

Nocturnal Enuresis in India: Are We Diagnosing and Managing Correctly?

Abstract

Nocturnal enuresis is a common problem affecting school-aged children worldwide. Although it has significant impact on child's psychology, it is always under-recognized in India and considered as a condition which will outgrow with advancing age. Nocturnal enuresis classified as primary or secondary and monosymptomatic or nonmonosymptomatic. Factors that cause enuresis include genetic factors, bladder dysfunction, psychological factors, and inappropriate antidiuretic hormone secretion, leading to nocturnal polyuria. Diagnosis consists of detailed medical history, clinical examination, frequency-volume charts, and appropriate investigations. The frequency-volume chart or voiding diary helps in establishing diagnosis and tailoring therapy. The first step in treating nocturnal enuresis is to counsel the parents and the affected child about the condition and reassure them that it can be cured. One of the effective strategies to manage enuresis is alarm therapy, but currently, it is not easily available in India. Desmopressin has been used in the treatment of nocturnal enuresis for close to 50 years. It provides an effective and safe option for the management of nocturnal enuresis. This review covers the diagnosis and management of nocturnal enuresis and introduces the concept of "bedwetting clinics" in India, which should help clinicians in the thorough investigation of bedwetting cases.

Keywords: Bed wetting, desmopressin, frequency-volume chart, incontinence, nocturnal polyuria voiding diary

Introduction

The International Children's Continence Society (ICCS) defines intermittent incontinence as urine leakage in discrete amounts, occurring during the day and/or at night in children aged ≥ 5 years. Enuresis is intermittent nocturnal incontinence and includes incontinence in discrete episodes while asleep. Nocturnal enuresis is not a condition, but a symptom of an underlying condition.^[1] Enuresis among children and adolescents is common but underreported.^[2] Primary enuresis (enuresis in a child who has never established continence for over 6 months) is the more common form, occurring in 80% of cases. Secondary enuresis is the reemergence of enuresis after continence has been established for at least 6 months.^[3] Primary nocturnal enuresis (PNE) is nocturnal wetting in a child who has never been dry on consecutive nights for longer than 6 months.^[4] Enuresis may occur without lower urinary tract symptoms or a history of bladder dysfunction (monosymptomatic/uncomplicated) or with lower urinary

tract symptoms such as change in voiding frequency, daytime wetting, dribbling, and holding maneuvers (nonmonosymptomatic enuresis). Nocturnal enuresis is three times more common than daytime wetting.^[3]

Impact of Bedwetting

Nocturnal enuresis can cause a feeling of failure and result in chronic stress. It impacts the emotional state, self-esteem, as well as the social development of a child. The fear of being detected by peers at school can cause stress. Children may feel unable to participate in activities and may feel that they are missing out on important aspects of their life.^[5,6] Children with nocturnal enuresis have lower self-esteem, mental health, skills, and poorer relation to their parents and others. Children with PNE have lower self-esteem scores than those with secondary nocturnal enuresis. Importantly, after treatment for nocturnal enuresis, children who become completely dry have higher self-esteem than those with persisting nocturnal enuresis.^[7] Affected children may be at an increased risk of physical and emotional abuse from family members.^[6]

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Epidemiology

The worldwide prevalence of enuresis among children aged 6–12 years is 1.4%–28%.^[2] Indian data on incidence and prevalence are very limited. In general, prevalence of nocturnal enuresis is higher among male children than female children [Figure 1]. The prevalence in India is 7.61%–16.3%.^[8-11] The prevalence is highest in children aged 5–8 years (and 6–8 years) and lowest in children aged 11–12 years (8–10 years).^[9,10] Nocturnal enuresis has been reported in 18.4% of children with sleep problems from a single center in India.^[12]

In rural areas in India, the prevalence is higher among children from poor socioeconomic class compared to those from the upper middle class. A family history of enuresis has been identified in enuretic children from both rural and urban areas. Other risk factors include living with a single parent, living with stepparents, parents with health problems, conflicts at home, stress due to enuresis, scolding, and poor scholastic performance.^[8-10] More enuretic children have a history of birth asphyxia, cesarean birth, low birth weight, and absence of breastfeeding.^[8]

Pathophysiology of Bedwetting

The exact cause for PNE is not clearly known, but several factors may be contributory. Nocturnal polyuria along with abnormal circadian release of antidiuretic hormone (ADH) or arginine vasopressin (AVP) is an important contributor to nocturnal enuresis.^[13-15] Impaired or deficient growth hormone release may inhibit vasopressin release, causing excess urine production at night.^[14] Children with PNE have smaller functional bladder capacities and high bladder instability at night.^[4]

