ORIGINAL ARTICLE

European Archives of Medical Research

DOI: 10.14744/eamr.2025.83093
Eur Arch Med Res 2026;42(2):183–187

The Importance of Screen Exposure in Cases Diagnosed with Enuresis

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ABSTRACT

Objective: "Screen time" refers to the time spent using all screen-enabled devices throughout the day. When considering sleep patterns and quality, daily screen use is thought to be effective in enuresis due to its impact on cognitive and physical functions. The study aimed to evaluate the relationship between enuresis and screen exposure.

Materials and Methods: One hundred forty-five children aged 6–18 years who applied to Pediatric Nephrology and Pediatric Urology outpatient clinics due to primary enuresis and whose daily screen time was over 60 min were evaluated with questions.

Results: A total of 145 patients, 72 girls and 73 boys, were evaluated with a mean age of 9.3±3.2 years. One hundred twelve patients had a family history of enuresis, and 109 first-degree relatives had a history of enuresis. The children's mean screen exposure time was 5.7±1.6 h/day, and 66% (98 patients) reported screen exposure immediately before sleep. All were observed to have computer or tablet exposure. At 3 months of treatment, all 47 patients with ongoing enuresis were observed to have screen exposure before bedtime, all were observed to have used computers or tablets, and all those with ongoing complaints were observed to have played games. At 6 months of treatment, all 27 patients whose enuresis persisted despite behavioral therapy and medical treatment were observed to have continued screen exposure before bedtime, exceeding 120 min by playing games.

Conclusion: Enuresis is multifactorial, and the effects of screen time are known. In children, in addition to behavioral therapy and medical treatment, reducing screen time, especially gaming time, should be considered in the treatment of enuresis.

Keywords: Enuresis, Gaming time, Screen exposure

Cite this article as: Ozdemir Simsek O, Yakin G, Turan H, Tahillioglu HA.The Importance of Screen Exposure in Cases Diagnosed with Enuresis. Eur Arch Med Res 2026;42(2):183–187.

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Submitted: 22.09.2025 **Revised:** 23.10.2025 **Accepted:** 11.11.2025 **Available Online:** 03.06.2026

European Archives of Medical Research – Available online at www.eurarchmedres.org

INTRODUCTION

The International Pediatric Urinary Incontinence Society (ICCS) defines enuresis as the incontinence of urine during sleep in children aged five and older.[1] Enuresis is classified as monosymptomatic in children without lower urinary tract symptoms (e.g., frequency, daytime incontinence, urgency, genital or lower urinary tract pain) and a history of bladder dysfunction; it is classified as secondary in children with symptoms. Children with monosymptomatic enuresis who have not yet achieved satisfactory dryness are classified as primary; children who develop symptoms after six months or more of dryness are classified as secondary.[1]

Primary monosymptomatic enuresis has a high rate of spontaneous resolution, with prevalence rates decreasing from approximately 15% at age 5–5% at age 10 and from 1% to 2% in individuals aged 15 years and older.[2] However, the longer enuresis lasts, the lower the rate of spontaneous recovery.[3] Enuresis is a clinical condition characterized by the inability to arouse from sleep. It may be caused by one or more factors, including delayed maturation in the child, genetic factors, nocturnal polyuria, sleep disturbance, low bladder capacity, and detrusor overactivity.[4] Psychological and behavioral abnormalities are encountered as both the cause and the consequence of enuresis.[4] Sleep quality, ability to wake up from sleep, and distinctions between REM and non-REM sleep stages are factors that affect enuresis in terms of the sleep-wake cycle.[5] Studies have been conducted to examine the effects of childhood screen exposure on sleep disturbances. The literature has shown that screen use leads to an increase in sleep disturbances and behavioral problems.[6] With the developing world and technology, internet and tablet usage are increasing; the age of usage is decreasing all over the world, and the time spent in front of the screen is increasing day by day.[7] As internet use and time spent online increase, behavioral problems also increase. As patients' sleep patterns and sleep-wake cycles change, increasing eating disorders and inactivity also become a problem.[8] Decreased physical activity and increased obesity are negative parameters in enuresis, leading to increased bladder and intra-abdominal pressure, fluid intake at inappropriate times, and disruption of the antidiuretic hormone secretion cycle.[8,9] Enuresis is a common and treatable condition, and in addition to medical treatment, it is also essential to manage the patient's behavior. In these cases, behavioral changes include regulating hourly water intake, avoiding junk food and eating at set times, and preventing constipation.[8] In addition, research is ongoing to evaluate reducing television, tablet, and internet use before bed as a treatment approach. It is known that all types of screen use affect all types of enuresis diseases and enuresis at all ages.[10,11]

