

Exploring Factors Contributing to Monosymptomatic Nocturnal Enuresis in School Children

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Abstract: *Background:* Even though most children attain bladder continence by age of five still a significant number continue bedwetting. Children usually rate this as a major life stressor and a cause for embarrassment. There are several factors that can contribute to nocturnal enuresis in children.

Methods: The present study aims at investigating factors associated with monosymptomatic nocturnal enuresis in children studying in selected schools. A structured questionnaire was administered to the parents of students aged 6 to 12 years suffering from nocturnal enuresis. Overall, 80 respondents took part in the study.

Results: Majority 36(45%) wetted their beds 1 – 3 times/week and (33.75%) were aged 7 years. 60% were males and 15 % had strict/controlling parents. 66.25% had positive family history of bedwetting. 65% of enuretics were deep sleepers while 50% had nightmares most of the times. 18.75% had constipation. 21.25% sometimes had presence of lack of breath during sleep. On basis of emotional status 27.5% were anxious. The scholastic performance of 52.5% was satisfactory. 36.25% were shy at school while 12.5% faced bullying. 58.75% had attention problems at school.

Conclusion: Monosymptomatic nocturnal enuresis is a heterogeneous disorder with multiple factors interplay in its pathogenesis. Therefore management must be tailored on individual basis depending upon the dominating contributing factor.

Keywords: Monosymptomatic nocturnal enuresis, Contributing factors, School Children

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I. Introduction

Nocturnal Enuresis is defined as intermittent micturition in bed during sleep in a child at least five years of age. Spontaneous remission usually occurs and the number of children affected will be reduced to 1% by adulthood. [1] Bedwetting has a deep impact on social, scholastic, and emotional well-being of children during a critical period of their psychosocial development. [2]

Nocturnal enuresis may be primary where a child has never achieved dryness for at least a period of 6 months or secondary with recurrence of nocturnal bed wetting for a child who had previously achieved sustained dryness. Secondary nocturnal enuresis can be triggered by an upper airway obstruction, chronic constipation, urinary tract infection, attention deficit hyperactivity disorder, conduct disorder, generalized anxiety, specific phobia or depression. [3] Primary Nocturnal enuresis may be either monosymptomatic nocturnal enuresis with normal daytime voiding patterns and without any underlying pathology or non-monosymptomatic caused due to overactive bladder and presented by daytime wetting, urinary frequency, hesitancy, urgency, interrupted stream with variable-sized wet patches and repeated perineal pain. [4]

The aetiology of bedwetting is not fully understood. Bedwetting is generally considered as a symptom that may result from a combination of different predisposing factors. Some of them may be categorised as: Sleep arousal difficulties (a reduced ability to wake to bladder contractions or full bladder), Polyuria (the production of larger than normal volumes of urine overnight exceeding the nocturnal bladder capacity), Bladder dysfunction (most often either an overactive bladder or a small bladder capacity). [5] A variety of factors are associated with bedwetting. Enuretic children have frequently a strong family history of bedwetting. Genetic studies show linkage to a number of different gene loci. [6] The leading pathophysiological mechanisms of nocturnal enuresis are several factors such as increased nocturnal urine production, decreased nocturnal bladder capacity or bladder instability, or decreased sensation perception of stimulus by bladder fullness during sleep. [7] In children diagnosed with Attention Deficit and Hyperactivity Disorder (ADHD) the incidence of nocturnal enuresis is around 10%. The association of bedwetting with attention problems and arousal difficulties are considered important in pathophysiology of bedwetting. [8]

Current understanding of pathophysiology suggests that children with bladder difficulties, either overactive bladder or small bladder capacity respond less well to desmopressin. [9] Many only experience

isolated night time bedwetting but some may also have daytime symptoms like urinary urgency, frequency, wetting, urge incontinence hesitancy, poor urinary stream, abdominal straining. [10] Nocturnal polyuria may be diagnosed by weighing nappy used overnight, restricting fluid intake prior to bedtime or bladder diaries. This can identify most children with bladder dysfunction although some children will need detailed urodynamics.

