Primary and Secondary Enuresis in Children Presenting At Pediatric Outpatient Department of Combined Military Hospital Malir Cantt Karachi

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ABSRACT

Objective: To determine the frequency of primary and secondary enuresis in the children presenting at outpatient department of Tertiary Care Hospital.

Study Design: A cross sectional study.

Place and Duration of Study: Outpatient Department of Combined Military Hospital Malir, Karachi, from Feb to July 2019.

Methodology: A total of 1200 children with age range of 5-12 years were included in the study. Children presenting with severe acute illness or those with non-willing caregivers were excluded from the study.

Result: Out of the total 1200 study participants, 167 (13.9%) children gave the history of enuresis. There were 109 (65.6%) boys and 58 (34.4%) girls. The children with primary enuresis were 141 (84.3%) while 26 (15.62%) children had secondary enuresis. About 31 (18.7%) children had daytime enuresis, 115 (68.5%) had night-time and 21 (12.5%) children had both day and night time bed wetting. About 57 (34.37%) children previously got the treatment for enuresis which included fluid restriction in 21 (12.5%) and desmopressin in 36 (21.87%). Out of them 52 (91.2%) children showed complete response while 5 (8.77%) showed incomplete response.

Conclusion: Our study found that enuresis is more frequent among boys. Primary enuresis is more common than secondary enuresis and nocturnal enuresis is more common than diurnal enuresis.

Keywords: Diurnal, Enuresis, Frequency, Nocturnal, Risk factors, Treatment.

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INTRODUCTION

Enuresis is defined as an involuntary and undesirable wetting at least twice a week beyond the age of anticipated bladder control that is generally accepted as 5 years of age. There are two types of enuresis. Primary enuresis is bedwetting in a child who never had bladder control for longer than six months. Secondary enuresis is defined in a child who was toilet trained for a minimum of six months after the age of bladder control but later loses bladder control.[1]

Bladder control achievement is a complex mechanism requiring conscious awareness of bladder fullness and the ability to suppress the urge to void. This ability develops first in daytime while nighttime control is achieved when brain during sleep suppresses the automatic bladder-emptying reflex.[2] Toilet training plays a very important role in achieving the bladder control, too early toilet training may lead to child defiance and conflict, while prolonged use of baby diapers may delay the establishment of bladder control.[3] Various important risk factors for primary and secondary enuresis have been identified including positive family history, sleep disorders like obstructive sleep apnea, snoring and many allergic conditions.[4-6] The parental education, working mother, large family size and too busy parents also contribute to the delay in the achievement of bladder control.[7] Stressful events in the child's life like change in school, educational stress, bullying in school and birth of another sibling may result in enuresis in a previously trained child. Some pathological conditions like urinary tract infections, obstructive uropathy, spinal dysraphism, spinal muscular atrophy and trauma may result in primary or secondary enuresis.[8] Diabetes mellitus and diabetes insipidus are other identified causes of secondary enuresis.[9] Available treatment options for enuresis include non-pharmacological measures like behavioral interventions, fluid restriction and alarm treatment. The pharmacological options are desmopressin (as first line and evidence-based therapy after failure of non-pharmacological options) and tricyclic antidepressants.[10]

Despite being a common problem enuresis, is not addressed as a serious problem. Many parents accept children to live with it with an expectation that it will resolve at some stage with the passage of time or they

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are too busy to address it. On part of children, many of them feel shy to report this problem or they are scared of being humiliated or beaten by their parents. As a result, the true picture of the prevailing situation cannot be obtained. We planned a study to put forward this under-addressed issue as it can have significant pathological and psychological impacts on child health. The purpose of this study was to determine the frequency of primary and secondary enuresis among children and to emphasize the importance of diagnosing and treating enuresis among the parents.

METHODOLOGY

It was a cross sectional study conducted at the Pediatric OPD of Combined Military Hospital Malir Cantt, Karachi, from February to July 2019 after the approval from Institutional Ethical Review Board.

Inclusion Criteria: Children of ages 5-12 years were included in the study.

Exclusion Criteria: Children presenting with severe acute illness or those with non-willing caregivers were excluded from the study.

The sample size was calculated using Open Epi (version 3.01). At 95% confidence interval, with 5% confidence limit, 9.1% prevalence of enuresis among pediatric age group 4, the calculated sample size was 220. However in our study total 1200 parents or caregivers were interviewed.

A questionnaire was designed and the data were collected by the doctors after taking the verbal informed consent. Variables covering demographic detail including name, age and gender were noted. Questions regarding family history of enuresis, education level of parents, working parents, single parents, sleeping habit of the child, number of siblings, school performance and history of urinary tract infections were asked in the first part of the questionnaire.[11] Second part of the questionnaire evaluated frequency of wetting at night and/or in daytime, continuous wetting or wetting after a dry period of more than 6 months.[12]

Statistical Package for Social Sciences (SPSS) version 20 was used for the data analysis. Quantitative variables were summarized as mean ± SD and qualitative variables were summarized as frequency and percentages.

RESULTS

Out of the total 1200 study participants, 167 (13.9%) children gave the history of enuresis. There were 109 (65.6%) boys and 58 (34.4%) girls. The children with primary enuresis were 141 (84.3%) while 26 (15.62%) children had secondary enuresis as shown in the Figure. The risk factors for enuresis were summarized in the Table-I. About 31 (18.7%) children had daytime enuresis, 115 (68.5%) had nighttime and 21 (12.5%) children had both day and night time bedwetting. About 57 (34.37%) children previously got the treatment for enuresis which included fluid restriction 21 (12.5%) and desmopressin 36 (21.87%) respectively. Out of them, 52 (91.2%) children showed complete

Table-I: Risk factors for enuresis.

