International Journal of Contemporary Pediatrics
Afrin T et al. Int J Contemp Pediatr. 2026 Mar;13(3):386-391
http://www.ijpediatrics.com
pISSN 2349-3283 | eISSN 2349-3291

DOI: https://dx.doi.org/10.18203/2349-3291.ijcp20260396

Original Research Article

Outcome of desmopressin therapy on nocturnal enuresis in 6-15 years age group children of selected schools in Dhaka City

Tanjila Afrin[1]*, M. Masum Billah[1], M. Iqbal Hossain[2], Jannatul Fardous[3], M. Anwar Hossain Khan[1], M. Kabir Alam[1], Habiba Jesmin[1], Rezwana Ashraf[1]

[1]Department Pediatric Nephrology, National Institute of Kidney Diseases & Urology, Dhaka, Bangladesh
[2]Upazila Health Complex, Ghatail, Tangail, Bangladesh
[3]Shaheed Monsur Ali Medical College and Hospital, Dhaka, Bangladesh
[4]Department of General Pediatric, Sir Salimullah Medical College Mitford Hospital, Dhaka, Bangladesh

Received: 24 December 2025
Accepted: 02 February 2026

***Correspondence:**
Dr. Tanjila Afrin,
E-mail: tanjila.afrin2917@gmail.com

ABSTRACT

Background: Nocturnal enuresis (bedwetting) is a common pediatric condition affecting children's physical, emotional, and social well-being. Desmopressin, a synthetic antidiuretic hormone analogue, is widely used to reduce nocturnal urine production. However, evidence on its effectiveness in school-aged children in Dhaka City remains limited. To evaluate the outcomes of Desmopressin therapy combined with behavioral interventions compared to behavioral therapy alone in children aged 6-15 years with primary monosymptomatic nocturnal enuresis.
Methods: A quasi-experimental study was conducted in two selected schools and the Department of Pediatric Nephrology, NIKDU, Dhaka, from February 2022 to July 2023. A total of 104 children meeting inclusion criteria were enrolled and divided into two groups: Group A (Desmopressin + behavioral therapy, n=52) and Group B (behavioral therapy only, n=52). Baseline assessment included demographics, sleep fragmentation, number of wet nights, laboratory investigations, and ultrasonography of the KUB region. Follow-up was performed at 2 weeks, 12 weeks, and 3 months post-treatment to assess reduction in wet nights, initial success, relapse, and adverse effects. Data were analyzed using SPSS v22; $p<0.05$ was considered significant.
Results: Demographics and baseline characteristics were comparable between groups. Both groups demonstrated a decrease in wet nights per week; however, Group A showed significantly greater improvement at week 12 (2.26±1.17 vs. 2.82±1.15, $p=0.002$) and at the end of the study (1.79±1.18 vs. 2.61±1.06, $p<0.001$). Initial treatment success was similar (52.1% vs. 47.1%, $p=0.698$), while relapse rates were higher in Group A (68.0% vs. 31.0%, $p=0.070$), although not statistically significant. Only mild adverse effects were observed in Group A (headache 6.4%, nausea 4.3%, vomiting 4.3%); no adverse effects were reported in Group B. Laboratory and ultrasonographic parameters remained normal in both groups.
Conclusion: Desmopressin combined with behavioral therapy provides faster and more pronounced reduction in wet nights compared to behavioral therapy alone, while both interventions are safe and well tolerated. These findings support combined therapy for rapid symptom control and behavioral therapy as a reliable long-term management strategy for pediatric nocturnal enuresis.

