



## EDITORIAL

## Enuresis. Let's look towards the future. What concepts are useful? ☆



### Enuresis. Miremos al futuro. ¿Qué conceptos son útiles?

María Isabel Úbeda-Sansano<sup>a,\*</sup>, Roberto Martínez-García<sup>b</sup>

<sup>a</sup> Centro de Salud La Eliana, Valencia, Spain

<sup>b</sup> Sección de Urología Funcional, Reconstructiva e Incontinencia Urinaria, Hospital Clínico Universitario de Valencia; Facultad de Medicina, Universidad de Valencia, Valencia, Spain

Enuresis is a frequent problem in childhood that is underdiagnosed and undertreated. The approach to its aetiology has changed over time, from the attribution of psychopathological causes to the current perspective of a multifactorial aetiology with emphasis on physiological, psychological, genetic and environmental factors. Although many different hypotheses have been formulated, it is believed that they all converge and manifest through a specific impairment in waking in response to the sensation of a full bladder.

The development of our understanding of enuresis from the 1960s to present has been slow, and the condition has gone from being considered a minor issue to an important problem for children for several reasons: its high prevalence, its psychological impact, the impairment of quality of life and its sequelae in adulthood (adult enuresis and overactive bladder).

Epidemiological studies have established that the prevalence of enuresis is high in the early years of life, with a rapid decline from age 5 to age 7–9 years (spontaneous resolution), that primary enuresis is more frequent than secondary enuresis and that monosymptomatic enuresis is more frequent than nonmonosymptomatic enuresis. They have also identified certain associations and comorbidities. Thus, in addition to daytime urinary symptoms, other manifestations that are not related to the urinary system are attention

deficit hyperactivity disorder, obesity, severe sleep apnoea, poor academic performance, sickle cell anaemia etc. Constipation has been growing in importance as a comorbidity, and a few years ago evidence emerged that it was the intermediate factor in the association between enuresis and chronic headache.<sup>1</sup>

Current technology has facilitated performance of epidemiological studies through the analysis of population databases which, despite their limitations, allow obtaining large samples. Recently, a case-control study that analysed data from population databases confirmed the association between enuresis and chronic constipation in children aged 5–12 years, without providing information about specific enuresis subtypes.<sup>2</sup> The authors proposed assessing constipation before and after treatment of enuresis and any time an anticholinergic drug is introduced, as these drugs can make constipation worse and interfere with its resolution.

The current issue of ANALES DE PEDIATRÍA features a study that provides clarification on the issue, based on data obtained through a questionnaire, evincing that constipation is associated most strongly with the nonmonosymptomatic type.<sup>3</sup>

Most cross-sectional studies consist of surveys of the population that require identification of diseases and their characteristics through methods other than those used in clinical practice, without performance of an anamnesis, a physical examination or diagnostic tests. Thus, questionnaires become diagnostic tools and need to be “validated” to ensure that they produce reproducible results, that they can be understood by survey respondents and that they provide information similar to the information obtained in clinical practice (adequate sensitivity and specificity). One of the problems commonly encountered is the absence of

☆ Please cite this article as: Úbeda-Sansano MI, Martínez-García R. Enuresis. Miremos al futuro. ¿Qué conceptos son útiles? An Pediatr (Barc). 2021;95:69–71.

\* Corresponding author.

E-mail address: [ubeda.isa@gva.es](mailto:ubeda.isa@gva.es) (M.I. Úbeda-Sansano).