Genetics plays a crucial role in nocturnal enuresis. Children of parents with a history of bedwetting have a higher chance of having bedwetting.^[4] The *ENURI* gene may be involved in the pathophysiology of enuresis.^[14] Children with attention-deficit/hyperactivity disorder (ADHD) have a higher prevalence of bedwetting that compared to those without ADHD.^[4] Inadequate arousal may impair secretion of vasopressin, or vasopressin deficiency may

impair arousal. Either way, there is a failure to awaken in response to a full bladder.^[14] An association between enuresis and obstructive sleep apnea syndrome has also been reported.^[4] Figure 2 summarizes the important pathophysiology of nocturnal enuresis.

Evaluation of Nocturnal Enuresis

History taking

This helps determine whether enuresis is primary or secondary, the pattern of enuresis (number of nights/week and number of episodes/night), and the pattern of nighttime fluid intake. The information related to urinary stream and presence or absence of voiding symptoms, such as slow stream, splitting or spraying, intermittency, hesitancy, straining, and terminal dribble should be recorded, as it will help in indicating the underlying pathologies. A detailed family history should also be obtained. Important questions to be asked are mentioned in Table 1.^[16,17]

Clinical assessment of primary nocturnal enuresis

Physical examination should involve evaluation of the abdomen (check for distended bladder and fecal impaction), rectum, genitalia (identify signs suggestive of sexual abuse which may be the cause of secondary/persistent enuresis), ears, nose, and throat. Neurological assessment is also required.^[3,4] Infection can be detected through urinalysis and urine culture. Secondary enuresis can be identified by testing for elevated serum glucose, blood urea nitrogen, and creatinine levels and low thyroid-stimulating hormone levels.

Assessment of overall growth with the help of growth charts is essential to check for growth retardation due to chronic kidney disease (CKD) or obstructive uropathy.^[16] Abnormalities in renal concentrating abilities should also be evaluated. In general, urodynamic studies are not required.^[3,17] However, urodynamic studies have indicated that bladder wall thickness was significantly higher in patients with detrusor overactivity and maximum detrusor overactivity was seen in children

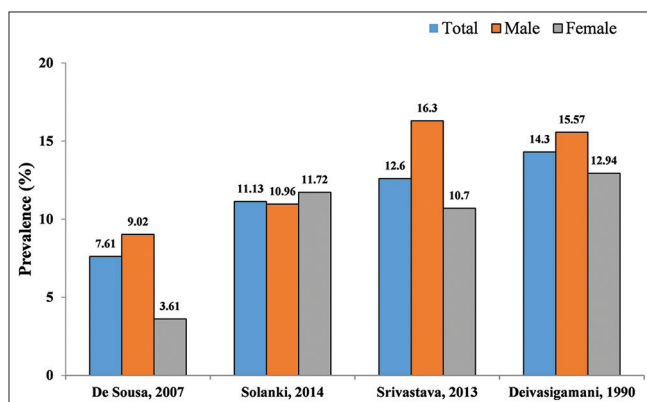


Figure 1: Prevalence of nocturnal enuresis in different studies in India

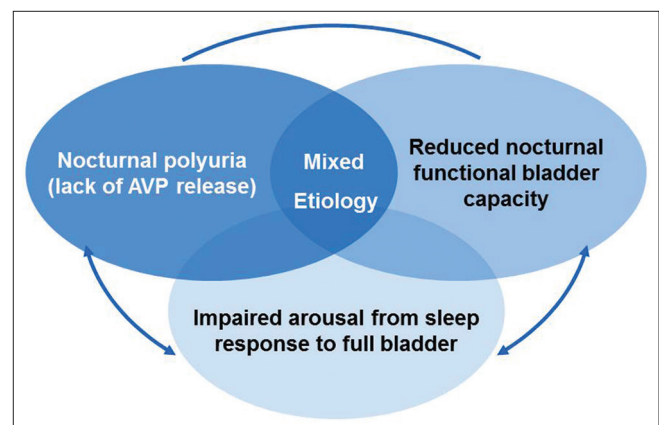


Figure 2: Pathophysiology of primary nocturnal enuresis

with nonmonosymptomatic PNE as compared to monosymptomatic PNE.^[18] Although rare, the possibility of ectopic ureter is to be ruled out, particularly in treatment-resistant cases. Such patients should undergo imaging to get the exact diagnosis.^[19]

