืนต่อสัปดาห์ คิดเป็น 9.34% ในเด็กชาย และ 7.78% ในเด็กหญิง

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## INTRODUCTION

"Enuresis", the term itself is derived from the Greek "enourein" and denotes only the voiding of urine, over the years the term has acquired both a pathological and a nocturnal connotation.

Functional enuresis is defined by DSM-IV as "repeated voiding of urine during the day or at night into bed or clothes at least twice per week for at least 3 months or must cause clinically significant distress or impairment in school, academic or other important areas of functioning." The child must also have reached an age at which discontinence could definitely be expected. DSM-IV utilizes a chronological age of 5 as a cutoff or a mental age of 5 for those children with delayed development. Wetting must not be the result of the direct physiological effect, of substance or a general medical condition.

There are three subtypes of enuresis : nocturnal (nighttime wetting), diurnal (daytime wetting) and mixed (day and night wetting). Primary enuresis is that the child has not been continent for more than one year. Secondary enuresis ; the child has been continent for more than one year. Almost all of enuretic children have nocturnal enuresis which is usually defined as repeated involuntary passage of urine during sleep in the absence of any identified physical abnormality in children aged over 5 years.

The prevalence of enuresis decreases with age. From other studies, 82 percent of 2 years old, 49 percent of 3 years old, 26 percent of 4 years old and 7-10 percent of 5 years old have been reported to be enuretic on a regular basis. However, the prevalence rate varies, depending on the population studied, severity of the disorder and tolerance of the symptoms in various cultures and socioeconomic group.<sup>1</sup> For example, in the Isle of Wight Study was found that 15.2% of boys were wet less than once a week, while only 6-7% wet at least once a week. The corresponding figures for girls were 12.2 and 3.2%. By age 14 only 1.9% of boys were wet less than once a week, and 1.1% were

wet at least once a week, with the corresponding figures for girls being 1.2 and 0.5%.<sup>2</sup>

A Scandinavian study of 3,206 7 years old children found an overall prevalence of 9.8%, 6.4% of the group was accounted for by children with night wetting, 1.8% by day wetting and 1.6% by those with mixed day and night wetting.<sup>3</sup>

An 8 - year longitudinal study in New Zealand found a prevalence of 7.4% for nocturnal enuresis in 8 years old. This figure was accounted for by 3.3% with primary enuresis and 4.1% with secondary enuresis.<sup>4</sup> Bedwetting is equally common in both genders until 5 years, then boys predominate, so that by age of 11, they are twice as likely to be wet as girls are.<sup>5</sup>

In Thailand, there has been no study about the prevalence rate of any type of enuresis. So in this study, we have surveyed and found out the prevalence rate and other associated factors for nocturnal enuresis in Thai children.

## MATERIALS AND METHODS

The survey for nocturnal enuresis was performed in five elementary schools in Bangkok by using an enuretic questionnaire. All of 1,804 students (boys 536 cases and girls 1,268 cases) aged 6 to 12 years old were included in this study.

All of the 1,804 questionnaires were filled out and answered by their parents who were told and well informed about the purpose, the method and other details about the questionnaire.

If any questionnaires were not complete or not clear, we had to directly contact the parents and try to complete them.

The questionnaire consisted of 3 parts ; the first part had 5 questions asking about general data, the second part had 10 questions asking about bedwetting and the third part had 6 questions asking about other associated factors.

### Statistical Method

Descriptive statistics and a 95% confident interval were used to analyse the data.

