





Prevalence and Factors Associated with Nocturnal Enuresis Among Children Aged 6–14 Years in Mogadishu: A Hospital-Based Cross-Sectional Study

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Purpose: Nocturnal enuresis, or enuresis during sleep, is a widespread condition in childhood influenced by genetic factors, delayed development of bladder control, and various behavioral factors. The main objective of the study was to determine the prevalence and factors associated with nocturnal enuresis among children aged 6–14 years who attended selected hospitals in Mogadishu, Somalia.

Patients and Methods: A hospital-based cross-sectional study was conducted among 320 children attending pediatric outpatient departments at Banadir and SOS Hospitals. Data were collected using structured questionnaires administered to caregivers. Logistic regression analysis was used to identify factors associated with NE, and adjusted odds ratios (AOR) with 95% confidence intervals (CI) were reported.

Results: The overall prevalence of nocturnal enuresis was 31.9%. Significant factors associated with NE included younger age (6–8 years: AOR = 4.228; 95% CI: 1.768–10.113), male sex (AOR = 6.456; 95% CI: 3.041–13.709), low parental education (AOR = 3.567; 95% CI: 1.385–9.185), drinking fluids before bedtime (AOR = 4.555), psychosocial stress (AOR = 3.742), constipation (AOR = 5.708), urinary tract infection (AOR = 7.211), deep sleep (AOR = 0.170), and a positive family history of NE (AOR = 10.076; 95% CI: 4.658–21.800).

Conclusion: Nocturnal enuresis is highly prevalent among children in Mogadishu and is significantly associated with various sociodemographic, behavioral, and medical factors. These findings highlight the need for early screening, parental education, and targeted interventions. Further multi-center and qualitative studies are recommended to improve understanding and management of enuresis in Somalia.

Keywords: maturational delay, nocturnal enuresis, depression, mood disorders, encopresis, urinary tract infection, UTI

Introduction

Nocturnal enuresis is a common condition affecting children worldwide, with its prevalence varying according to factors such as age, sex, and geographic location. Epidemiological research suggests that approximately 15%–20% of children aged 5–7 years and 2%–3% of those aged 10–12 years experience this condition.¹ Research has consistently demonstrated that nocturnal enuresis is more prevalent among boys than among girls. This observed gender disparity may be

explained by an interplay of biological, developmental, and psychosocial factors.² Most children typically develop toileting readiness skills between 22 and 30 months of age. Particularly, girls tend to show signs of readiness earlier than boys, around 24 to 26 months, compared to boys at 29 months.^{3,4} According to the International Children's Continence Society (ICCS), nocturnal enuresis (NE) is defined as intermittent involuntary release of urine during sleep regardless of the presence of daytime urinary symptoms.⁵ As outlined in the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5), nocturnal enuresis is defined as involuntary urination during sleep in children aged five years or older occurring at least twice a week for a minimum of three months or resulting in clinically significant distress.⁶ NE can be classified into two types: primary and secondary. Primary enuresis is observed in children over five years of age who have not achieved dryness for a minimum of six consecutive months, whereas secondary enuresis manifests after a period of at least six months of dryness.⁷ The International Children's Continence Society further classified into two subtypes: "monosymptomatic nocturnal enuresis" (MSNE) which occurs in isolation, without any another symptom, and non-monosymptomatic nocturnal enuresis or with NE-lower urinary tract symptoms (NE-LUTS) accompanied by symptoms such as dysuria, suprapubic pain, and daytime incontinence. Additional conditions associated with NE include encopresis, urinary tract infection (UTI), suprapubic pain, asymptomatic bacteriuria, vesicoureteral reflux, neuropsychiatric disorders, learning disabilities, and sleep disorders.⁸ The causes of nocturnal enuresis are multifaceted and include delayed bladder maturation, nocturnal polyuria, sleep arousal dysfunction, genetic predisposition, and psychosocial stressors. Numerous studies have identified links between male sex, younger age, positive family history, constipation, urinary tract infections, fluid intake before bedtime, and abnormal sleep patterns.^{9,10}