Frequency-volume charts/voiding diaries

A baseline record of the enuresis pattern over 2 weeks can assess enuresis severity and give an objective measure of bladder performance.^[3] Vande Walle *et al.* provided a format for a daytime diary which recorded the volume of fluid intake, volume of urine, and occurrence of leakage. The measurement of maximum voided volume should be made over at least 2–4 days. In addition, they describe a bedwetting diary to detect nocturnal polyuria. This diary

records the time of going to bed and waking up, whether it was a dry or wet night, the volume of urine passed at night and in the morning, the weight of the diaper in the morning, and bowel movements.^[17]

Differential Diagnosis

Renal, neurologic, and organic disease states can also cause symptoms of nocturnal enuresis [Table 2].^[19-22] Conditions such as neurogenic bladder, posterior urethral valves (PUV) and chronic kidney diseases can present as transient urethral obstruction, incomplete voiding, spontaneous bladder contractions, and increased urination at night which can be confused with nocturnal enuresis.^[20] It is crucial to differentiate PNE from secondary enuresis or daytime incontinence with a nocturnal component.^[19-22]

Table 1: Questions to be asked while taking history

Factor	Variables
When did bedwetting start	Days or weeks
Previously been dry at night without assistance for 6 months	Yes or no
Bedwetting pattern	Nights/week, times/night, time of bedwetting, awakening after bedwetting Whether volume of urine is large
Daytime symptoms and toileting pattern	Frequency, urgency, wetting Passing urine <4 times a day, poor urinary stream, pain while passing urine, abdominal straining Whether symptoms occur in specific situations Avoiding toilets when at school and other settings Going to the toilet more/less frequently than peers Volume of fluid intake
Fluid intake during the day	Constipation and/or soiling; consistency of stool
Comorbidities	Developmental, attention, or learning difficulties Behavioral, emotional, or family problems Diabetes mellitus

Table 2: Differential diagnosis of nocturnal enuresis

Condition	Differentiating signs/symptoms	Differentiating tests
Congenital abnormality of urinary tract	Urinary tract infections, continuous incontinence or dampness, hydronephrosis	Ultrasound of kidney and bladder; voiding cystourethrogram
Constipation	Fecal incontinence, hard stools, rectal bleeding	Bladder X-ray or ultrasound
Diabetes mellitus	Glycosuria, polyuria; possible weight loss and polydipsia	Urinalysis, fasting serum glucose, glycated hemoglobin
Detrusor overactivity/areflexia	Daytime urinary frequency, urgency; possible daytime incontinence	Urodynamics, bladder ultrasound
Emotional disturbance	Depression and/or defiant activity	Clinical diagnosis
Neurological disorder (spina bifida, epilepsy)	Daytime voiding dysfunction; spina bifida: sacral deformity Epilepsy: at least two unprovoked seizures and may be associated with incontinence	Electroencephalogram, radiograph, computed tomography, or magnetic resonance imaging scan
Urinary tract infection	Fever, dysuria, abdominal pain	Urinalysis and urine culture
Pediatric vesicoureteral reflux	Voiding symptoms, abdominal pain	Renal ultrasound
Chronic kidney disease	Increased urination especially at night, decreased urination, hematuria, puffy face or hands or feet	Renal ultrasound, urine tests, renal function test
Posterior urethral valve	Urethral obstruction, incontinence	Renal ultrasound
Neurogenic bladder	Spontaneous bladder contractions, incontinence	Uroflowmetry Filling cystometry

Treatment of Primary Nocturnal Enuresis

The first step in treating PNE is to educate the child and parents about the condition and provide reassurance regarding spontaneous resolution (annual cure rate is 15%).^[3] Non-pharmacologic and pharmacologic treatment is available. Medication should be initiated in children >5 years only if non-pharmacologic measures fail.^[17,23] Secondary causes, if any, should also be addressed. An evaluation and treatment algorithm is depicted in Figure 3.^[24,25] Figure 4 depicts a comprehensive treatment algorithm.^[17,25,26]