Identifying the possible underlying mechanism for bed wetting may enable better use of certain treatment options. But the clinical profile of the child usually does not lead to a clear differentiation of underlying pathological mechanisms. Most of the clinical research has inadequate description of symptoms and causative factors in the study populations. To date the studies are not adequate to assess the treatment hypotheses generated from current physiological understanding. [11]

II. Aims

1. To assess the frequency of bedwetting in school children
2. To investigate the factors contributing to primary monosymptomatic nocturnal enuresis

III. Materials and Methods

A descriptive explorative study was carried out in parents of enuretic children studying in selected schools in Nashik. A survey was conducted to find the number of children suffering from monosymptomatic nocturnal enuresis between July 2018 to August 2018.

Out of 127 enuretic children aged 6 years to 12 years, parents of 80 enuretic children who met the inclusion criteria were selected for the study. The inclusion criteria included the: Parents of children suffering from primary monosymptomatic nocturnal enuresis, Parents of children between age groups of 6 to 12 years, Parents of children not taking any treatment for nocturnal enuresis, Parents willing to participate in the study. In the study, non-probability convenient sampling technique was used for selecting the sample.

After explaining the purpose and nature of the study informed consent was obtained for participation in the study. The confidentiality of the participant was assured. Ethical clearance was obtained from the institutional review board of the selected schools.

A structured questionnaire was administered to collect information about selected contributing factors and frequency of bed wetting. All responses were collected and analysed. Qualitative data were described using frequency and percentage. Data was presented in the form of tables and graphs.

IV. Results

Table no 1: Distribution of selected Contributing Factors of Primary Monosymptomatic Nocturnal Enuresis. (N= 80)

Contributing Factors	Frequency	Percentage
Age:		
6	24	30%
7	27	33.75%
8	19	23.75%
9	8	10%
10	1	1.25%
11	1	1.25%
12	0	0%
Gender		
Male	48	60%
Female	32	40%
Family Structure		
Nuclear	53	66.25%
Joint	9	11.25%
Extended	15	18.75%
Single parent	3	3.75%
Parent Child relationship		
Approachable	48	60%
Friendly	20	25%
Strict/ Controlling	12	15%
Avoidant	0	0%
Type of Enuresis:		
Nocturnal	68	85%
Diurnal	0	0%
Both	12	15%
Family History of Bed wetting		
Positive	53	66.25%
Negative	27	33.75%
Presence of chronic bowel disorders:		
Constipation	15	18.75%

Loose stools	0	0%
Encopresis	4	5%
None	61	76.25%
Depth of sleep:		
Shallow/Easily aroused	2	2.5%
Normal	26	32.5%
Deep sleeper	52	65%
Presence of Frequent Nightmares/Fear at night time:		
Always	5	6.25%
Most of the times	40	50%
Sometimes	23	28.75%
Rarely	12	15%
Never	0	0%
Presence of lack of breath or choking during sleep:		
Yes	3	3.75%
No	60	75%
Sometimes	17	21.25%
Emotional status:		
Anxious	22	27.5%
Scared	12	15%
Depressed	10	12.5%
Happy/ Normal	28	35%
Angry	8	10%
Scholastic Performance:		
Excellent	10	12.5%
Good	20	25%
Satisfactory	42	52.5%
Poor	8	10%
Social problems at school:		
Shy	29	36.25%
Talkative	20	25%
Faces bullying	10	12.5%
Frequent quarrels	6	7.5%
Peer pressure	15	18.75%
Attention problems at school:		
Present	47	58.75%
Absent	33	41.25%

Table no 1: shows majority of study participants were aged 6 years (30%) and 7 years (33.75%) respectively. Majority 60% were males and 66.25% were from nuclear families. On basis of parent child relationship 15 % were strict/controlling and 60% of parents were approachable. 85% of the study participants had only nocturnal enuresis while 15% had both. 66.25% had positive family history of bedwetting. 76.25% of children did not have any chronic bowel disorders while 18.75% had constipation. Majority (65%) of study participants were deep sleepers while 50% had nightmares most of the times. 21.25% sometimes had presence of lack of breath or choking during sleep while 75% did not have any lack of breath or choking during sleep. On basis of emotional status 35% were happy/normal while 27.5% were anxious. The scholastic performance of 52.5% was satisfactory while 10% were poor. 36.25% of the study participants were shy at school while 12.5% faced bullying. Majority (58.75%) had attention problems at school.