The probability of a child developing nocturnal enuresis is approximately 45% if one parent has a history of the condition, and it rises to approximately 75% when both parents are affected. In contrast, the risk is approximately 15% in children with no family history.¹¹ Children diagnosed with nocturnal enuresis (NE) often experience emotional difficulties, including diminished self-esteem, depression, guilt, discouragement, and anxiety. This condition is frequently distressing for both the affected children and their families, placing them in challenging situations.^{12,13} Nocturnal enuresis can adversely affect a child's psychological development. Research indicates that children with nocturnal enuresis frequently experience diminished quality of life, disrupted sleep patterns, feelings of unhappiness, and reduced self-esteem.¹⁴ Despite the significant global impact of nocturnal enuresis, data from low-resource settings, such as Somalia, remain limited. Cultural perceptions, restricted access to healthcare services, and delayed health-seeking behavior may further influence the prevalence and associated risk factors of this condition. To our knowledge, no previous studies have been published on the prevalence and determinants of nocturnal enuresis among children in Somalia, highlighting a significant gap in the existing literature and underscoring the need for research tailored to specific contexts. Accordingly, this study aimed to ascertain the prevalence of nocturnal enuresis and identify the factors associated with this condition among children aged 6–14 years in Mogadishu, Somalia.

Materials and Methods

Study Design

This study utilized a hospital-based cross-sectional approach to assess the prevalence and identify factors associated with nocturnal enuresis among children aged 6–14 years who visited selected hospitals in Mogadishu, Somalia, between February and May 2025.

Study Setting

The study was conducted in Mogadishu, focusing on specific hospitals that serve pediatric patients, such as Banadir and SOS Hospitals. These hospitals provided facilities to ensure diverse sample sizes.

Inclusion and Exclusion Criteria

Inclusion Criteria

Children aged 6 to 14 years who visited the selected hospitals during the study period and met the operational definition of nocturnal enuresis were included in the study. Nocturnal enuresis was defined as involuntary urination during sleep

occurring at least twice a week for a minimum of three consecutive months, in line with international guideline criteria. Since enuresis is often not recognized as a medical condition by caregivers in the study setting, a prior diagnosis was not required. Instead, children were actively screened during outpatient visits through structured symptom-based interviews with caregivers. A specialist physician confirmed the diagnosis following a clinical assessment. Caregivers provided relevant sociodemographic, behavioral, and medical data.

Exclusion Criteria

Children with a history of neurological disorders, significant developmental delays, or identifiable organic causes of urinary incontinence (including structural, endocrine, or metabolic conditions) were excluded, as were children with secondary enuresis attributable to an underlying medical condition. Caregivers who were unwilling or unable to provide informed consent were also excluded.

Sample Size and Technique

The sample size was calculated using the single population proportion formula:

$$n = \frac{(Z^2 a / 2P(1 - P))}{d^2}$$

Where:

n represents the number of subjects enrolled, Z denotes the 95% confidence interval, which is 1.96, d signifies the margin of error between the sample and the population, set at 0.05, and P indicates the prevalence of nocturnal enuresis, calculated as 22.2%.

Given that no data on the prevalence of enuresis among children was found within the country, our research team has opted to use a prevalence rate of 22.2%, based on data from a study conducted in Gondar City, Ethiopia, with similar objective¹⁵

$$n = \frac{(1.96^2) * (0.222) * (0.778)}{0.0025}$$

n= 264

After adding a 10% non-response rate, the final sample size became:

$$\text{Final} = 264 + (10\% \text{ of } 264) = 296$$

However, to improve the reliability and precision of the study, a total of 320 participants were included.

Data Collection

Data were collected from Banadir Hospital and SOS Hospital using the Kobo Toolbox application. A total of 320 fully completed questionnaires were obtained, with 160 participants recruited from each facility. Convenience sampling was employed. All eligible children aged 6–14 years who attended the pediatric outpatient departments during the study period were invited to participate, and recruitment continued until the targeted sample size for each hospital was achieved. Questionnaires that were incomplete or partially filled were excluded from the final analysis. Data were collected using a structured, interviewer-administered questionnaire primarily adapted from previously published studies on nocturnal enuresis and associated risk factors,^{16,17} covering sociodemographic characteristics, behavioral factors, and relevant medical history. The questionnaire was developed following a comprehensive review of pertinent literature. Its content validity was evaluated by a panel comprising pediatricians and an epidemiologist, and it underwent pilot testing with a small cohort of caregivers to ensure its clarity, feasibility, and cultural relevance. The difference between primary and secondary nocturnal enuresis was not differentiated, as many caregivers were unfamiliar with these definitions and were unable to reliably recall their continence history. Consequently, the broader term “nocturnal enuresis” was employed to prevent misclassifications. Trained research assistants administered the questionnaires to the caregivers during clinic visits.