Non-pharmacologic treatment

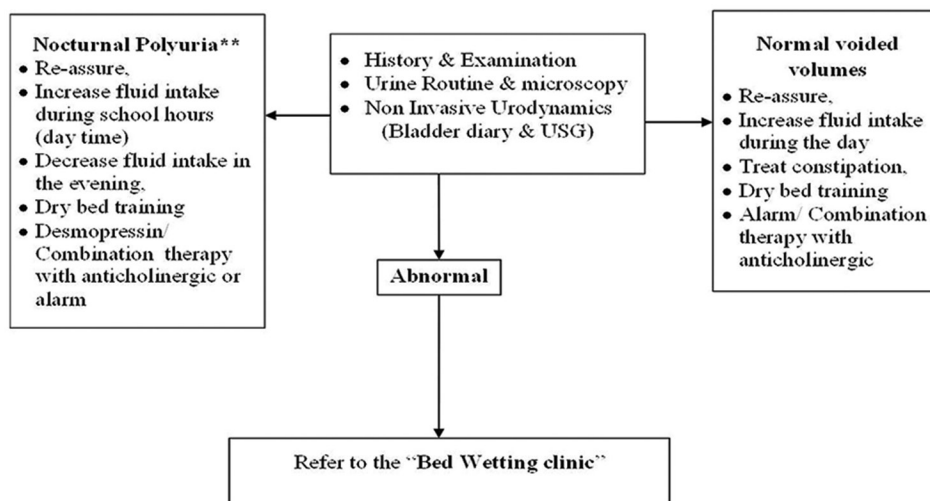
The primary management is through behavioral intervention, including dry-bed training, motivational therapy, classic conditioning therapy using an enuresis alarm system, and hypnotherapy.^[3] Dry-bed training involves waking the child on a schedule of decreasing intervals over several nights. The child is made to change clothes and bedding (if wet), and walk to the toilet if voiding is required.^[23] The efficacy of dry-bed training is variable. Factors favoring a positive outcome for adapted clinical dry-bed training include female gender, mild initial enuresis, current diaper use, no prior anticholinergic treatment, and degree of enuresis after 6 weeks of training.^[7,27]

Motivational therapy involves a combination of providing reassurance, emotional support, eliminating guilt, and rewarding the child for dry nights. Cleaning after bedwetting should not be performed as a punishment. The avoidance of dairy products, fruits juices, and fluids before bedtime is also beneficial. Motivational therapy completely resolves enuresis in up to 25% of cases, and the number of wet nights reduces in up to 70% of children. On failure of

3–6 months of motivational therapy, different management strategies can be tried.^[23]

Alarm therapy with an enuresis alarm is the most effective strategy for curing nocturnal enuresis. Success rates of 66%–70% are reported despite being a difficult treatment modality.^[4] Enuresis alarms should be considered only when behavioral measures are unsuccessful.^[3] Enuresis alarm consists of a sensor device attached to the child's underwear or to a mat under the bed-sheet, and an alarm placed on the bedside or attached to the child's collar. The sensor on the device is activated when bedwetting occurs. The alarm conditions the child to sense a full bladder and awoken from sleep.^[28] Alarm therapy requires treatment for 6–16 weeks and may be more effective in older patients as they are more motivated.^[4] Increased fluid intake before going to bed improves the efficacy of alarm therapy such that more children in the increased fluid intake group have complete resolution of nocturnal enuresis after 2 weeks (39% vs. 24%, $P < 0.05$).^[29] A simple alarm clock can be used as an inexpensive, simple, safe alternative to an enuresis alarm. The child is awakened for voiding at 2–3 h after going to sleep. The efficacy is reported as 62%–77%. Enuresis alarms can be used along with behavioral or pharmacologic therapy. In general, simple behavioral measures are inferior to alarm therapy in terms of number of wet nights and number of children achieving 14 dry nights.^[23,30]

Alarm therapy is advantageous since it provides a real cure with no adverse effects. However, it requires significant parental involvement and sleep disturbance, which could be stressful for child and family.^[27,31] Currently, the availability of alarm devices in India is limited. A simple body-worn alarm is available and other types of alarms can be



