# Clinico-Demographic Profile of Children with Enuresis from a Tertiary Child Psychiatry Centre in Nepal: A Cross-Sectional Study

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## Abstract

### Background

Enuresis is a common presentation and is associated with significant distress to both child and parents. To date, there are no hospital-based studies evaluating enuresis in Nepal. The main objective of the study was to determine the socio-demographic and clinical profile of children with enuresis.

### Methods

It is a cross-sectional observational study conducted among out patients visiting the Child and Adolescent Psychiatry Unit at Kanti Children's Hospital, Kathmandu, Nepal, from February 2024 to July 2024. A total of 2219 cases were screened using the Child and Adolescent Symptom Inventory parent version and diagnosis was based on Diagnostic and Statistical Manual of Mental Disorders (DSM-5).

### Results

Out of 2219 cases screened, 35 cases met the diagnostic criteria of enuresis. The clinic-based prevalence of enuresis was 1.6%. The mean age of diagnosis was 9.63 ± 2.7 years with male to female ratio of 2.1:1. A total of 24 (68.6%) cases were referred by doctors, 20 (57.1 %) cases visited for reasons other than for enuresis and 19 (54.3%) cases had a positive family history of enuresis. A total of 34 cases (97.1%) had primary enuresis and 30 (85.7%) cases were having monosymptomatic symptoms. Psychiatry co-morbidity was found in 15 (42.9 %) cases.

### Conclusion

Enuresis is twice more common in boys compared to girls. Psychiatric co-morbidities are very common in children with enuresis.

### Keywords

Children; Clinical profile; Co-morbidities;Enuresis; Nepal

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## INTRODUCTION

Enuresis is a common presentation in outpatient psychiatric, pediatric, and urology clinics throughout the world [1,2,3]. Enuresis is defined in the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) as repeated voiding of urine into bed or clothes, whether involuntary or intentional, in children aged five years or older. It must occur at least twice weekly for three consecutive months or cause clinically significant distress or impairment, and cannot be explained by a substance or medical condition.[2] The global prevalence of enuresis is 5%–10% among 5-year-olds, 3%–5% among 10-year-olds, and around 1-2% among individuals 15 years or older adolescents, and adults [1,2]. In Nepal, only a few studies on enuresis exist, with one school based study among children aged 11–16 years reporting stress, urge, and nocturnal enuresis at 22.95%, 19.3%, and 3.93%, respectively, while no hospital-based studies on enuresis have been identified.[4] Bedwetting can have a considerable impact on children and families, affecting a child's self-esteem and interpersonal relationships and his or her performance at school [5,6,7,8].

The study aims to identify the sociodemographic and clinical profile of children with enuresis including common co-morbidities and also will be the baseline for further studies on enuresis in the country.

## METHODS

This is a cross-sectional hospital based observational study. The study site was the CAP Unit at KCH, Kathmandu, Nepal. Kanti Children's Hospital (KCH) is the only hospital in the

country with a fully dedicated Child and Adolescent Psychiatry (CAP) Unit. The study period was six months, from February 2024 to July 2024. Ethical approval was obtained from the ethical review committee of KCH (Reference number: 1420). Written informed consent was obtained from the participants' informants, and assent was taken from children above 12 years after the researchers explained the study objectives and questionnaire procedures. All children were interviewed separately and with parents for screening of inclusion and exclusion criteria. All children above 5 years to 14 years (developmental age) visiting psychiatric outpatient with a history of enuresis and providing consent were included in the study. Patients below 5 years of age, parents not willing to give consent for the study, and patients with intellectual disability or with mental age below 5 years of age were excluded. The Child and Adolescent Symptom Inventory (CASI-5) two item questionnaire was attached to all the presenting cases at the reception. Psychiatrists and child psychiatrists who saw the cases used the CASI screening questionnaire and further assessed for the diagnosis of enuresis and if diagnosed referred to the research team members for data collection. Those who screened positive were then were diagnosed enuresis based on Diagnostic and Statistical Manual of Mental Disorders (DSM-5) and classification of enuresis was based on the International Children's Continence Society (ICCS) Data was collected using semi-structured proforma.

CASI parent version[9] : The CASI-5 is a behavior rating scale for evaluating the symptoms of DSM-5 emotional and behavioral disorders among children and adolescents between 5 and 18 years old who are attending elementary, middle, or secondary school.CASI-5 parent version enuresis questionnaires were used to screen the cases. The CASI-5 parent version has been translated into the Nepali language before, and permission to use was taken with the primary author, Kenneth Gadow, before the application[9]. CASI-5 two questions; one about nighttime bedwetting and another about daytime symptoms or soiling were used to screen the participants.