## RESULTS

Table 1. Students who were wet less than twice per week and wet at least twice per week

Age	Males			Females		
	< 2/wk	≥ 2/wk	No. of male students studied	< 2/wk	≥ 2/wk	No. of female students studied
6	12	12	91	13	18	127
7	13	12	122	23	30	199
8	13	12	83	19	26	196
9	14	14	88	22	19	251
10	8	10	73	16	19	241
11	3	1	49	9	1	180
12	1	3	30	9	5	74
Total	64	64	536	111	118	1,268

< 2/wk = less than twice per week

≥ 2/wk = at least twice per week

Table 2. Percentage and 95% CI of students who were wet less than twice per week, wet at least twice per week and all of enuretics (&lt; 2/wk and ≥ 2/wk)

Age	Males (%)			Females (%)		
	< 2/wk	≥ 2/wk	All	< 2/wk	≥ 2/wk	All
6	13.19	13.19	26.38	10.27	14.17	24.44
7	10.66	9.84	20.50	11.55	15.08	26.63
8	15.66	14.46	30.12	9.69	13.27	22.96
9	15.91	15.91	31.82	8.83	7.57	16.40
10	10.96	13.70	24.66	6.64	7.88	14.52
11	6.12	2.04	8.16	5.00	0.55	5.55
12	3.33	10.00	13.33	12.16	6.76	18.92
Total		11.94 (64/536)			9.31 (118/1268)	

Functional nocturnal enuresis is defined by DSM-IV as repeated voiding of urine at night at least twice per week.

11.94% of male students and 9.31% of female students were enuretics.

Table 3. Siblings who were wet less than twice per week and wet at least twice per week

Age	Males (number)			Females (number)		
	< 2/wk	≥ 2/wk	No. of male siblings studied	< 2/wk	≥ 2/wk	No. of female siblings studied
6	8	12	93	2	15	92
7	3	4	76	5	8	114
8	2	7	76	5	8	114
9	3	9	81	2	4	124
10	2	3	84	2	4	111
11	1	2	69	1	3	113
12	3	2	88	2	1	121
Total	22	39	567	19	43	789

< 2/wk = less than twice per week

≥ 2/wk = at least twice per week

Table 4. Percentage and 95% CI of siblings who were wet less than twice per week, wet at least twice per week and all of enuretics (&lt; 2/wk and ≥ 2/wk)

Age	Males (%)			Females (%)		
	< 2/wk	≥ 2/wk	All	< 2/wk	≥ 2/wk	All
6	8.61	12.90	21.51	2.18	16.30	18.48
7	3.95	5.26	9.21	4.38	7.02	11.40
8	2.63	9.21	11.84	4.38	7.02	11.40
9	3.70	11.11	14.81	1.61	3.23	4.84
10	2.38	3.57	5.95	1.81	3.60	5.41
11	1.45	2.90	4.35	0.89	2.65	3.54
12	3.41	2.27	5.68	1.65	0.83	2.48
Total		6.88 (39/567)			5.45 (43/789)	

Functional nocturnal enuresis is defined by DSM-IV as repeated voiding of urine at night at least twice per week. So 6.88% of male siblings and 5.45% of female siblings were enuretics.

**Table 5.** Children (students and siblings) who were wet at least twice per week and all of enuretics (< 2/wk and ≥ 2/wk)

Age	Males (number)			Females (number)			P value
	≥ 2/wk	< 2/wk and ≥ 2/wk	All boy children studied	≥ 2/wk	< 2/wk and ≥ 2/wk	All girl children studied	
6	24	44	184	33	48	219	0.6
7	16	32	198	38	66	313	0.2
8	19	34	159	34	58	310	0.8
9	23	40	169	23	47	375	0.006
10	13	23	157	23	41	352	0.6
11	3	7	118	4	14	293	0.4
12	5	9	118	5	16	195	0.5
Total	103	189	1,103	160	290	2,057	

Male had more overall nocturnal enuresis than females, but only the age group of 9 year old males had more enuresis than females with statistical significance (P<0.05).