Data Analysis

Data analysis was conducted using IBM SPSS Statistics (version 27). Descriptive statistics were used to summarize the prevalence of nocturnal enuresis, with results presented as frequencies and percentages. The association between nocturnal enuresis and categorical independent variables was evaluated using the chi-square test. Variables that demonstrated statistically significant associations at the bivariate level ($P < 0.05$) were included in a multivariable logistic regression model to identify independent predictors of nocturnal enuresis. Multicollinearity among independent variables was assessed using the Variance Inflation Factor (VIF), with all predictors exhibiting VIF values below 2, indicating no evidence of problematic multicollinearity.

Results

Prevalence of Nocturnal Enuresis

The overall prevalence of nocturnal enuresis among children aged 6–14 years was 31.9% ($n = 102$). As shown in [Figure 1](#)

Descriptive Analysis of Socidemographic, Behavioral, and Medical Factors

A total of 320 participants were included in this study. As shown in [Table 1](#), the majority (57.8%, $n = 185$) were aged 6–8 years, followed by 31.6% ($n = 101$) who were 9–11 years old, and a smaller segment of 10.6% ($n = 34$) who were between 12 and 14 years old. Females were (56.6%, $n = 181$), while males represented 43.4% ($n = 139$). Regarding caregiver relationships, mothers were the primary caregivers for 71.9% ($n = 230$) of the children. Grandparents, other relatives, and fathers were the primary caregivers in 15.0% ($n = 48$), 7.2% ($n = 23$), and 5.9% ($n = 19$) of cases, respectively. Regarding the educational background of caregivers, 65.3% ($n = 209$) had no formal education, 28.4% ($n = 91$) had completed primary or secondary education, and only 6.3% ($n = 20$) had a higher education. Most caregivers were not employed (64.1%, $n = 205$), and the majority (77.2%, $n = 247$) of the children had more than two siblings.

In terms of socioeconomic status, 67.2% ($n = 215$) of families reported a monthly income exceeding \$150, while 32.8% ($n = 105$) earned \$150 or less. Of the total residents, 51.6% ($n = 165$) lived in urban areas and 48.4% ($n = 155$) in rural areas. A significant majority of the children, 203 (63.4%), were light sleepers, while 117 (36.6%) were deep

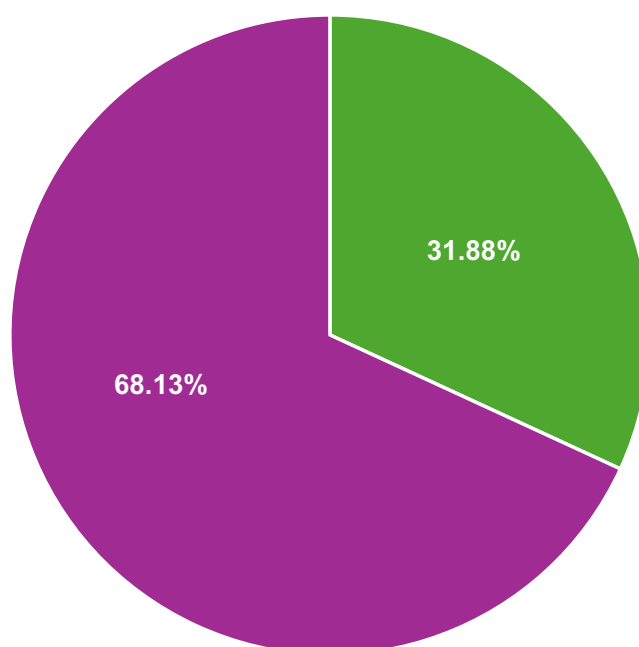


Figure 1 Prevalence of nocturnal enuresis among children aged 6–14 years in Mogadishu, Somalia. The green color indicates children with nocturnal enuresis (31.88%), while the purple color represents those without it (68.13%).