**Defined as urine output >130% of expected bladder capacity for age during the night

Figure 3: Enuresis treatment simple algorithm

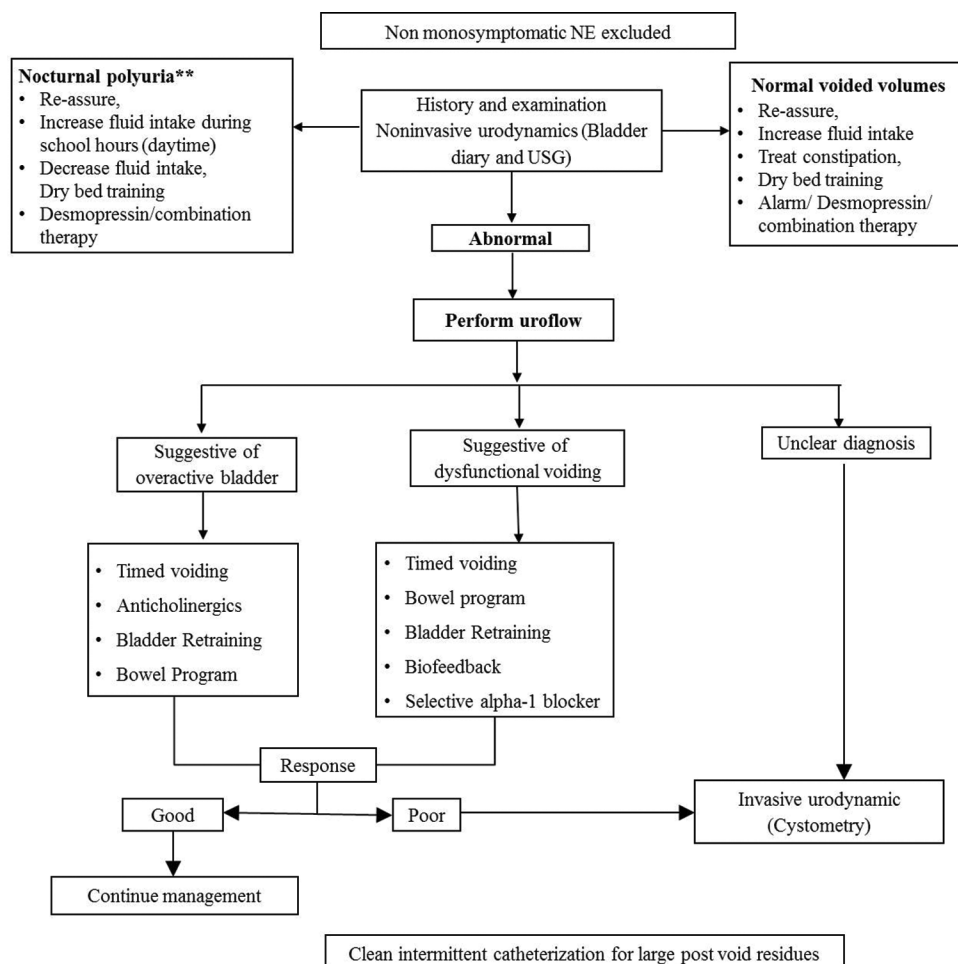


Figure 4: Comprehensive management of functional voiding disorder

imported. However, patient acceptability of these devices is a major limitation.

In Chinese culture, acupuncture is commonly used to treat nocturnal enuresis and is safe and cost-effective as compared to conventional therapy. A recent meta-analysis found that acupuncture improved the cure rate compared to patients receiving Western medicine. Laser acupuncture therapy more effectively reduced the mean number of weekly bedwetting episodes compared to placebo and also increased bladder capacity.^[32] Hypnotherapy appears to be as effective as imipramine and has a lower relapse rate.^[31]

In a systemic review of 56 clinical trials, alarm training has been shown an effective long-term treatment approach in treating nocturnal enuresis. Although alarm therapy is not better than tricyclic therapy, it has a lower relapse rate.^[33] Dry-bed training can achieve fewer wet nights per week compared to the alarm system, with a 58% long-term remission rate after 16 weeks of treatment.^[34] Combination therapy with an enuresis alarm, bladder training, motivational therapy, and pelvic floor muscle training was successful in 87% of patients after 14 weeks and improved functional bladder capacity from 53% to 88%.^[35]

Pharmacotherapy

Pharmacologic therapies for nocturnal enuresis decrease the frequency of enuresis and temporarily resolve symptoms until spontaneous resolution occurs. Commonly used drugs are desmopressin, oxybutynin, and imipramine.^[3,17,23]

Desmopressin

Desmopressin, a synthetic analog of the pituitary hormone AVP, has been used in the treatment of nocturnal enuresis close to 50 years. It increases reabsorption of water by the distal convoluted tubule and collecting tubules in the kidney, thus reducing urine production. The response rate to desmopressin therapy is 60%–70%, and it is well tolerated. Desmopressin is available as a regular tablet and orally disintegrating tablet (ODT), and the response is dose-dependent. Desmopressin should be taken before sleep. Fluid intake must be avoided from 1 h before to 8 h after taking desmopressin, to prevent fluid overload and hyponatremia.^[4,7]