**Table 1** Definitions and subtypes of enuresis based on the criteria of the major scientific societies.

	ICCS - (2016) <sup>6</sup>	DSM-5 (2013) <sup>5</sup>	ICD-10/11 (1990)/(2019) <sup>7</sup>
<b>DEFINITION</b>	<p>- Urinary intermittent incontinence that occurs during periods of sleep</p> <p>- Involuntary</p> <p><b>Frequency:</b></p> <p>- <math>\geq 1</math> episode/month for at least 3 months (3 in 3 consecutive months). A lower frequency is accepted in older children</p> <p><b>Age <math>\geq 5</math> years</b> (does not consider impaired quality of life for diagnosis)</p> <p><b>Excluded if:</b> Continuous urinary incontinence</p>	<p>- Repeated voiding of urine into bed or clothes</p> <p>- Involuntary or intentional</p> <p><b>Frequency and other criteria</b></p> <p>One of the 2 following criteria:</p> <p>- <math>\geq 2</math> episodes/week for 3 consecutive months</p> <p>- Clinically significant distress or impairment in social, academic (occupational), or other important areas of functioning.</p> <p><b>Age <math>\geq 5</math> years</b> (or equivalent developmental level)</p> <p><b>Excluded if:</b> Attributable to the physiological effects of a substance (antipsychotic medication, diuretic . . .) or another medical condition (diabetes, epilepsies, spina bifida. . .)</p>	<p>- Repeated voiding of urine into clothes or bed</p> <p>- Involuntary or intentional</p> <p><b>Frequency:</b></p> <p>- 2 or more events a month in children aged <math>&lt; 7</math> years or at least 1 a month in children aged <math>\geq 7</math> years, for 3 consecutive months</p> <p><b>Age <math>\geq 5</math> years</b> (or equivalent level of development)</p> <p><b>Excluded if:</b> Attributable to seizures, neurologic disorder, structural abnormality of the urinary tract and other psychiatric or non-psychiatric diseases</p>
<b>SUBTYPES</b>	<p><b>Monosymptomatic:</b> no significant daytime lower urinary tract symptoms<sup>a</sup></p> <p><b>Nonmonosymptomatic:</b> with significant daytime lower urinary tract symptoms</p> <p><b>Primary:</b> without a previous dry period lasting at least 6 consecutive months</p> <p><b>Secondary:</b> previous dry period of at least 6 consecutive months. Not considered secondary if the dry period occurs during or after 2 years of treatment of enuresis (relapse or failure)</p>	<p><b>Nocturnal only</b> (considered equivalent to "monosymptomatic")</p> <p><b>Diurnal only</b> (considered equivalent to "urinary incontinence")<sup>b</sup></p> <p><b>Nocturnal and diurnal</b> (considered equivalent to "nonmonosymptomatic")<sup>c</sup></p> <p><b>Primary:</b> without a previous dry period</p> <p><b>Secondary:</b> previous stable dry period (of unspecified duration)</p> <p>Does not consider whether the dry period was spontaneous or the result of a treatment</p>	<p><b>Nocturnal only</b> (considered equivalent to "monosymptomatic")</p> <p><b>Diurnal only</b> (considered equivalent to "urinary incontinence")<sup>b</sup></p> <p><b>Nocturnal and diurnal</b> (considered equivalent to "nonmonosymptomatic")<sup>c</sup></p> <p><b>Primary:</b> present from birth</p> <p><b>Secondary:</b> following a period of acquired bladder control</p>

<sup>a</sup> Significant daytime lower urinary tract symptoms: incontinence while awake, voiding urgency, voiding frequency, urinary tract infection, straining to void, weak stream, large post-void residual, dysfunctional voiding. Not significant: vaginal reflux, giggle incontinence, stress incontinence (adults), voiding postponement.

<sup>b</sup> Diurnal incontinence: urge incontinence and voiding postponement.

<sup>c</sup> If daytime lower urinary tract symptoms are present in the absence of incontinence (urgency, frequency, straining, weak stream, functional obstruction), enuresis is considered nocturnal.

“survey definitions”. Research publications should describe the combinations of items and answers used in the definitions of cases or factors under study. An example of such adequate description is available in the article on the influence of constipation on enuresis published in the current issue of this journal.<sup>3</sup>

For years, advances in enuresis have been compromised by biases in research, whether intentional or not, and the poor quality of published studies, which results have confused clinicians and researchers alike.

Another identified difficulty is the heterogeneous terminology used in the definition of enuresis. The concept of enuresis has undergone an interesting evolution through the past few decades.<sup>4</sup> The initial milestone took place in 1968 when the Diagnostic and Statistical Manual of Mental Disorders (DSM), second edition (DSM-II) of the American Psychiatric Association proposed that enuresis was a psychophysiological symptom of psychopathology and classified it as a “special symptom not elsewhere classified”.

Twelve years later (1980), in the DSM-III, the term was changed to “functional enuresis” with an emphasis on ruling out physical disease and the description of symptoms. This edition defined enuresis as “repeated involuntary leak of urine” with “at least 2 such events per month for children between the ages of five and six, and at least one event per month for older children”. The term “enuresis” included both passage of urine during sleep and in daytime. “Primary” enuresis was defined as enuresis in children that had not yet achieved continence and “secondary” as enuresis as enuresis preceded by a period of continence of at least one year.