**Table 6.** Percentage of children (students and siblings) who were wet at least twice per week and all of enuretics (< 2/wk and ≥ 2/wk)

Age	Males (%)		Females (%)	
	≥ 2/wk	All of enuretics	≥ 2/wk	All of enuretics
6	13.04	23.91	15.07	21.92
7	8.08	16.16	12.14	21.09
8	11.95	21.38	10.97	18.71
9	13.61	23.67	6.13	12.53
10	8.28	14.65	6.53	11.65
11	2.54	5.93	1.37	4.78
12	4.24	7.63	2.56	8.21
Total	9.34 (103/1103)	17.14 (189/1103)	7.78 (160/2057)	14.10 (290/2057)

Table 7. Other associated factors in enuretic students

Family Hx bedwetting	Ever received treatment		Reason for not being treated		Is it a problem?		Want to receive treatment		Other assoc sympt (nail biting, bruxism etc)	
	Yes	No	spontaneous remission	do not know where	Yes	No	Yes	No	Yes	No
213/357	31/357	326/357	282/326	51	183/357	174	253/357	104	59	298
59.66%	8.68%	91.32%	86.5%	15.64%	51.26%	48.74%	70.87%	29.13%	16.53%	83.47%

## DISCUSSION

The 1,804 students aged 6 to 12 years old, consisted of 536 males and 1,268 females. There were 11.94% of male enuretics and 9.31% of female enuretics who were wet at least twice weekly.

Their 1,356 siblings aged 6 to 12 years old, consisted of 567 boys and 789 females; there were 6.88% of male enuretics and 5.45% of female enuretics who were wet at least twice weekly.

All 3,160 children aged 6 to 12 years old, consisted of 1,103 females and 2,057 males; there were 9.34% of male enuretics and 7.78% of female enuretics who were wet at least twice weekly.

As other studies; males had more overall nocturnal enuresis than females, but in this study only the age group of 9 year old males had more enuresis than females with statistical significance ( $P < 0.05$ ).

The prevalence rate tended to decrease with an increase in age especially in females. But males had a more scattered prevalence rate. The difference of prevalence rate among studies might be due to the difference of the population studied, the number of subjects, the severity of disorder, the tolerance for the symptoms in various cultures and socioeconomic groups, the spontaneous remission rate and secondary enuresis.

From the study by the authors in 1994, we found that more female enuretics had come to see a physician for treatment than males, but in this study we found that males had more overall enuresis than females. So, the higher prevalence rate of nocturnal

enuresis in males might be caused by the fewer treatment interventions received.

One reason for the higher prevalence rate of nocturnal enuresis in males was that male enuretics might have had fewer treatments than female enuretics.

The prevalence rate of male enuretic children were more scattered among the different age groups which might be due to the smaller sample size, or fewer treatment interventions received than female enuretic children.

About 60% of enuretic students had a history of enuresis in family members. That is, nearly the same as other studies (60-80%). Almost all of the enuretic students (91.32%) had never received any treatment intervention except home-spun techniques such as fluid restriction before bed and night-lifting. Waiting for spontaneous remission and not knowing where they could receive treatment were the reason for not coming to see the physicians. About half of them still thought that this was not the problems, but most of them wanted to receive treatment intervention.

We also found other associated symptoms such as nail-biting, bruxism, nightmares, hyperactivity etc in about 16.5% in our enuretic students.

This study gave us many useful and interesting informations about the prevalence rates of nocturnal enuresis and other associated factors in different age groups and sexes that might be used as the reference for Thai enuretic children and for further studies.

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Abstract : This research replicates the findings of a previous study of nocturnal enuresis in 11 cases in which single enuresis without remission was described. The study replicates the results of epidemiological studies and shows that in this study, enuresis could not be relieved after the rate of remission was found. Survival rate of enuresis was 88.8 percent (11 from 12) which compares favorably to other reports. The authors offer better control and treatment outcome than treatment of a complete remission. The results of our study confirm the possibility of single enuresis being associated with an exceptional outcome in several cases. Case material and method used will be discussed in detail.

วัตถุประสงค์ของการศึกษานี้คือ เพื่อสำรวจปัญหาปัสสาวะรดที่นอนในนักเรียนไทยและครอบครัว  
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