Canadian enuresis and evaluation (CESE) study evaluated the efficacy and safety with the long-term use of desmopressin tablets. In this study, the response rate remained constant

at about 74% with desmopressin treatment and continuous treatment reduced the median number of wet nights from 5.75 to 1.00/week during the observation period of 4 weeks. Increasing the dose from 0.2 to 0.4 mg resulted in a further 31.1% of children responding. 25.4% of patients showed no response, which was attributed to either dropouts, incomplete data from patient diaries, or relapses (relapse was defined as wet for ≥ 2 nights during the 28-day treatment-free period). Only 0.8% patients reported possible drug-related adverse events, and there was no incidence of hyponatremia in this study.^[36] Two double-blind randomized controlled studies have demonstrated that desmopressin significantly reduces wet nights as compared to placebo [Table 3 and Figure 5].^[37,38] Combined pharmacotherapy with desmopressin and oxybutynin produces more rapid results compared to imipramine or desmopressin alone.^[39] Greater compliance with ODT compared to tablet (40% vs. 28%, $P = 0.0425$) resulted in a greater reduction in the number of wet nights per week.^[40] Combination therapy with desmopressin ODT and tolterodine was more efficacious in reducing the number of wet nights and preventing relapse compared to desmopressin ODT alone.^[41]

Long-term (6 months) desmopressin treatment as the first-line therapy in children with monosymptomatic PNE is effective and well tolerated. The reduction in

wet nights in the study by Lottmann was $\geq 50\%$ in ~41% of patients.^[42] Relapse after treatment discontinuation is known to occur.^[39] One strategy to reduce the rate of relapse after discontinuation may be to taper the dose of desmopressin. Two different structured withdrawal regimens for desmopressin ODT resulted in significantly lower relapse rates (39.1% and 42.4%) compared to relapse rates for direct withdrawal (55.3%) and administration of placebo after withdrawal (53.1%) at 12 weeks of follow-up. Abrupt withdrawal was independently associated with a 4-fold higher odds of relapse.^[43]

Desmopressin appears to be well tolerated in children with PNE, irrespective of the age and gender.^[44] Treatment-related adverse events are low, even on long-term treatment. Severity is usually mild to moderate.^[36-42] Older age, fewer wet nights per week before treatment, nocturnal polyuria, higher maximum daytime functional bladder capacity, history of breastfeeding, and lower spot urine osmolality can positively affect the response to desmopressin, while poor birth weight, poor linear growth, low AVP concentration, and the presence of spina bifida occulta negatively affect the response.^[45-49]

The combination of an enuresis alarm with desmopressin may be superior to the use of an alarm alone.^[50] A study in children with monosymptomatic nocturnal enuresis comparing desmopressin alone, alarm alone, and a combination of the two found that the reduction in the number of wet nights was higher with desmopressin alone and the combination. However, the number of relapses was lowest among patients undergoing alarm therapy alone.^[51] The addition of dietary changes to desmopressin was more effective than desmopressin alone (67.2% vs. 58.6% response and 31.1% vs. 46.3% relapse, favoring the combination).^[52] Nasal formulation of desmopressin is not recommended for the use in management of PNE as hyponatremia is more frequently reported when desmopressin administered by nasal spray compared with the tablet formulation. ODT formulation is most preferred formulation for the treatment of PNE with minimal risk of hyponatremia if patient follows the instructions.^[53,54]

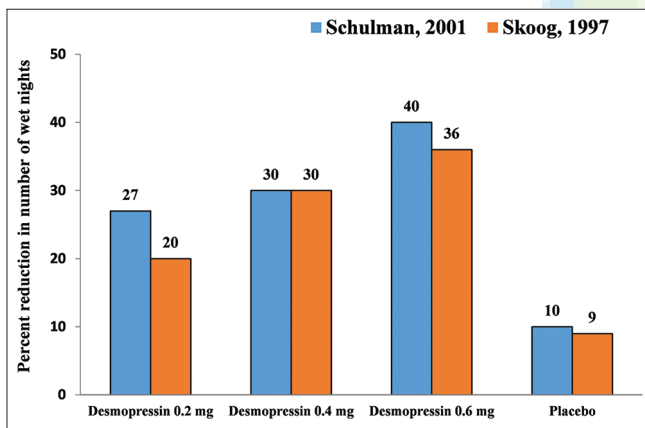


Figure 5: Decrease in number of wet nights after 2 weeks and 6 weeks of treatment with oral desmopressin