This study aimed to evaluate the use of tablets and television in patients receiving medical treatment for enuresis, to determine the duration of gaming and video viewing, and to assess their impact on treatment outcomes. The aim was to provide evidence-based recommendations to guide patients in monitoring without medication or with shorter-term medication use by recommending behavioral changes before or in conjunction with medical treatment.

MATERIALS AND METHODS

Study Design and Patient Selection

Only cases diagnosed with monosymptomatic enuresis were evaluated. Patients aged 60 months to 18 years who were still receiving treatment but had completed at least 3 months of enuresis treatment between February 2025 and May 2025 were evaluated. Patients who were evaluated in pediatric nephrology and pediatric urology clinics, who were using regular medication, had no known nephrological or urological problems, were not diagnosed with neurodevelopmental or neuropsychiatric diseases, and were not using neurological or psychiatric medications, were evaluated for screen exposure using survey questions. No artificial intelligence (AI)-supported technologies (such as large language models [LLM], chatbots, or image generators) were used in the production of the presented work. This retrospective cross-sectional study was approved by the institutional ethics committee (approval number: 2014, date: February 6, 2025) and was in accordance with the principles of the Declaration of Helsinki. Written consent was obtained from all participants in accordance with ethical rules.

Evaluation

A questionnaire was used to collect information on patients' age at presentation, family history of enuresis, age at toilet training, average sleep duration, difficulty falling asleep due to screen exposure, daily screen time, type of screen exposure (tablet, phone, television), presence of a social media account, time spent gaming, time spent watching videos/movies, type and duration of the last screen exposure before sleep, and whether the previous stimulus was used to induce sleep. Patients were evaluated at the 3rd month of treatment. Patients who still had symptoms at the 3rd month were reevaluated at the 6th month.

Statistical Analysis

No AI-supported technologies (such as LLM, chatbots, or image generators) were used in the production of the presented work. The Statistical Package for the Social Sciences (SPSS) package program (IBM SPSS Statistics for Windows, version 25.0. Armonk, NY: IBM Corp, 2017) was used for statistical analyses. Variables with normal distribution are

shown as mean values±standard deviation, variables with abnormal distribution are shown as median (range), and the rest are expressed as frequency. The Chi-square test was used to compare categorical variables between groups. The Kolmogorov-Smirnov test was used to evaluate the normal distribution of continuous variables between groups. All parameters were distributed abnormally, so they were evaluated by the Mann-Whitney U test.

RESULTS

Three hundred and forty-two patients receiving medical treatment for enuresis were considered. Patients who spent more than 60 min/day in front of screens were identified. A total of 145 patients, 72 women and 73 men, were evaluated via questionnaire. The mean age was 9.3±3.2 years. Of the 145 patients, 112 (77%) had a family history of enuresis, and 109 had a first-degree relative with enuresis. The mean age at which patients began toilet training was 2.5±0.8 years. Patients with symptoms of frequent urination, urgency, urinary incontinence, urinary retention, or recurrent urinary tract infections were excluded from the evaluation. Mean daily sleep duration was 9.4 (7–10.5) h. The average time children spent in front of the screen was found to be 5.7±1.6 h/day. It was observed that all patients were exposed to computer or tablet use, 42 patients had social media accounts, and all boys played games. It was observed that patients who spent 3.5 h or more in front of the screen per day had difficulty falling asleep. Sixty-six percent (98 patients) of patients reported exposure to screens immediately before sleep, and all of these patients had difficulty falling asleep. In the 3rd month of treatment, all 47 patients with persistent enuresis were observed to be exposed to screens before bed. All were using computers or tablets, and all those with persistent complaints were observed to be playing games. In the 6th month of treatment, all 27 patients with persistent enuresis, despite behavioral therapy and medical treatment, were observed to continue to be exposed to screens by playing games before bed.