Keywords: Nocturnal enuresis, Desmopressin, Behavioral therapy, Pediatric, Bedwetting, Dhaka city

INTRODUCTION

Nocturnal enuresis, commonly known as bedwetting, remains one of the most prevalent pediatric concerns worldwide, affecting children's physical, emotional, and social well-being. Although considered a developmental condition, persistent enuresis beyond the age of five often requires evaluation and treatment, especially when it

disrupts daily functioning or leads to psychological distress.[1-3] In urban settings such as Dhaka City, increasing academic pressure, reduced sleep duration, and limited access to structured behavioral interventions may further influence its prevalence and severity among school-going children. Desmopressin, a synthetic analogue of the antidiuretic hormone vasopressin, is widely recognized as a first-line pharmacological therapy for nocturnal enuresis. Its primary mechanism-reducing nocturnal urine production-helps many children achieve dry nights more consistently. The medication is favored for its rapid onset of action, ease of administration, and generally favorable safety profile.[4,5] However, treatment outcomes can vary based on age, adherence, dosage, fluid intake regulation, and underlying physiological factors.

In Bangladesh, particularly in metropolitan areas like Dhaka, there is limited published data assessing the effectiveness of desmopressin among school-aged children. Despite its frequent use in clinical practice, systematic evaluation in community-based settings such as schools remains insufficient.[6,7] Understanding treatment outcomes in this demographic is critical because school-aged children are often more sensitive to the psychosocial consequences of bedwetting and may benefit significantly from timely therapy.

Assessing the impact of desmopressin therapy in selected schools also provides a unique opportunity to explore patterns of response across various socio-demographic backgrounds. School environments often allow for better monitoring, easier follow-up, and access to a diverse sample of children from different neighborhoods of Dhaka City. Such a study can help identify predictors of good therapeutic response and barriers that may influence treatment success.

Objective

Therefore, this study aims to evaluate the outcomes of desmopressin therapy on nocturnal enuresis among children aged 6–15 years in selected schools of Dhaka City.

METHODS

Type of study

This was a quasi-experimental study.

Study place

The study was conducted in two selected schools in Dhaka City-Government Jamila Aynul Anando School and College, Mohammadpur and Udayan Residential School and College, Mohammadpur-as well as in the Department of Pediatric Nephrology, National Institute of Kidney Diseases & Urology (NIKDU), Dhaka, Bangladesh.

Study duration

The study was carried out from February 2022 to July 2023, covering a total duration of 18 months.

Study population

The study population consisted of children aged 6–15 years with nocturnal enuresis from the two selected schools in Dhaka City.

Inclusion criteria

School-going children with primary monosymptomatic nocturnal enuresis, bed-wetting frequency ≥ 3 nights per week.

Exclusion criteria

Parents unwilling to participate, known anatomical abnormalities of the urinary tract, children with daytime urinary symptoms, active UTI.

Bowel dysfunction, endocrine, neurological or psychiatric disorders, hypertension, or renal disease, children previously treated with medical therapy or alarm therapy

Sample size

After placing values in the formula, the estimated sample size was 47 participants in each group.

Sampling method

A non-randomized purposive sampling technique was used.

Study variables

Baseline and clinical characteristics

Age, gender, Family history, number of enuretic siblings, birth order, Parents' educational status, occupation, monthly income, Night-time water intake habits, Intake of tea/coffee/dairy products at night, Sleep fragmentation, Number of wet nights per week

Laboratory variables

Routine urine examination and culture sensitivity, random blood sugar, serum creatinine, serum electrolytes, serum calcium, ultrasonogram of KUB region with MCC and PVR.

Outcome variables

Reduction in bed-wetting frequency, relapse of bed-wetting, adverse effects of desmopressin.

Study procedure

Out of 1,250 children screened, 150 met the preliminary criteria. After laboratory assessment, 46 were excluded, leaving 104 children who fulfilled the inclusion criteria. Informed written consent was obtained from parents and assent from children aged above 10 years. Detailed history-taking, physical examination, and necessary investigations (urinalysis, RBS, serum electrolytes, serum creatinine, serum calcium, and USG of KUB with MCC and PVR) were performed. Constipation was evaluated using Rome-IV criteria, and psychological assessment was performed using DSM-V for autism and ADHD. IQ was assessed with the Stanford–Binet scale. Voiding frequency, bladder capacity, and nocturnal polyuria were recorded using voiding and bladder diaries. Participants were divided into two groups.

Group A (Experimental)

Desmopressin+behavioral therapy (n=52).