The American Psychiatric Association's DSM-5- is a classification of mental disorders with associated criteria designed to facilitate more reliable diagnoses of these disorders. It provides criteria for diagnosis of enuresis and other mental health conditions[2]. The ICCS has proposed newer, more practical suggestions and classification of enuresis. Based on ICCS, enuresis is classified as primary or secondary and further into mono-symptomatic or non-monosymptomatic (who have lower urinary tract symptoms and may have gastrointestinal symptoms, such as constipation and soiling) [5].

Data entry and analysis were done using SPSS version 25. Data were analyzed using descriptive statistics such as frequencies, means, and standard deviation.

# RESULTS

A total of 2219 C&A cases presenting to out patient clinic were screened using the CASI questionnaire. Out of these, 35 cases met the diagnostic criteria of enuresis. Thus, the clinic-based prevalence of enuresis was 1.6%. The mean age of diagnosis was 9.6 ± 2.7 years with male to female ratio of 2.1:1. A total of 24 (68.6%) cases were male, 19 (54.3%) were residing outside Kathmandu Valley, 34 (97.1%) cases were attending school and 21 (60%) belonged to the nuclear family. (Table 1)

**Table 1: Sociodemographic profile of the study population**

| Sociodemographic | Frequency (N=35) | Percentage (%) |
|---|---|---|
| **Total Cases Screened: 2219** | | |
| **Age: 9.6 (SD:± 2.7)** | | |
| **Gender** | | |
| Male | 24 | 68.6 |
| Female | 11 | 31.4 |
| **Locality** | | |
| Kathmandu valley | 16 | 45.7 |
| Outside Kathmandu valley | 19 | 54.3 |
| **Education History** | | |
| Yes | 34 | 97.1 |
| No | 1 | 2.9 |
| **Family Type** | | |
| Nuclear | 21 | 60 |
| Joint/Extended | 14 | 40 |

A total of 24 (68.6%) cases were referred by doctors and 20 (57.1%) cases visited for reasons other than for enuresis. A total of 19 (54.3 %) cases had a positive family history of enuresis, with 25 (71.4 %) cases without any significant birth history. The mean age of initiation of toilet training was 2.9 (SD± 1.3) years. About the treatment history, 29 (82.9 %) cases hadn't received any previous treatment for enuresis. About the type of enuresis 34 (97.1 %) cases were having primary enuresis with 30 (85.7%) cases having monosymptomatic symptoms. Co-morbid encopresis was found in 4 (11.4%) cases. Psychiatry co-morbidity was found in 15 (42.9%) cases. Among the psychiatric co-morbidities 4 cases (11.4 %) had Anxiety disorder and 4 (11.4 %) had Attention Deficit Hyperactivity Disorder. (Table 2)

**Table 2: Clinical profile of the study population**

| Clinical variables | Frequency (N=35) | Percentage (%) |
|---|---|---|
| **Source of referral** | | |
| Doctors | 24 | 68.6 |
| Parent's concern | 8 | 22.9 |
| Others (School/Media) | 3 | 8.6 |
| **Reason for visit** | | |
| For enuresis | 20 | 57.1 |
| Others | 15 | 42.9 |
| **Family history of enuresis** | | |
| Yes | 19 | 54.3 |
| No | 16 | 45.7 |
| Birth History | | |
| Uneventful | 25 | 71.4 |
| Eventful | 10 | 28.6 |
| Age of initiation of toilet training | 2.85± 1.34 | |
| **Treatment for enuresis** | | |
| Yes | 6 | 17.1 |
| No | 29 | 82.9 |
| Clinical Prevalence of Enuresis | 1.58% | |
| **Enuresis Type** | | |
| Primary | 34 | 97.1 |
| Secondary | 1 | 2.9 |
| Monosymptomatic (Nocturnal only) | 30 | 85.7 |
| Non-monosymptomatic (Diurnal and nocturnal) | 4 | 11.4 |
| Diurnal only/Daytime incontience | 1 | 2.9 |
| **Co-morbid Encopresis** | | |
| Yes | 4 | 11.4 |
| No | 31 | 88.6 |
| **Medical Co-morbidity** | | |
| Yes | 10 | 28.6 |
| No | 25 | 71.4 |
| **Psychiatric Co-morbidity** | | |
| Yes | 15 | 42.9 |
| No | 20 | 57.1 |
| Anxiety disorders | 4 | 11.4 |
| ADHD | 4 | 11.4 |
| Intellectual Disability (ID) | 2 | 5.7 |
| Autism Spectrum Disorder (ASD) | 1 | 2.9 |
| Depressive disorders | 2 | 5.7 |
| Oppositional Defiant Disorder (ODD) | 2 | 5.7 |

# DISCUSSION

The mean age of the study population was 9.6 ± 2.7 years which is similar to studies done in other countries[11,12].Our study revealing male to female ratio of 2.1:1 is in line with similar previous studies[13,14]. The gender difference is due to dysfunction in nocturnal arousal response and differences in anatomical structure [15]. Most of the participants were residing outside of Kathmandu valley (54.3%) that reveals the limited child and adolescent mental health services outside the capital.The majority of children with enuresis belonged to the nuclear family (60%) however, another study showed that enuresis is common in children with large family sizes [16]. In this study, referral from doctors was the primary reason for seeking consultation followed by parents themselves seeking help. The CAP unit is the only government-run tertiary children's hospital in the country and therefore could be the reason for more referrals from doctors themselves. It is also encouraging to note parents' awareness regarding the condition.