Table 1 Sociodemographic Behavioral and Medical Characteristics of the Participants (N = 320)

Variable	Category	Frequency	Percentage
Child's Age (years)	6 – 8	185	57.8%
	9 – 11	101	31.6%
	12 – 14	34	10.6%
Sex	Male	139	43.4%
	Female	181	56.6%
Caregiver Relationship	Mother	230	71.9%
	Father	19	5.9%
	Grandparent	48	15.0%
	Other	23	7.2%
Educational Level	No formal Education	209	65.3%
	Primary/Secondary	91	28.4%
	Higher Education	20	6.3%
Caregiver's Working Status	Employed	115	35.9%
	Unemployed	205	64.1%
Number of Siblings	Two or fewer	73	22.8%
	More than two	247	77.2%
Monthly Household Income	\$150 or less	105	32.8%
	More than \$150	215	67.2%
Residence	Urban	165	51.6%
	Rural	155	48.4%
Typical sleep pattern	Light sleeping	203	63.4%
	Deep sleeping	117	36.6%
Consume a drink before bedtime	Yes	216	67.5%
	No	104	32.5%
History of family problems	Yes	135	42.2%
	No	185	57.8%
Constipation	Yes	40	12.5%
	No	280	87.5%
Urinary tract infection	Yes	42	13.1%
	No	278	86.9%
Family history of enuresis	Yes	196	61.3%
	No	124	38.8%
Chronic/medical condition (eg, diabetes)	Yes	43	13.4%
	No	277	86.6%

sleepers. Additionally, 135 participants (42.2%) came from families with a history of family problems. Regarding medical conditions, 40 children (12.5%) suffered from constipation, and 42 (13.1%) had a history of urinary tract infections. Notably, 196 participants (61.3%) had a family history of enuresis, suggesting a genetic link. Lastly, 43 children (13.4%) had chronic or medical conditions, such as diabetes or neurological disorders.

Table 2 Bivariate Analysis of Factors Associated with Nocturnal Enuresis (N = 320)

Variable	Category	Yes (n = 102)	No (n = 218)	P-value
Child Age (years)	6–8	79 (77.5%)	106 (48.6%)	<0.001
	9–11	18 (17.6%)	83 (38.1%)	
	12–14	5 (4.9%)	29 (13.3%)	
Sex	Male	75 (73.5%)	64 (29.4%)	<0.001
	Female	27 (26.5%)	154 (70.6%)	
Residence	Urban	46 (45.1%)	119 (54.6%)	0.113
	Rural	56 (54.9%)	99 (45.4%)	
Caregiver Relationship	Mother	82 (80.4%)	148 (67.9%)	0.122
	Father	4 (3.9%)	15 (6.9%)	
	Grandparents	12 (11.8%)	36 (16.5%)	
	Other relatives	4 (3.9%)	19 (8.7%)	
Education Level	No formal education	82 (80.4%)	127 (58.3%)	<0.001
	Primary/Secondary	13 (12.7%)	78 (35.8%)	
	Higher education	7 (6.9%)	13 (6.0%)	
Caregiver's Working Status	Employed	33 (32.4%)	82 (37.6%)	0.361
	Unemployed	69 (67.6%)	136 (62.4%)	
Number of Siblings	Two or fewer	25 (24.5%)	48 (22.0%)	0.621
	More than two	77 (75.5%)	170 (78.0%)	
Monthly Household Income	\$150 or less	32 (31.4%)	70 (33.5%)	0.707
	More than \$150	70 (68.6%)	145 (66.5%)	
Sleep pattern	Light	44 (43.1%)	159 (72.9%)	< 0.001
	Deep	58 (56.9%)	59 (27.1%)	
Drink before bedtime	Yes	83 (81.4%)	113 (51.8%)	<0.001
	No	19 (18.6%)	105 (48.2%)	
Family problems	Yes	81 (79.4%)	135 (61.9%)	0.002
	No	21 (20.6%)	83 (38.1%)	
Constipation	Yes	21 (20.6%)	19 (8.7%)	0.003
	No	81 (79.4%)	199 (91.3%)	
UTI	Yes	26 (25.5%)	16 (7.3%)	<0.001
	No	76 (74.5%)	202 (92.7%)	
Family history of enuresis	Yes	78 (76.5%)	57 (26.1%)	<0.001
	No	24 (23.5%)	161 (73.9%)	
Medical conditions	Yes	9 (8.8%)	34 (15.6%)	0.098
	No	93 (91.2%)	184 (84.4%)	