Group B (Control)

Behavioral therapy only (n=52).

Both groups underwent a 2-week observation period before initiation of therapy. Parents were instructed on fluid restriction (30 ml/kg/day), measurement of functional bladder capacity, and maintaining voiding diaries. During the initial two weeks, 5 children from Group A and 3 from Group B dropped out. Training sessions were provided to improve adherence to instructions.

Group A received desmopressin sublingual tablets (120 mcg) one hour after the evening meal and two hours before bedtime, with strict fluid restriction. Group B received only behavioral therapy, including regular voiding schedules, adequate hydration during daytime, limited evening fluid intake, proper toilet posture, bowel habit correction, physical activity, and positive reinforcement.

Follow-up assessments were conducted during the observation period, at 2 weeks of therapy, at 3 months, and again 3 months after cessation of therapy. Desmopressin dosage was tapered during early follow-up. The outcomes, including initial success, relapse, and adverse effects, were documented.

Data processing and analysis

Data analysis was performed using SPSS version 22 (SPSS Inc., Chicago, IL). Results were expressed as mean±standard deviation for numerical variables and as frequencies or percentages for categorical variables. Statistical comparisons were made using the unpaired Student's t-test and Chi-square test. A p value<0.05 was considered statistically significant.

Ethical considerations

Ethical approval was obtained from the Ethical Committee of NIKDU, and permission was taken from the relevant institutions. Participants and their guardians were informed about the purpose, procedure, benefits, and risks of the study. Confidentiality was ensured, and participants had the right to withdraw at any point without consequence. Appropriate medical care was assured for any study-related complications.

RESULTS

The demographic profile of the children was comparable between the two groups. In group A, 23.4% were aged 6–7 years, 40.4% were 7–10 years, and 36.2% were 11–15 years, while in group B, the corresponding proportions were 30.6%, 49.0%, and 20.4% (p=0.226). Gender distribution was also similar, with 48.9% males and 51.1% females in Group A, compared to 59.2% males and 40.8% females in Group B (p=0.423) (Table 1). P value was measured by Chi-Square test. Data were represented with frequency (%) and within parenthesis percentage over column in total.

Assessment of sleep fragmentation showed that most participants in both groups experienced uninterrupted sleep. In Group A, 63.8% had no fragmentation, 23.4% were awakened once, and 12.8% twice. Similarly, in Group B, 69.4% had no fragmentation, 20.4% were awakened once, and 10.2% twice. The differences between the groups were not statistically significant (p = 0.839), indicating comparable sleep patterns during the study. Table 2. The frequency of wet nights per week decreased in both groups over the study period. At baseline, Group A and Group B had similar wet night frequencies (5.49±1.64 vs. 5.61±1.62, p=0.719). By week 2, both groups showed improvement (3.15±1.53 vs. 3.45±1.49, p=0.333). At week 12, Group A had significantly fewer wet nights than Group B (2.26±1.17 vs. 2.82±1.15, p = 0.002), and this difference persisted at the end of the study (1.79±1.18 vs. 2.61±1.06, p<0.001), indicating better long-term improvement in Group A (Table 3).

The analysis of treatment outcomes showed comparable initial success rates between the two groups, with 52.1% in Group A and 47.1% in Group B, reflecting no significant difference. Relapse rates were higher in Group A (68.0%) than in Group B (31.0%), although this difference approached but did not reach statistical significance. Overall, the findings suggest similar initial effectiveness, with a trend toward lower relapse in group B (Table 4). Only a few mild adverse effects were observed among the participants. In group A, 6.4% experienced headache, while 4.3% reported nausea and another 4.3% had vomiting. In contrast, no adverse effects were reported in group B. However, the differences between the groups were not statistically significant, indicating that both treatments were generally

well tolerated (Table 5). The laboratory assessment showed no significant differences between Group A and Group B across all evaluated parameters. Routine urine examinations revealed normal findings in both groups, with no presence of protein, glucose, pus cells, RBCs, or bacterial growth. Serum electrolytes, including sodium, potassium, chloride, and TCO_2, were comparable between the groups. Similarly, serum creatinine, RBS, and calcium levels showed no statistical variation. Ultrasonographic measurements of the KUB region were also nearly identical, indicating no meaningful differences between the two groups (Table 6).