Risk Factors for Enuresis	Enuretics		Non – Enuretics	
No. of Siblings	None	-	None	-
	1-3	110 (65.87%)	1-3	269 (26.67%)
	4-6	26 (15.57%)	4-6	455 (44.03%)
	>6	31 (18.56%)	>6	303 (29.30%)
Family history of enuresis	63 (37.50%)		26 (2.50%)	
School performance of the child	Good	83 (49.70%)	Good	951 (92.00%)
	Fair	11 (6.59%)	Fair	10 (1.00%)
	Poor	73 (43.71%)	Poor	72 (7.00%)
History of urinary tract infection in the child	115 (68.86%)		283 (27.39%)	
Education level of child's father	None	26 (15.62%)	None	94 (9.09%)
	Primary School	31 (18.75%)	Primary School	78 (7.57%)
	Secondary School	16 (9.37%)	Secondary School	52 (5.05%)
	Intermediate	31 (18.75%)	Intermediate	256 (24.74%)
	Graduation	63 (37.50%)	Graduation	553 (53.53%)
Education level of child's mother	None	68 (40.62%)	None	167 (16.16%)
	Primary School	26 (15.62%)		245 (23.73%)
	Secondary School	42 (25.00%)		292 (28.28%)
	Intermediate	31 (18.75%)		167 (16.16%)
	Graduation	-		162 (15.65%)
Earning Mother	79 (47.00%)		214 (20.70%)	
Jobless Father	63 (37.50%)		78 (7.57%)	

response while 5 (8.77%) showed incomplete response (Table-II).

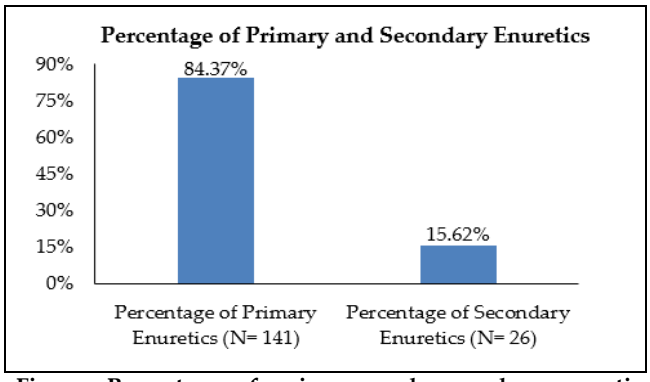

Figure: Percentage of primary and secondary enuretics. (n=167).

Table-II: Frequency and treatment of enuresis.

Parameters	Primary Enuretics	Secondary Enuretics
Wetting at day	31(100%)	-
Wetting at night	110 (95.6%)	5 (4.34%)
Wetting at day & night	-	21 (100%)
Frequency less than twice/week	16 (76.2%)	5 (23.8%)
Frequency greater than twice/week	126 (86.3)	20 (13.69%)
Treated for enuresis	50 (87.7%)	7 (12.28%)
Treated by Desmopressin	26 (72.2%)	10 (27.77%)
Treated by fluid restriction	21 (100%)	-

DISCUSSION

Despite significant prevalence of enuresis worldwide in all the races and cultures, it is considered as an undervalued medical problem.[13,14] Our results were comparable to the previous studies conducted in different countries and showed high magnitude of this problem with least concern by the parents and the attending physicians despite the great consequences on child personality and self-esteem that may delay the timely intervention and successful treatment.[15,16]

In our study population, 13.9% children were found to have enuresis. According to locally conducted researches frequency of enuresis range from 9%-25%.[11,12,13] This wide range was observed because of difference between hospital or school-based studies versus community based studies where later yielded higher frequencies. Similar frequencies of enuresis were observed internationally. Few examples are Egypt 15.7%,[14] India 7.6-16.3%,[15] Iran 11.1%,[16] Turkey 12.5-25%,[17] and USA 5-7%.[18]

A significant male predominance was found in our study (65.6% vs. 34.4%). The high frequency in the male as compared to female is explainable by early psychoneurological maturation of girls in comparison with boys.[19] Sixty eight percent mothers of enuretic children were found to be illiterate. In our study better education of mothers had a strong impact in reducing the chance of enuresis while in another study conducted in Karachi, frequency of enuresis was more in children of mothers with better educational status.[11] In fact the association of maternal educational level with enuresis is a controversial matter because of impact of many other social and cultural factors and study settings. Enuresis was found considerably associated with mother's employment as 47% mothers of enuretics children in our study were working mothers. This finding was supported by another previous publication.[20]

All the children with diurnal enuresis had secondary enuresis. Majority of children (68.75%) with enuresis had nocturnal enuresis, out of which 95.6% of them had primary enuresis. In a previous study, the abnormality of circadian rhythm in antidiuretic hormone secretion was found to be in 71.7% of nocturnal enuresis cases 21. Some other risk factors that have been found strongly associated with enuresis in previous studies were not assessed in our study. These include sexual abuse, encopresis, constipation, ADHD and obesity.[22-24] Success rate of the used treatment options also needs further individual evaluation.

Enuresis is a common problem which is usually under reported and not effectively treated. Although this problem may result in children and parental conflict, poor self-esteem and many psychosocial issues, the awareness about effective treatment strategies is lacking.

LIMITATIONS OF STUDY

Some risk factors were not assessed in our study that include history of sexual abuse, encopresis, constipation, ADHD and obesity.

CONCLUSION

Our study found that enuresis is more frequent among boys. Primary enuresis is more common than secondary enuresis and nocturnal enuresis is more common than diurnal enuresis.

Conflict of Interest: None.

Authors' Contribution

MZ: Prime auther collected data compiled results, AA: Title Selection, final approval, STHZ: Manuscrip writing, AS: Calculation of statistics, WS: Concieved & designed the analyses, MS: Helped data collection.

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