Bivariate Analysis of Factors Associated with Nocturnal Enuresis

Bivariate analysis was conducted to assess the factors associated with nocturnal enuresis (NE) as presented in Table 2, age was significantly associated with nocturnal enuresis ($p < 0.001$). Most children with NE (77.5%) were aged 6–8 years, compared to 48.6% of those without NE. The occurrence of NE decreased as age increased, with only 4.9% of enuretic children being 12–14 years old, in contrast to 13.3% of nonenuretic children. Sex was also significantly correlated ($p < 0.001$), with males being more frequently affected. Among the enuretic children, 73.5% were male, while females accounted for only 26.5%. Conversely, in the group without NE, 70.6% were women and 29.4% were men. No

significant link was found between place of residence and NE ($p = 0.113$), although a slightly higher percentage of enuretic children lived in rural (54.9%) than in urban areas (45.1%). There was no statistically significant difference in the relationship between caregivers and children ($p = 0.122$). Most enuretic children were looked after by their mothers (80.4%) and their grandparents (11.8%). A significant association was identified between the caregiver's education level and NE ($p < 0.001$). Among enuretic children, 80.4% of caregivers lacked formal education, compared to 58.3% of caregivers of non-enuretic children. Only 6.9% of the caregivers of enuretic children had higher education. There was no statistically significant link between caregiver employment status and enuresis ($p = 0.361$), although a larger proportion of enuretic children had caregivers who were unemployed (67.6%). The number of siblings also did not show a significant association with NE ($p = 0.621$). Most enuretic children (75.5%) had more than two siblings, similar to the non-enuretic group (78.0%).

Finally, monthly household income was not significantly associated with NE ($p = 0.707$). Among enuretic children, 31.4% came from households earning \$150 or less per month, compared to 33.5% of children without NE. The association between behavioral and clinical characteristics and the presence of nocturnal enuresis (NE) was also assessed using the chi-square test. A significant relationship was observed between sleep patterns and NE ($p < 0.001$), with a higher percentage of deep sleepers (56.9%) experiencing NE than light sleepers (43.1%). Conversely, among children without NE, the majority (72.9%) were light sleepers. Furthermore, drinking before bedtime was significantly linked to NE ($p < 0.001$); 81.4% of children with NE reported consuming drinks before sleeping, in contrast to 51.8% of children without NE. Family issues were also significantly associated with NE, with 79.4% of children with NE reporting such problems compared to 61.9% of those without NE ($p = 0.002$). Constipation was more prevalent among children with NE (20.6%) than among those without (8.7%), showing a significant difference ($p = 0.003$). Similarly, urinary tract infections (UTIs) were more common in the enuretic group (25.5%) than in the non-enuretic group (7.3%), with a strong statistical association ($p < 0.001$). A family history of enuresis was strongly associated with the condition, as 76.5% of children with NE had a family history compared to only 26.1% in the non-NE group ($p < 0.001$). Although chronic or medical conditions, such as diabetes and neurological disorders, were more prevalent in the non-NE group (15.6%) than in the NE group (8.8%), this difference was not statistically significant ($P = 0.098$).

Table 3 Multivariate Analysis of Factors Associated with Nocturnal Enuresis (N = 320)

Variable	B	P-value	AOR (95% CI)
Child's Age Group (vs 12–14 years)			
6–8 years	1.442	0.001	4.228 (1.768–10.113)
9–11 years	1.554	0.018	4.729 (1.303–17.166)
Sex (Male vs Female)	1.865	0.000	6.456 (3.041–13.709)
Educational Level (vs Higher)			
No formal education	1.272	0.008	3.567 (1.385–9.185)
Primary/Secondary	-0.360	0.633	0.698 (0.159–3.060)
Sleep Pattern (Light vs Deep)	-1.772	0.000	0.170 (0.077–0.377)
Drinks Before Bedtime (Yes vs No)	1.516	0.001	4.555 (1.925–10.777)
Family Problems (Yes vs No)	1.319	0.002	3.742 (1.617–8.659)
Constipation (Yes vs No)	1.742	0.002	5.708 (1.907–17.084)
Family History (Yes vs No)	2.310	0.000	10.076 (4.658–21.800)
UTI (Yes vs No)	1.976	0.000	7.211 (2.542–20.451)

Multivariate Analysis of Factors Associated with Nocturnal Enuresis

After controlling potential confounding variables, several factors were found to be significantly associated with nocturnal enuresis. As shown in Table 3, children aged 6–8 years and 9–11 years had over four times the risk of developing nocturnal enuresis compared to children aged 12–14 years (AOR = 4.228, 95% CI: 1.768–10.113, $p=0.001$; AOR = 4.729, 95% CI: 1.303–17.166, $p=0.018$).