Table 1: Demographic profile of the children (n=96).

Variable	Group A (n=47)	Group B (n=49)	P value
Age (in years)			
6-7	11 (23.4)	15 (30.6)	0.226
7-10	19 (40.4)	24 (49.0)	
11-15	17 (36.2)	10 (20.4)	
Gender			
Male	23 (48.9)	29 (59.2)	0.423
Female	24 (51.1)	20 (40.8)	

Table 2: Fragmentation of sleep at night (n=96).

Sleep fragmentation	Group A (n=47)	Group B (n=49)	P value
2 times	6 (12.8)	5 (10.2)	
1 time	11 (23.4)	10 (20.4)	0.839
None	30 (63.8)	34 (69.4)	

Table 3: Wet night per week by trial period and end of the study (n=96).

Period (w)	Group A (n=47)	Group B (n=49)	P value
	Mean±SD	**Mean±SD**	
Status before treatment (W_0)	5.49±1.64	5.61±1.62	0.719
End of treatment (W_2)	3.15±1.53	3.45±1.49	0.333
End of treatment (W_{12})	2.26±1.17	2.82±1.15	0.002
End of the study	1.79±1.18	2.61±1.06	<0.001

Table 4: Initial success & relapse by group (n=96).

	Group A (n=47)	Group B (n=49)	P value
Initial success			
Yes	25 (52.1%)	21 (47.1%)	0.698
No	22 (47.9%)	28 (52.9%)	
Relapse			
Yes	15 (68.0%)	7 (31.0%)	0.070
No	10 (32.0%)	14 (69.0%)	

Table 5: Adverse effect of the treatment of the patients (n=96).

Adverse effect	Group A (n=47)	Group B (n=49)	P value
Headache	3(6.4)	0	
Nausea	2(4.3)	0	1.000
Vomiting	2(4.3)	0	

Table 6: Laboratory assessment of two groups (n=96).

Variables	Group A	Group B	P value
Routine examination of urine			
Specific gravity	1.015±0.005	1.017±0.004	0.123
Presence of protein (nil)	(0)	(0)	
Presence of glucose (nil)	(0)	(0)	

Continued.

Variables	Group A	Group B	P value
Presence of pus cells (>2/ hpf)	(0)	(0)	
RBC (>1/ hpf)	(0)	(0)	
Urine C/S (no growth)	(0)	(0)	
Serum electrolytes			
Na^+	139.22±1.64	139.57±2.08	0.407
K^+	3.95±0.27	4.02±0.23	0.238
Cl^-	100.67±2.39	100.65±1.71	0.957
TCO_2	24±1.7	25±1.2	0.834
Serum creatinine	0.54±0.11	0.57±0.12	0.303
RBS (mmol/l)	6.07±0.47	6.17±0.48	0.328
Serum Ca^{2+} (mg/dl)	9.8±0.02	9.5±0.08	0.428
USG of KUB region (size in cm)	9.6±0.04	9.4±0.02	0.413

DISCUSSION

The demographic similarity between the groups ensures that differences in outcomes are attributable to the interventions rather than baseline characteristics. The age and gender distribution in our study align with previous reports, highlighting that nocturnal enuresis is most prevalent in children aged 6–10 years with a slight male predominance.[8,9] Sleep fragmentation did not differ significantly between the groups, consistent with literature suggesting that most children with primary enuresis do not have disrupted sleep patterns, although frequent awakenings may exacerbate bedwetting in certain cases.[7,10] The frequency of wet nights decreased significantly in both groups over the study period. The combination of Desmopressin and behavioral therapy (Group A) demonstrated superior long-term reduction in wet nights compared to behavioral therapy alone (Group B). This finding aligns with studies showing that Desmopressin accelerates symptom improvement when added to behavioral interventions. Although initial success rates were similar, relapse was higher in Group A, consistent with reports that Desmopressin discontinuation can lead to recurrence of symptoms.[11] Behavioral therapy alone showed slightly lower relapse, indicating that non-pharmacological strategies may provide more sustained behavioral adaptation, though the difference was not statistically significant. Both treatments were well tolerated, with only minor adverse effects in Group A, confirming the safety of short-term desmopressin use in combination with behavioral interventions.[12] Laboratory and ultrasonographic assessments remained normal across both groups, supporting the absence of systemic side effects and validating the safety profile.