Over the six months duration, we screened 2219 children for enuresis and clinic-based prevalence was found to be only 1.6%. Community-based studies show a higher prevalence rate ranging from 3.9% to 11.4% [4,17,18]. In general, the prevalence of nocturnal enuresis is variable. It is above 10% among 6-year-olds, around 5% among 10-year-olds, and 0.5-1% among teenagers and young adults[19,20,21]. The rate of enuresis is found to be higher in the community rather than in the hospitals or clinics which was also observed in this study. Unlike our study, studies from India showed a higher prevalence of enuresis in school-going children. [17,22] Lack of awareness, normalization of bed wetting and less interference in the daily functioning of the child compared to other psychiatric conditions could be a few reasons that parents do not seek consultation at hospitals for diagnosis and treatment of enuresis. More than half (54.3%) of the sample had a family history of enuresis, which was more than in studies done in India, where they found a family history of enuresis in 28.4% and 36% of the sample respectively[18,17]. However, our finding of a positive family history of enuresis is similar to an epidemiological study done in Italy with a large sample size of 9307 children with enuresis, where 44.9% had a family history positive for enuresis[23]. It is very well known that enuresis is a genetically determined maturational disorder of the central nervous system and around 70%-80% of all children with enuresis have affected relatives[5,24,25]. The age of initiation of toilet training was found to be 2.85± 1.34 years which is the usual recommended age of initiation of toilet training in children [26]. However, the time of initiation of toilet training does not affect the development of enuresis [27]. It is not surprising that the majority of the children (82.9%) were not on treatment as these children were diagnosed with enuresis for the first time when brought to the CAP unit.

The majority (97.1%) were found to have primary enuresis which is more often the case[5]. In our study, around two third of the sample had monosymptomatic enuresis (85.7%) compared to non-monosymptomatic enuresis

(11.4%). A Study done by Butler et al. also shows that monosymptomatic enuresis (68.5%) is more common than non – monosymptomatic enuresis (31.5%)[28]. This study identified that 42.9% of the sample had a psychiatric co-morbidity and ADHD (11.4%) and Anxiety Disorders (11.4%) were the commonest psychiatric co-morbidities. Our findings of co-morbidity are slightly higher compared to the existing literature that suggests 20- 30% of children with enuresis have clinically relevant comorbid disorders[29]. This could be due to the clinical sample in our study where there is a high possibility of children presenting with more than one problem. Our finding of ADHD (11.4%) and Anxiety disorders (11.4%) as the commonest comorbid conditions with enuresis is similar to the findings of the study done by Von Gontard et al. and Joinson et al [29,30]. Overall, psychological disorders are 2 to 5 times more frequent in children with elimination disorders [5]. The high rate of co-morbidity (42.9%) in our study underscores the importance of treating psychiatric disorders in addition to enuresis as co-morbidities could add more distress to the child and family members, leading to significant impairment in functioning and quality of life. Previous studies have found gender, age group, family history, fathers' education, occupation stress, poor school performance, sleep pattern (hard to awaken), and burning micturition as important predictors of enuresis among children[17,4,12].

This study is the first to examine the clinical profile of enuresis among children in a Nepali hospital setting, offering crucial baseline data on prevalence, demographics, and psychiatric comorbidities. It highlights treatment gaps and provides insights that can inform future research and improve pediatric mental health care in Nepal.

As a cross-sectional study, it limits our ability to establish causality, meaning we cannot determine whether enuresis and psychiatric comorbidities influence each other or share common underlying factors. Selection bias may have occurred, as cases were drawn from a clinic setting, potentially excluding children with enuresis who do not seek medical attention, thereby limiting generalizability. Recall bias could also affect accuracy, especially regarding family history and early toilet training practices, which rely on parental memory. Additionally, the small sample size reduces the statistical power, making it difficult to draw robust conclusions or detect subtle associations between variables.

## CONCLUSION

Hospital-based prevalence of enuresis, although low, predominantly affects boys and the majority have a positive family history. Primary monosymptomatic enuresis is the most common type, with most cases having no previous treatment, indicating gaps in early identification and mangaemet. Psychiatric comorbidities, notably Anxiety Disorders and ADHD, were most common among children with enuresis, highlighting the importance of concurrent treatment of co-morbid conditions.

## CONFLICTS OF INTEREST

The authors declare that there is no conflict of interest regarding the publication of this paper.

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