Table 3: Clinical trials with desmopressin

Author	Study design	Treatment	Results
Schulman <i>et al.</i> (n=193)	Double-blind, placebo-controlled, randomized, parallel group, multicenter trial	Phase 1: dose ranging for 2 weeks: oral desmopressin (0.2, 0.4 or 0.6 mg) or placebo at bedtime Phase 2: placebo washout for 2 weeks followed by dose titration for 8 weeks	Desmopressin significantly reduced wet nights compared to placebo ~44% of children treated with desmopressin achieved $\geq 50\%$ reduction in the number of wet nights/2 weeks with doses of 0.2 and 0.4 mg Mild-to-moderate adverse effects unrelated to treatment
Skoog <i>et al.</i> (n=141)	Double-blind, placebo-controlled, randomized, parallel group trial	Oral desmopressin (0.2, 0.4, 0.6 mg) or placebo before bedtime	Desmopressin 0.6 mg significantly reduced wet nights compared to placebo ($P < 0.05$) <50% decrease in wet nights was observed in 83%, 79%, 64%, and 61% of patients receiving placebo and 0.2, 0.4, 0.6 mg desmopressin, respectively

Table 4: Do's and don'ts for desmopressin use

Do's	Don'ts
Use of voiding (bladder) diary as advised by your doctor	Drink excess of fluids
Regular follow-up with your doctor	Drinking beverages at night, for example, chocolates, milk, cola, tea, coffee, and cold drinks.
Follow the instructions given by doctor	Use in patients with moderate-to-severe renal disease
Consult the doctor in case of any untoward symptoms, for example, nausea, vomiting, headache, loss of energy, fatigue, restlessness and irritability, muscle weakness, spasms or cramps, excessive drowsiness, decreased serum sodium, weight gain, convulsions	Use when sodium levels are below normal range
Encourage water intake during daytime and restrict the fluid intake in the evening	Use in loose motions, fever, infection, heart ailments, and other conditions requiring treatment with diuretic drugs
Inform the doctor that you are taking desmopressin when you have any hospitalization	Use in children below the age of 5 years
Structured withdrawal (tapering) of desmopressin, leaving the dose constant and increasing daily treatment intervals to every second evening for 2 weeks, twice weekly for 2 weeks, and once weekly for 2 weeks or as per the suggestions given by your doctor	Stopping the treatment with desmopressin suddenly

The important precautions and instructions for the use of desmopressin are given in the form of “Do's and Don'ts” in Table 4.^[55]

Imipramine

Imipramine has a weak anticholinergic effect and nonadrenergic effects. The latter could decrease detrusor muscle activity. The initial dose of imipramine is 25 mg before bedtime. If this is ineffective after 1 or 2 weeks of use, the dose can be increased to 50 or 75 mg daily (depending on age). Following 6 months of treatment with imipramine, the success rate is 15%–50%, but relapse is common after discontinuation. Side effects are usually mild, but overdose can result in serious and potentially lethal effects (ventricular dysrhythmias, seizures, and coma). There is a reluctance to use imipramine due to the narrow toxic/therapeutic ratio.^[3,23]

The International Continence Society (ICS) states that use of imipramine may be associated with cardiac toxicity.^[50] The society also suggests that imipramine and other drugs of the same family have potential cardiotoxic side effects and hence cannot be recommended for the treatment of a nonlethal disorder like enuresis. Although treatment with tricyclic drugs is associated with a decrease of one wet night per week, the lasting cure rate of only 17% restricts the use of these drugs. Only in selected cases (like adolescent boys with ADHD and persistent nocturnal enuresis), imipramine should be considered. The ICS recommendation on use of imipramine is Grade 1C.^[50] The World Health Organization and National Institute for Health and Care Excellence (NICE) guidelines recommend not to use tricyclic antidepressants (e.g., imipramine) as the first-line treatment for bedwetting in children and young people.^[56,57] NICE guidelines also recommend not to offer an anticholinergic combined with imipramine for the treatment of bedwetting in children and young people.^[56]

Table 5: Comparison of efficacy of nonpharmacologic and pharmacologic options for treatment of nocturnal enuresis