The odds of having nocturnal enuresis among boys were over six times higher than those among girls (AOR=6.456, 95% CI: 3.041–13.709, $p<0.001$). Children whose caregivers had no formal education had 3.6 times higher odds of enuresis than those whose caregivers had higher education (AOR = 3.567, 95% CI: 1.385–9.185, $p=0.008$). However, primary or secondary education was not significantly associated with the outcome ($p=0.633$).

Children with light sleep had an 83% lower risk of developing enuresis than those with deep sleep (AOR = 0.170, 95% CI: 0.077–0.377, $p<0.001$). Children who consumed drinks before sleep had 4.6 times higher odds of enuresis (AOR = 4.555, 95% CI: 1.925–10.777, $p=0.001$), and children with family problems had 3.7 times higher odds of enuresis (AOR = 3.742, 95% CI: 1.617–8.659, $p=0.002$). Children with constipation were 5.7 times more likely to have enuresis (AOR = 5.708, 95% CI: 1.907–17.084, $p=0.002$), children with urinary tract infections had over seven times increased odds (AOR = 7.211, 95% CI: 2.542–20.451, $p<0.001$), and children with a family history of enuresis were ten times more likely to be affected (AOR = 10.076, 95% CI: 4.658–21.800, $p<0.001$).

Discussions

Prevalence of Nocturnal Enuresis

The current study found that the overall prevalence of nocturnal enuresis (NE) among children aged 6–14 years in Mogadishu, Somalia was 31.9%. Which is in line with study done in Saudi Arabia 31.2%.¹⁸ In this study, the prevalence of nocturnal enuresis was higher than study done in Ethiopia 26.6%,⁷ 27.9% in the Dominican Republic,¹⁹ 27.9% in Palestine.²⁰ The observed variations may be attributed to differences in study design, sample characteristics, cultural practices related to toilet training, health-seeking behavior, and environmental conditions across different countries. Additionally, discrepancies in diagnostic criteria and parental reporting patterns may contribute to the observed differences. The relatively high prevalence identified in the current study indicates that nocturnal enuresis constitutes a significant yet under-recognized health issue among Somali children.

Sociodemographic, Behavioral and Medical Factors

This study identified several factors significantly associated with nocturnal enuresis. Younger age was strongly associated with increased NE odds. Children aged 6–8 and 9–11 years were 4.2 times (AOR = 4.228, 95% CI: 1.768–10.113) and 4.7 times (AOR = 4.729, 95% CI: 1.303–17.166) more likely, respectively, to experience NE than those aged 12–14 years. A similar study found that age is a significant factor in enuresis, with its prevalence decreasing with increasing age.²¹

Reflecting the natural developmental course of bladder control, where younger children may not yet have fully developed body systems to control urination at night. Male gender was another strong predictor of NE in our study (AOR = 6.456, 95% CI: 3.041–13.709), as prevalence of enuresis is more common in males than females. A similar study was conducted in Asturias, Spain.²² This difference between boys and girls may be because boys develop more slowly. This includes their ability to control their bladders and wake up from sleep. Parental education also plays a significant role. Children whose caregivers had no formal education had a 3.6-fold increased risk of NE (AOR = 3.567, 95% CI: 1.385–9.185) compared to those whose caregivers had higher education. Similar associations found Pattern and risk factors for nocturnal enuresis among children in Aseer region, southwestern Saudi Arabia.²³ This may be due to limited awareness of toilet training practices, and delayed health-seeking behavior. Drinking fluids before bedtime was associated with 4.6 times increased odds of NE (AOR = 4.555). Similar findings were reported in Egypt.²⁴ Children from families with psychosocial stress had a significantly higher likelihood of NE (AOR = 3.742). Findings in Egypt support this association.²⁵ Children with light sleep had 83% lower odds of nocturnal enuresis compared to deep sleepers (AOR = 0.170, 95% CI: 0.077–0.377, $p<0.001$). Suggesting that lighter sleepers may wake more easily to bladder signals.²⁶ From

a medical standpoint, constipation (AOR = 5.708, 95% CI: 1.907–17.084) and urinary tract infections (AOR = 7.211, 95% CI: 2.542–20.451) were both significantly associated with NE similar study done in Egypt.²⁷ Finally, family history of enuresis was the strongest predictor, with affected children being 10 times more likely to experience NE (AOR = 10.076, 95% CI: 4.658–21.800).¹⁰

