

# The Relationship Between Child Anxiety Related Disorders and Primary Nocturnal Enuresis

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## Abstract

**Background:** Nocturnal enuresis, often called bedwetting or sleep wetting, is a common problem in children after the age of five and may lead to symptoms such as infection, incontinence and frequent urination. This problem refers to a state in which children after the age of five have no control of their urine for six continuous months and it cannot be attributed to any organic factors or drug use.

**Objectives:** In this study we aimed to study generalized anxiety disorder as one of the possible causes of primary nocturnal enuresis.

**Materials and Methods:** In this case-control study 180 children with primary nocturnal enuresis and same number of healthy children with a mean age of 7-17 years old with the same demographic characteristics were selected. The study took place at Amir Kabir hospital of Arak, Iran during year 2014. After collecting the information, diagnosis was verified based on the diagnostic and statistical manual of mental disorders (DSM) IV-TR criteria. Results were analyzed using the SPSS software (IBM Corp. Released 2011. IBM SPSS Statistics for Windows, version 20.0. Armonk, NY: IBM Corp.).

**Results:** Frequency of generalized anxiety disorder, panic disorder, school phobia, social anxiety, separation anxiety, history of anxiety in mother, history of primary nocturnal enuresis in parent's family and body mass index had a significant difference between the two groups ( $P = 0.005$ ).

**Conclusions:** With the results obtained from this study we could say that there was a clear significant difference between the two control and patient groups for all subgroups of anxiety disorders such as generalized anxiety disorder and their relationship with primary nocturnal enuresis. Given the higher prevalence of generalized anxiety disorder, panic disorder, school phobia, social anxiety, separation anxiety and comparison with healthy children, it is recommended for all children with primary nocturnal enuresis to be investigated and treated for generalized anxiety disorder.

**Keywords:** Anxiety Disorders, Neurogenic, Nocturnal Enuresis, Urinary Bladder

## 1. Background

Enuresis, often called bedwetting or sleep wetting, is a common problem in children after the age of five and may lead to symptoms such as infection, incontinence and frequent urination (1). Primary nocturnal enuresis is a common problem among school-aged children (2). This problem refers to the state in which a child after the age of five has no control of his/her urine for six continuous months and it cannot be attributed to any organic factors or drug use (3, 4).

In the international classification of diseases and related health problems-10<sup>th</sup> revision (ICD-10) involuntary urination at night more than twice a month in children under seven and once a month in children above seven and in DSM-IV-TR more than twice per week for three months

is accepted as primary nocturnal enuresis (5, 6). So far a clear explanation for enuresis has not been proposed yet several factors such as reduced bladder capacity, delays in development, nocturnal polyuria, sleep disorders, snoring at night, psychological issues etc. may cause this problem (7-9).

Most children with primary nocturnal enuresis have significant signs of stress and mental problems and most of the symptoms are anxiety disorders (10-12). Logan et al. (13) (2014) showed that 60% of patients with enuresis disorder had at least one mental factor. Anxiety disorders are very common and are involved in about 5% - 10% of children and adolescents (14-17). The anxiety disorder discussed in this study is generalized anxiety disorder (GAD).

## 2. Objectives

Given that bed-wetting is a common problem in school-age children and studies regarding the relationship between generalized anxiety disorder and primary nocturnal enuresis have not been performed in Iran thus this study aimed to investigate the relationship between generalized anxiety disorder and primary nocturnal enuresis.

## 3. Materials and Methods

This study was a case-control study that was performed on 180 children aged between 7 and 17 years old with primary nocturnal enuresis as the patient group and 180 healthy children as the control group. The participants were selected from patients referred to Amir Kabir hospital of Arak, Iran during year 2014. In this study, we tried to match demographic characteristics such as age, gender, number on children in the family, presence of parents in the family and etc. Anxiety was measured by a questionnaire to detect anxiety disorders in children (SCARED) and the score was recorded with the approval of a psychiatrist based on DSM IV-TR (diagnostic and statistical manual of mental disorder Ed 4. Text revised) index (18).

### 3.1. Inclusion and Exclusion Criteria

Inclusion criteria were the diagnosis of primary nocturnal enuresis based on the book by Nelson and approval of a specialist in pediatric urinary tract. Exclusion criteria were having underlying psychological problems, mental retardation, using tranquilizers or anti-epileptic drugs, all underlying structural problems in kidney and urinary tract and parasitic diseases. Also, anybody who was not willing to continue to participate in the study was excluded from the study.

### 3.2. Statistical Analysis

Collected data were analyzed by the SPSS software (IBM Corp. Released 2011. IBM SPSS Statistics for Windows, Version 20.0. Armonk, NY: IBM Corp.), and interpreted by chi-square and odds ratio method.