Figure 1: Frequency of Bedwetting in School children (N=80)

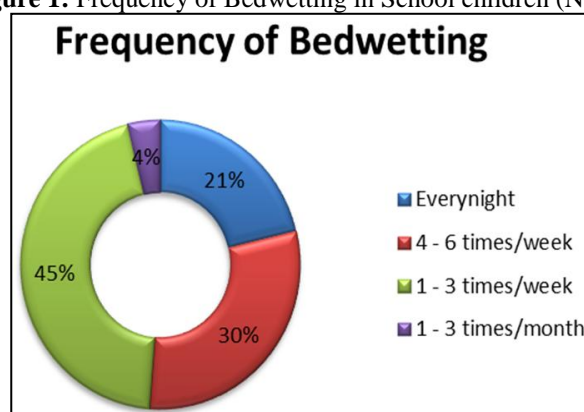


Fig. 1: indicates that out of 80 study participants 17 (21%) wetted their beds Every night, 24 (30%) wetted 4-6 times/week, 36 (45%) wetted 1-3 times/week and 3 (4%) wetted 1-3 times/months.

V. Discussion

Nocturnal enuresis is defined as involuntary voiding of urine during sleep beyond the age at which bladder control is normally obtained. The primary monosymptomatic nocturnal enuresis is a heterogeneous disorder in which multiple factors work together to result in its development in genetically predisposed subjects. [12] This study investigated the possible etiological factors of primary monosymptomatic nocturnal enuresis and assessed the frequency of bed wetting in school children. The study shows that the incidence and frequency of monosymptomatic nocturnal enuresis decreases with age. It is more common in male children with a positive family history. Other contributing factors included strict or controlling parent child relationship, deep sleep, nightmares and fear during sleep, breathing difficulties or choking during sleep, anxiety, social problems like shyness or bullying at school. Majority (58.75%) had attention problems at school.

Thurber's work (Thurber 2017) conveyed similar results which showed the importance of genetic role in pathogenesis of monosymptomatic nocturnal enuresis by documenting presence of more than one affected member within the patient's family. [13] A study by Wille S (1994) investigated the sleeping pattern in 88 children with nocturnal enuresis and compared with 340 non-enuretic children. Enuresis was three times more common in the children with a positive family history and the enuretics were considered deep sleepers by their parents. A wake-up test showed that they were more difficult to arouse at night compared with controls ($p < 0.001$). These results demonstrate that enuresis has a strong genetic link and most enuretics are deep sleepers when compared to their non-enuretic peers [14]

Baeyens D et al. (2004) studied the prevalence of attention deficit hyperactivity disorder (ADHD) in enuretic children. Among the 120 enuretic children aged 6 to 12 years selected for the study, 15% were diagnosed with the full syndrome of ADHD while 22.5% had ADHD inattentive subtype. The findings revealed that the older the children (9 to 12 years), the higher prevalence of attention deficit disorder or ADHD. [15] Another study by Bahnasy WS et al. (2018) compared 40 children aged 6 to 18 years suffering from primary monosymptomatic nocturnal enuresis with 20 healthy controls. The findings suggested that 42.5% of them had a positive family history of nocturnal enuresis. The child behaviour checklist revealed enuretic children having higher anxious depressed symptoms, social problem, attention problems and internalizing problems compared to non-enuretic control subjects. [16]

VI. Conclusion

The present study shows multiple contributing factors present in children with monosymptomatic nocturnal enuresis. Therefore it can be concluded as Monosymptomatic nocturnal enuresis is a heterogeneous disorder with multiple factors interplay in its pathogenesis. Therefore the management must be tailored on a patient to patient basis depending upon the dominating contributing factor.

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