



Frequency of enuresis and related factors among school children in Guilan province; a single center investigation

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ABSTRACT

Introduction: Enuresis is one of the most common diseases in children that has several physical and psychosocial effects on children and their parents. Enuresis is classified in primary and secondary groups which depends on various factors such as genetic predisposition, biological and developmental, psychological, social and economic factors.

Objectives: This study aimed to determine the prevalence of enuresis in primary school-aged children and the role of related personal and family factors in Rasht.

Patients and Methods: In this cross-sectional study, samples were randomly selected from Rasht's primary schools. Questionnaires were selected for each student and then completed by a health expert with invitation of a parent.

Results: In this study, 1125 questionnaires were completed that 568 (50.5%) were boys and 557 (49.5%) were girls. The study showed that the prevalence of enuresis was 7.5% (n = 43) in boys and 4.1% (n = 23) in girls and overall is 5.9% (n = 66). The gender difference was statistically significant. There was statistically significant relation in two groups about personal factors such as history of urinary tract infections (UTIs), snoring, computer games and eating fast food and family factor such as family history of enuresis and the place of residence.

Conclusion: The results showed that the prevalence of this disorder was lower than other studies, which it may be because of ethnic and cultural differences among the communities. Our results with enuresis prevalence and associated factors were comparable to other epidemiological studies from various countries.

Implication for health policy/practice/research/medical education:

Enuresis is one of the most common diseases in children that has several physical and psychosocial effects on children and their parents. This study aimed to determine the prevalence of enuresis in primary school-aged children and the role of related personal and family factors. In this study personal and social factors such as history of urinary tract infections, snoring, computer games and eating fast food and family factor such as family history of enuresis and the place of residence were significant predictors of enuresis.

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Introduction

Enuresis is one of the most common diseases in children that has different prevalence in different parts of the world. There are various factors responsible for its incidence (1-3). Enuresis is classified in primary and secondary groups which depends on various factors such as genetic predisposition, biological and developmental, psychological, social and economic factors (4). According to the high prevalence in different sites and its destructive effects on different physical, psychological and social dimensions in children and their families (3), several

specialists such as nephrologists, urologists, pediatricians, neurologists and psychiatrists investigate about enuresis. This study was to determine the prevalence of enuresis in primary school-aged children and the role of related personal and family factors in Rasht.

Materials and Methods

This descriptive cross-sectional study was conducted on primary school children in Rasht. A total of 1150 samples of 7-12 years old from 120 clusters were randomly selected from Rasht's primary schools. Enuresis was defined using

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the DSM-IV criteria as bedwetting for at least two nights a week. Primary enuresis was defined as bedwetting in a child who had never had bladder control for a period longer than 6 months. Questionnaires were selected for each student and then completed by a Health expert with invitation of a parent.

Ethical issues

1) The research followed the tenets of the Declaration of Helsinki; 2) informed consent was obtained; and 3) This study was approved by the Ethics Committee of Guilan University of Medical Sciences.

Statistical analysis

Data analysis was done in SPSS software using chi-square test. $P < 0.05$ was considered significant.

Results

In this study, 1125 questionnaires were completed that 568 (50.5 %) were related to boys and 557 (49.5%) related to girls. Of these, the most frequent age in children was 10 years old with 245 cases (21.8%) and the least frequent age was 12 years old with 105 cases (9.4%) and the average age of children was 8.8 ± 3.2 years. This study showed that enuresis prevalence was 7.5% in 43 boys and 4.1% in 23 girls. Among children with enuresis, 2.5% (29) wet their bed two or more times per week. Additionally, 4.7% (53) of these children had urine incontinency during the day.

Table 1 shows age frequency in children. The result of study showed no significant difference in enuresis between children ($P=0.627$).

Table 2 shows personal factors associated with enuresis such as academic position, history of urinary tract infection (UTI), neonatal jaundice, breast feeding, febrile

convulsion, constipation, tonsillectomy, snoring, involving with computer games and fast food consumption. The table shows a significant different between the history of UTI, snoring, computer games and fast food consumption in two groups ($P=0.001$, $P=0.045$, $P=0.025$ and $P=0.003$ respectively).

Table 3 shows familial factors associated with enuresis such as history of enuresis in family members, education levels, death, occupation and parental divorce status. This table shows a significant relationship between enuresis in fathers, mothers and sisters of subjects ($P=0.001$, $P=0.007$ and $P=0.001$ respectively).

Discussion

This is a community based study that determines 5.9% enuresis prevalence and related factors among 7-12 years old in Rasht. Similar studies in some provinces have 18.7% of prevalence (5) that was more than our study. Enuresis prevalence studies of other countries were 15.6% (6), 9.4% (7) that prevalence was less in our study. According to the studies, it seems that the prevalence of enuresis is less in primary school students of Rasht in comparison with several areas of the world (8,9). Findings showed that the prevalence of enuresis were more common in boys (7.5%) in comparison with girls (4.1%) (10-12).

Remarkably a significant relationship between enuresis and positive family history in fathers, mothers and sisters was detected.