DISCUSSION

Enuresis treatment is divided into two groups: Medical and paramedical. It is known that the patients who benefit most are those who share a common denominator between these two groups: Those who are treated with both medication and behavioral modification.[12] Even if full compliance with medical treatment is achieved, if behavioral changes are not made, the treatment response will not be sufficient, and the rate of recurrence of the disease will increase at the end of treatment.[13] Enuresis behavioral therapy involves establishing nutritional habits, ensuring adequate fluid intake during daylight hours, meeting physiological sleep needs, maintaining regular sleep patterns, and adhering to appropriate bedtime routines.[14] Prolonged or increased screen use causes children and adolescents to drift away from their daily routine and prevents behavioral changes in treatment.[14] A study examining screen exposure, sleep quality, and behavioral problems in 374 children found that children with screens in their bedrooms experienced more sleep and behavioral issues. The same study also showed that increased exposure, particularly in the evening, led to more sleep disruptions, which were in turn associated with behavioral problems.[6] Screen presence in the bedroom is also associated with obesity in children. Lifestyle behaviors (television viewing time, diet, physical activity, and sleep duration) determine the association with obesity. This is considered a mediating behavior. Reducing screen use has been shown to reduce obesity and behavioral problems.[8] Eating disorders and excessive social media engagement are significant problems among young people. This study assessed the prevalence of eating disorders and their relationship to social media addiction among 350 young people aged 14–25.[15] The American Psychiatric Association recently included Internet Gaming Disorder (IGD) among its potential diagnoses. While the etiology of IGD is not yet fully understood, impulsivity and excessive gaming appear to be risk factors.[7] Another study evaluating 1.713 children showed that screen exposure and sleep duration were inversely proportional, and that increased exposure led to behavioral and adaptation disorders.[12] Experimental studies measuring physiological and polysomnographic information related to screen exposure and sleep disruption have shown that screen light significantly disrupts sleep continuity and quality. In particular, short-wavelength light emitted from monitors has been shown to inhibit or delay normal melatonin production. Light exposure in the evening has been shown to directly affect melatonin's circadian cycle, leading to circadian rhythm disturbances and insomnia, with this effect being more pronounced in adolescents.[16] Children whose parents watched television or played video games in their rooms reported more sleep disturbances. Furthermore, evening screen exposure has been linked to impaired daytime attention and behavior and has been shown to exacerbate sleep disturbances in children ages 6–16. In this digital age, children are often exposed to both screens and activities like internet use and gaming from early childhood. Research shows that young children are particularly vulnerable to screen exposure.[17]

In our study, we found that patients with prolonged screen exposure either did not respond fully to treatment or subsequently experienced relapses. In other words, there was a statistically negative correlation between treatment benefit and screen exposure duration, consistent with the literature.

Study Limitations

This study has several limitations. First, its retrospective design may have led to missing data or selection bias. Second, the study was conducted as a single-center, cross-sectional study, which may limit the generalizability of the findings to other populations. In this context, a limitation of the study is that the questionnaire used to evaluate the patients is not an accepted, well-established tool with proven reliability and validity, but rather a short questionnaire we created ourselves. Information regarding the activation of yellow light or "night mode" filters on the devices was not collected during the study. We are aware that light color temperature may affect sleep quality, but this was not assessed. This could be considered another limitation of our study.

CONCLUSION

Enuresis is a multifactorial pathology, and screen use is known to be a significant factor. Both direct and indirect effects of screen use are known. Literature has shown that it causes cognitive, physical, and neuropsychiatric decline in patients. In addition to behavioral therapy and medical treatment, reducing screen use in children, especially gaming time, should be considered. Considering all this data, our study is cross-sectional, and studies with larger patient numbers and more data are needed.

DECLARATIONS

Ethics Committee Approval: The study was approved by Izmir Bakircay University Ethics Committee (No: 2014, Date: 06/02/2025).

Informed Consent: Informed consent was obtained from all individual participants included in the study.

Conflict of Interest: The authors declare that there is no conflict of interest.

Funding: The authors received no financial support for the research and/or authorship of this article.

Use of AI for Writing Assistance: Not declared.

Authorship Contributions: Concept – OOS; Design – OOS; Supervision – OOS; Data collection &/or processing – GY, HT; Analysis and/or interpretation – GY, HT; Literature search – OOS, HAT; Writing – OOS, HAT; Critical review – OOS.

Peer-review: Externally peer-reviewed.

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