Study Limitations

This study has several limitations. First, the use of convenience sampling from two public hospitals in Mogadishu may constrain the generalizability of the findings to children in other regions or those not seeking hospital care. Second, the cross-sectional design precluded the establishment of causal relationships between nocturnal enuresis and associated factors. The study did not differentiate between primary and secondary nocturnal enuresis, as many caregivers were unfamiliar with these definitions and could not reliably recall continence history, which may have restricted the assessment of potentially distinct risk profiles between the two types of NE.

Furthermore, some behavioral and sleep-related information was obtained through caregiver-reported questionnaire items rather than standardized instruments, which may limit comparability with studies utilizing validated tools and introduce the potential for reporting bias. Despite these limitations, this study had several strengths. The diagnosis of nocturnal enuresis was not solely reliant on the questionnaires. Children underwent clinical assessment, and the diagnosis was confirmed by a pediatrician using standardized criteria, with additional investigations conducted only when clinically indicated, in accordance with international recommendations. Notably, this study is among the first to provide primary data on nocturnal enuresis in Mogadishu, thereby offering valuable baseline evidence for future research, clinical practice, and public health planning in the country.

Conclusion

This study found a high prevalence of nocturnal enuresis (NE) among children aged 6 to 14 years in Mogadishu, Somalia, with an overall rate of 31.9%. Several factors were significantly associated with NE, including younger age, male gender, caregiver's lack of formal education, deep sleep patterns, drinking fluids before bedtime, family problems, constipation, urinary tract infections, and a family history of enuresis. The strongest predictors were family history of enuresis and urinary tract infections, suggesting both genetic and medical contributions to the condition. In light of these findings, targeted interventions should be implemented to reduce the incidence of nocturnal enuresis.

Recommendations

The researchers recommend to the Ministry of health to roll out health education and awareness campaigns through media, community outreach, and brochures. These campaigns should address health seeking behavior, proper toilet training practices, management of stressors within the household, and discourage harsh disciplinary practices.

Further research is recommended to build on the findings of this study. Larger multi-center studies are needed to validate these findings across Somalia. We also recommend qualitative research to explore cultural beliefs, caregiver attitudes, and behavioral factors related to nocturnal enuresis.

Data Sharing Statement

The data that support the conclusions of this study are available from the two corresponding authors, Arif Sayid Ali Mayow and Dr. Abdifatah Hassan Elmi, upon reasonable request.

Ethical Approval

This study was conducted in accordance with the ethical principles of the Declaration of Helsinki. The Ethical Review Board of the National Institute of Health (NIH), Somalia, granted ethical approval for this study (Approval No: NIH/IRB/06/JAN/2025). Before enrollment, written informed consent was obtained from the parents or legal guardians of all the participating children.

Furthermore, children aged 6–14 years provided assent after receiving age-appropriate explanations of the study procedures to ensure their comprehension and voluntary involvement. Throughout the study, the confidentiality and privacy of all participants were diligently protected.

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Author Contributions

AS and AH: Conceptualization, data curation, formal analysis, methodology, software, supervision, validation, writing – original draft, and writing – review & editing. MAD, MSM, MIA, MAS, and MBM: Data curation, methodology, software, supervision, validation, writing – original draft, and writing – review & editing. FAS: Data curation, formal analysis, investigation, supervision, validation, visualization, and writing – review & editing. All authors have substantially contributed to the work presented, through the initial conception, study design, execution, data collection, analysis, or interpretation. They actively participated in drafting, revising, or critically evaluating the manuscript, provided their final approval for the version to be published, concurred on the journal for submission, and accepted accountability for all facets of the work.

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Disclosure

The authors declare no conflicts of interest associated with this study.

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