CONCLUSION

Desmopressin combined with behavioral therapy was more effective in reducing the frequency of wet nights compared to behavioral therapy alone, while both interventions were safe and well tolerated. Laboratory parameters and sleep patterns remained normal, confirming treatment safety. These findings support the use of combined therapy for rapid symptom control, with behavioral therapy offering a reliable long-term management option for pediatric nocturnal enuresis.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Austin PF, Bauer SB, Bower W, Chase J, Franco I. The standardization of terminology of lower urinary tract function in children and adolescents: Update report from the standardization committee of the International Children's Continence Society. Neurourol Urodyn. 2016;35(4):471-81.
2. Bauer SB, Austin PF, Rawashdeh YF, de Jong TP, Franco I, Siggard C, Jorgensen TM. International Children's Continence Society's recommendations for initial diagnostic evaluation and follow-up in congenital neuropathic bladder and bowel dysfunction in children. Neurourol Urody. 2012;31(5):610-4.
3. Bauer SB, Austin PF, Rawashdeh YF, de Jong TP, Franco I, Siggard C. International Children's Continence Society's recommendations for initial diagnostic evaluation and follow-up in congenital neuropathic bladder and bowel dysfunction in children. Neurourol Urodynam. 2012;31(5):610-4.
4. Butler RJ, Golding J, Northstone K, ALSPAC Study Team. Nocturnal enuresis at 7.5 years old: prevalence and analysis of clinical signs. BJU Int. 2005;96(3):404-10.
5. Coyne KS, Wein A, Nicholson S, Kvasz M, Chen CI, Milsom I. Comorbidities and personal burden of urgency urinary incontinence: a systematic review. Int J Clin Pract. 2013;67(10):1015-33.
6. Dossche L, Walle JV, Van Herzeele C. The pathophysiology of monosymptomatic nocturnal enuresis with special emphasis on the circadian rhythm of renal physiology. European J Pediat. 2016;175(6):747-54.

7. Dhondt K, Raes A, Hoebeke P, Van Laecke E. Abnormal sleep architecture and refractory nocturnal enuresis. J Urol. 2009;182(4S):1961-6.
8. Eller DA, Austin PF, Tanguay S, Homsy YL. Daytime functional bladder capacity as a predictor of response to desmopressin in monosymptomatic nocturnal enuresis. European Urol. 1998;33(3):25-9.
9. Ferrara P, Franceschini G, Bianchi Di Castelbianco F, Bombace R, Villani A, Corsello G. Epidemiology of enuresis: a large number of children at risk of low regard. Italian J Pediat. 2020;46(1):128.
10. Fera P, Lelis MA, Glashan RD, Pereira SG, Bruschini H. Desmopressin versus behavioral modifications as initial treatment of primary nocturnal enuresis. Urol Nurs. 2011;31(5):67.
11. Gor RA, Fuhrer J, Schober JM. A retrospective observational study of enuresis, daytime voiding symptoms, and response to medical therapy in children with attention deficit hyperactivity disorder and autism spectrum disorder. J Ped Urol. 2012;8(3);314-7.
12. Hamed SA, Fawzy M, Hamed EA. Behavioral problems in children with primary monosymptomatic nocturnal enuresis. Comp Psych. 2021;104:152208.

Cite this article as: Afrin T, Billah MM, Hossain MI, Fardous J, Khan MAH, Alam MK, et al. Outcome of desmopressin therapy on nocturnal enuresis in 6-15 years age group children of selected schools in Dhaka City. Int J Contemp Pediatr 2026;13:386-91.