Lastly, in 1994 the DSM-4-TR enuresis was redefined as a disorder, which is a behavioural or psychological pattern. The definition was expanded to also include intentional voiding of urine and the frequency criterion became more stringent, with a minimum of 2 events per week required for diagnosis. The age criterion of a developmental level equivalent to 5 years or older was introduced, in addition to the alternative criterion for diagnosis that it “must cause clinically significant distress or impairment in social, academic (occupational), or other important areas of functioning”. These modifications shifted the diagnostic approach to improve the definition of psychiatric disorders and remain in the current edition, the DSM-5.<sup>5</sup>

The International Children’s Continence Society (ICCS) was also established in the 1990s, publishing its first document for the standardization of terminology in 1998. It defined enuresis as involuntary voiding while asleep with a frequency of at least 1 a month in children aged at least 5 years. It already established the subtypes of primary enuresis (without a previous dry period of 6 consecutive months) and secondary enuresis (with onset after such a dry period). It also differentiated between nonmonosymptomatic and monosymptomatic based on the presence or absence, respectively, of daytime lower urinary tract symptoms. These definitions have remained unchanged to present.<sup>6</sup> In 2006, the ICCS decided to use the term “enuresis” as synonymous with “nocturnal enuresis” and not for other types of daytime or continuous incontinence. Table 1<sup>5-7</sup> presents the current definitions for enuresis and its subtypes proposed by different institutions: the DSM-5, ICCS and International Classification of Diseases (ICD-10/11) criteria.

In one of the articles featured in the current issue of this journal, its authors express the confusion generated by the use of different definitions.<sup>8</sup>

It is essential that studies use the same terminology so that results can be compared and conclusions drawn, both in clinical practice and in research. In documents that are not specifically focused on psychiatric disorders, we recommend using the terminology proposed by the ICCS. This society gathers specialists from different fields involved in the management of enuresis (paediatricians, paediatric surgeons, urologists, nephrologists, psychologists, psychiatrists, paediatric nurses...) that, in recent decades, applying criteria based on clinical experience evidence-based medicine, have succeeded in agreeing on many different aspects of enuresis with a broad perspective that encompasses organic and functional disease and that is more useful for paediatric clinical practice.

## Funding

This research did not receive any external funding.

## Conflicts of interest

The authors have no conflicts of interest to declare.

## References

1. von Gontard A, Overs C, Moritz A, Thomé-Granz S, Hussong J. Incontinence and headache in preschool children. *Neurourol Urodyn.* 2019;38:2280–7, <http://dx.doi.org/10.1002/nau.24134>.
2. Hsiao YC, Wang JH, Chang CL, Hsieh CJ, Chen MC. Association between constipation and childhood nocturnal enuresis in Taiwan: a population-based matched case-control study. *BMC Pediatrics.* 2020;20:35, <http://dx.doi.org/10.1186/s12887-020-1939-z>.
3. Rodríguez-Ruiz M, Mendez-Gallart R, García Mérida M, Somoza-Arguibay I. Influencia del estreñimiento en la enuresis. *An Pediatr (Barc).* 2021;95:108–15, <http://dx.doi.org/10.1016/j.anpedi.2020.06.016>.
4. Caldwell P, von Gontard A. Enuresis. In: Goldstein S, DeVries M, editors. *Handbook of DSM-5 disorders in children and adolescents.* Cham (Switzerland): Springer; 2017. p. 453–65, <http://dx.doi.org/10.1007/978-3-319-57196-6>.
5. American Psychiatric Association. *Guía de consulta de los criterios diagnósticos del DSM-5™.* In: Traducción de la 5ª edición. Washington-London: American Psychiatric Publishing; 2014.
6. Austin PF, Bauer SB, Bower W, Chase J, Franco I, Hoebeke P, et al. 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;35:471–81, <http://dx.doi.org/10.1002/nau.22751>.
7. World Health Organization (WHO). *CIE-11. Clasificación Internacional de Enfermedades para estadísticas de mortalidad y morbilidad. 11.ª revisión.* Guía de referencia (versión: 11 / 2019) 2019. (Accessed: 15 Feb 2021). Available from: [https://icd.who.int/es/docs/Guia%20de%20Referencia%20\(version%2014%20nov%202019\).pdf](https://icd.who.int/es/docs/Guia%20de%20Referencia%20(version%2014%20nov%202019).pdf).
8. Torga Díaz E, Martínez Suárez V, Alcántara-Canabal L, Suárez Castañón C, Cebrián Muñíos C. Valoración de los criterios diagnósticos de la enuresis nocturna. *An Pediatr (Barc).* 2021;95:101–7, <http://dx.doi.org/10.1016/j.anpedi.2020.08.011>.