### 3.3. Ethical Considerations

Informed consent was obtained from parents of all children and children over 12 years were also informed about the purpose of the study. All patient information was kept confidential. Use of the information was anonymous and patients were coded by numbers in the questionnaire. In addition, parents were able to end their participations at any time of the study. The Helsinki ethics statements and ethical statement of research ethics committee of Arak University of Medical Sciences were considered at all stages of the research.

## 4. Results

After receiving demographic information and trying to synchronize the data, we asked the parents to answer the questions. Based on the obtained scores these results were obtained: in the case of GAD, 46 of participants scored 9 and higher so the prevalence of the mentioned disease in the patient group was 12.8%. The demographic information of the participants is visualized in [Table 1](#).

**Table 1.** Demographic Information of the Participants<sup>a</sup>

Value	Patient Group	Control Group
<b>Gender</b>		
Female	79 (43.9)	91 (50.6)
Male	101 (56.1)	89 (49.4)
<b>Age</b>	8.42 ± 1.94	8.70 ± 1.75
<b>Number of children in the family</b>		
One	45 (25)	41 (22.8)
Two	86 (47.8)	98 (54.4)
Three	35 (19.4)	29 (16.1)
Four	13 (7.2)	10 (5.6)
Five	0 (0)	0 (0)
Six	1 (0.6)	2 (1.1)
<b>Child order in the family</b>		
First	83 (46.1)	107 (59.4)
Second	73 (40.6)	47 (26.1)
Third	18 (10)	19 (10.6)
Fourth	5 (2.8)	6 (3.53)
Fifth	0 (0)	1 (0.6)
Sixth	1 (0.6)	0 (0)

<sup>a</sup>Values are expressed as No. (%) or mean ± SD.

In the case of history of anxiety, 12.2% of fathers and 28.9% of mothers stated a history of anxiety in their own life. However, these ratios were lower in the control group. Referring to these data, the history of anxiety in mothers was significant ( $P = 0.0001$ ) but in fathers the differences were not significant ( $P = 0.19$ ) ([Table 2](#)).

## 5. Discussion

In this study the history of anxiety in mothers of the patient group was significantly higher than that of the control group and also regarding the gained scores in GAD, a clear relationship between GAD and primary nocturnal enuresis was recorded. Since no similar studies were found, accurate comparison with other studies was not

**Table 2.** The Values Related to Anxiety in the Patients<sup>a</sup>

Case of Study	Patient Group	Control Group	P Value
<b>History of anxiety in father</b>			0.19
Yes	26 (14.4)	18 (10)	
No	154 (85.6)	162 (90)	
<b>History of anxiety in mother</b>			0.0001
Yes	80 (44.4)	24 (13.3)	
No	100 (55.6)	156 (86.7)	
<b>Generalized anxiety disorder</b>			0.0001
Yes	42 (23.3)	4 (2.2)	
No	138 (76.7)	176 (97.8)	
<b>Panic disorder</b>			0.0001
Yes	93 (51.7)	8 (4.4)	
No	87 (48.3)	172 (95.6)	
<b>Rate of separation anxiety</b>			0.0001
Yes	118 (65.6)	14 (7.8)	
No	62 (34.4)	166 (92.2)	
<b>School phobia</b>			0.0001
Yes	93 (51.7)	8 (4.4)	
No	87 (48.3)	172 (95.6)	

<sup>a</sup>Values are expressed as No. (%).

possible so to compare the results; studies with similar titles are discussed below.

Logan et al. in 2014 showed that among 216 patients with urinary dysfunction, about 60% had at least one mental problem (13). In another study on psychological profile of women with urinary dysfunction performed by Fan, it was shown that people with urinary dysfunction were more likely to have depression and anxiety than the control group (14).

In 2012, Wolfe-Christensen et al. (19) performed a survey on “psychosocial problems in children referred to urology clinics” and reported that in total 15.2% of children had serious psychosocial and social problems. However, children with functional urinary tract disorders and primary nocturnal enuresis had a greater risk of mental problems and with increasing mental-social problems the severity of urology disease also increased. It was shown that psychosocial and stress during the sensitive time of learning for voluntary urination may cause primary nocturnal enuresis. In another study by Eapen et al. (20) nocturnal enuresis was found to be very common in school-aged chil-

dren and it was recommended for all children to be carefully evaluated for psychological damage.

In conclusion the results obtained from this study show that there was a clear significant difference between the two control and patient groups for all subgroups of anxiety disorders such as GAD and their relationship with primary nocturnal enuresis. The strength point of this study could be that this complication was studied for the first time in Iran and can guide further studies in the future.

Lack of cooperation of some parents for inclusion was one of the major limitations in this and similar studies. We recommend further researches to be performed in other geographical areas with larger sample sizes to accept or reject the results of this study.

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## Footnotes

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