Therapy	Response (%)	Relapse rate (%)
Dry-bed training	50	40
Alarm	66	15-50
Motivational therapy	25	5
Desmopressin	60-70	60-80
Imipramine	40-60	82-100
Oxybutynin	47-71	83

Anticholinergic drugs

Anticholinergics such as oxybutynin improve bladder capacity by decreasing uninhibited bladder contractions and decreasing detrusor tone as well as urgency and frequency.^[3] Combination therapy with desmopressin and an anticholinergic provides a more rapid and efficacious response compared to desmopressin alone in children with primary monosymptomatic nocturnal enuresis.^[58]

A summary of treatment options is presented in Table 5.^[3,7,30-50]

Guidelines for the Treatment of Nocturnal Enuresis

There are several guidelines for the management of nocturnal enuresis. However, no India-specific guidelines exist. ICCS recommends taking a proper history and using a voiding chart for primary evaluation. Bladder advice, alarms, and/or desmopressin are the primary treatment option, and therapy-resistant cases could be treated with anticholinergics if constipation is treated or excluded. Anticholinergics could also be an add-on to desmopressin. In case of failure with anticholinergics, imipramine may be used as the last option in complicated cases.^[59]

The ICS recommends the use of oral desmopressin. It is more effective in children with nocturnal polyuria and those with limited number of wet episodes per month. Desmopressin is safe and well tolerated, and although severe water retention, hyponatremia, and convulsions are reported, the frequency is low. Imipramine may cause cardiac toxicity and should thus be considered only in select cases, such as adolescent boys with ADHD and persistent nocturnal enuresis. Oxybutynin may be an option in patients who fail to respond to desmopressin and may be used in combination with desmopressin in cases with suspected detrusor overactivity.^[50] The NICE guidelines recommend against the combination of an anticholinergic with imipramine.^[7] Mathew has summarized Indian context on the management of nocturnal enuresis and recommended some behavioral interventions, desmopressin, alarm therapy as the treatment of choice and tricyclic anti-depressants as a reserved option.^[60] Indian data on these treatment options are very limited though.

Concept of a Bedwetting Clinic

A bedwetting clinic is a highly specialized setup consisting of staff specialized in evaluating and managing bedwetting problems. The team includes urologists, pediatric specialists, nephrologists, pediatricians, psychologists, or psychiatrists and nurses. Bedwetting clinics can help parents whose children suffering from bedwetting and their families. In India, however, the concept of “bedwetting clinic” does not exist. Thus, introduction of a “bedwetting clinic” which would provide a thorough evaluation and management can be a boon for children and ease the distress and frustration associated with this condition. Such clinics can be run on specific day of a week or month. The initial visit can include a detailed evaluation of a child, including the history of bedwetting and explaining the use of voiding diary in details. Nurses or paramedical staff can also be trained on the counseling and use of voiding diary. Parents and child can be counseled on various methods to manage bedwetting. The healthcare professional and parent can together develop a plan of action to stop the bedwetting episodes. Support for the family would continue even after significant progress has been made in stopping bedwetting. Progress would be monitored till the child has significantly more dry nights. It may take around 6 months to stop bedwetting completely, but this time frame varies considerably depending on the child and severity of the problem. At the level of primary care, bedwetting clinics can help in the initial screening, diagnosis, and management of such cases, and at the tertiary care level, it can help in comprehensive assessment of complicated cases with the help of specialists. These clinics can be used as referral centers for the patients seeking treatment and primary care physicians can refer such cases to these centers.

Conclusion

Nocturnal enuresis is a serious problem that affects children as well as their families. The impact of nocturnal

enuresis is under-recognized in India, and data on prevalence in India are very limited. The socioeconomic and cultural settings are vastly different in India, and bedwetting is considered as a taboo. Obtaining an accurate patient history is important as it helps in distinguishing the type of enuresis and its possible cause. A voiding diary facilitates the correct diagnosis. Spending time with the patient for detailed history taking and counseling and discussing the treatment options are of utmost importance. Behavioral therapy is the initial approach; however, if it does not give the desired results, other options should be considered immediately. Alarm usage in India is limited and its availability is a major concern. Pharmacotherapy includes various agents including a new melt formulation of desmopressin. It is necessary to document the treatment response in Indian patients with these medications. A standard treatment algorithm for diagnosis and management should help Indian pediatricians to correctly diagnose and manage patients with bedwetting. Novel concept like “bedwetting clinic” can help these patients suffering silently.

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Conflicts of interest

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