Recently, a systematic review and meta-analysis conducted by Makrani et al displayed the relationship between enuresis and positive familial history in nine studies. Seven of these studies, reported that presence of positive familial history is a predictive factor (13). Several studies detected that, if one parent is enuretic, each child will have 44% risk of enuresis

Table 1. The frequency of enuresis in related to age

Age (y)	With enuresis		Without enuresis		Total	
	No.	%	No.	%	No.	%
7	10	6	158	94	168	100
8	17	7.5	208	92.5	225	100
9	9	4.5	193	95.5	202	100
10	17	7	228	93	245	100
11	9	5	170	95	179	100
12	4	3.7	102	96.3	106	100
Total	66	5.9	1059	94	1125	100

Table 2. Individual factors related to enuretic patients (n = 66)

Variable	With underlying factor, No. (%)	Without underlying factor, No. (%)	P value
Child educational status			0.989
Good	49 (5.2)	894 (94.8)	
Moderate	16 (9.7)	149 (90.3)	
Excellent	1 (5.9)	16 (94.1)	
Jaundice	28 (42.4)	38 (57.6)	0.076
Breast feeding	53 (80.3)	13 (19.7)	0.293
History of urinary tract infection	9 (13.6)	57 (86.4)	0.001
Febrile seizures	6 (9.1)	60 (90.9)	0.057
Constipation	5 (7.5)	61 (92.5)	1
Tonsillectomy	4 (6.1)	62 (93.9)	1
Snoring	12 (18.2)	54 (81.9)	0.045
Computer games	62 (93.9)	4 (6.1)	0.025
Fast food	45 (68.1)	21 (31.9)	0.003

Table 3. Family factor related to enuresis

Variable		Enuresis		Without enuresis		P value
		No.	%	No.	%	
History of Father's enuresis	+	16	36.4	28	63.6	0.001
	-	50	4.6	1031	95.6	
History of mother's enuresis	+	7	17.5	33	82.5	0.007
	-	59	5.4	1026	94.6	
History of sister enuresis	+	12	16.2	62	83.8	0.001
	-	54	5.1	997	94.9	
History of brother's enuresis	+	3	10	27	90	0.415
	-	63	5.8	1032	94.2	
Father's education level	Illiterate	0	0	32	100	0.108
	Primary school	20	4.4	438	95.5	
	Junior high school	31	7.9	361	92.1	
	Licentiate degree	15	6.4	218	93.6	
	PHD	0	0	10	100	
Mother's education level	Illiterate	0	0	36	100	0.025
	Primary school	19	4.7	388	95.3	
	Junior high school	40	8.4	437	91.6	
	Licentiate degree	7	3.5	192	96.5	
	PHD	0	0	6	100	
Father's death	+	0	0	7	100	0.19
	-	66	5.9	1052	94.1	
Mother's death	+	0	0	2	100	0.194
	-	66	5.9	1057	94.1	
Working father	+	62	6.3	915	93.7	1
	-	4	2.7	143	97.3	
Working mother	+	8	3.9	199	96.1	1
	-	58	6.3	860	93.7	
House	Rental	40	4.9	778	95.1	0.01
	Personal	26	8.5	281	91.5	
Parents' divorce	+	3	8.8	31	91.2	0.445
	-	63	5.8	1028	94.2	

and if both parents are enuretic, the child will have 77% likelihood of enuresis (1,14).

In this study a significant relationship between enuresis and parent's education level was detected. This finding is similar with other studies in different countries (15,16). Probably, educational and cultural level in parents has a pivotal role in toilet training and attention to health of children and also familial problems handling and as a result, enuresis control.

Other related factors are scary computer games and hearing or viewing scary scenes that in this study is statistically significant. In the study by Eqemen et al, computer games and their applications had a significant relation with enuresis (14).

Likewise, this study showed a significant relationship between nocturnal enuresis and snoring. While tremendous controversy exists about relationship between nocturnal enuresis and adenoid hypertrophy, however, in the study of Aydin et al in Turkey no significant relationship between enuresis and adenoid hypertrophy was detected (18). Accordingly, the study of Bakhtiar et al showed, statistically significant relationship between nocturnal enuresis and deep sleep (19). Cinar et al reported a cure rate of 63% for nocturnal enuresis following adenoidectomy for upper airway obstruction in 74 children. Other findings of this research show no significant relation between enuresis and factors like age, father's and mother's job and parent's

divorce.

Our study also showed, the prevalence of enuresis in children living in rental home in comparison with children living in personal home is significant ($P=0.010$).

Importantly, case group children have more UTI history than control group. Other studies also suggest that recurrent UTI can lead to dysfunction of bladder sphincter and urine incontinency in children (21,22). Vande Walle et al found a significant relationship between UTI history and nocturnal enuresis. Therefore it is necessary to conduct routine laboratory tests in asymptomatic and sick children especially older children according to rule out UTI (4). Awareness of patient's families about prevention, evaluation and treatment of children with UTI in order to control this complication seems to be necessary.

Conclusion

In summary, enuresis prevalence has less rate in Rasht in comparison with some provinces in the country and also other countries. Results achieved from enuresis and familial and personal factors in this research is comparable with other countries' epidemiological studies.

Limitations of the study

One of the most important limitations of this research was lack of response some parents for various reasons to our questionnaire

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Authors' contribution

ASA, AH, AK and SM contributed to design and conducted the research. AK performed data gathering, data interpretation and preparation of manuscript. AS, AH analyzed the data. All authors prepared the manuscript read, revised, and approved the final manuscript

Conflicts of interest

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the article.

Ethical considerations

Ethical issues (including plagiarism, data fabrication, double publication) have been completely observed by the authors.

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