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CORRECTION

Correction: Enuresis and overactive bladder in sickle cell patients: a narrative review of the literature

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In the original publication of the article, the tables 1 to 4 are incorrect. The correct Tables 1, 2, 3, 4 are given below, and the original article has been corrected.

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Table 1 General characteristics of included studies

Authors	Types of studies	Population: numbers and phenotypes	Mean age	Sex-ratio (H/F)	Tools defining enuresis and/or overactive bladder (OAB)
Barakat et al. 2001 [17]	Cross-sectional study	217 SS	11.9 (5–22)	1.17	DSM
Jordan et al. 2005 [18]	Cross-sectional study	126 SCD: 64.3% SS 17.5% SC 13.5% SBétha 4.8% not reported 47 controls	10.09 (5–17)	1.29 (SCD) 1.13 (controls)	DSM
Portocarrero et al. 2012 [19]	Cross-sectional study	155 SS 100 AS	11.12 (5–17)	1.87 (SS) 1.86 (AS)	Overactive bladder symptoms
Eneh et al. 2015 [20]	Cross-sectional study	70 SS 70 AS	8.37 (5–11)	1.26	DSM
Anele et al. 2016 [6]	Cross-sectional study	239 SCD 78.7% SS 13.8% SC 6.7% SBétha 0.8% SO arab 104 AA 57 AS	SCD: 31 (24–38) AS: 32 (28–38) AA: 23 (21–38)	8.1	DSM OAB short form
Eneh et al. 2017 [21]	Cross-sectional study	70 SS 70 AS	8.37	1.3	DSM
Esezobor et al. 2018 [22]	Cross-sectional study	243 SCD 243 controls	9.9 (5–17)	0.84	DSM
Porter et al. 2021 [23]	Cross-sectional study	248 SCD 59.3% SS 25.8% SC 8.9% HbSb+ 6% HbSb0	11.3 (6–17)	1.03	DSM

Table 2 Prevalence and clinical characteristics of enuresis and overactive bladder in selected studies

Authors	Types of studies	Population: numbers and phenotypes	Mean age	Enuresis prevalence Present (P) Background (B)	Predominant sex for enuresis	Average age stop enuresis	Enuresis features	Overactive bladder (OAB) prevalence
Barakat et al. 2001 [17]	Cross-sectional study	217 SS	11.9 (5–22)	P: 20.3% B: 35%	Male	Not reported	Not reported	Not reported
Jordan et al. 2005 [18]	Cross-sectional study	126 SCD 64.3% SS 17.5% SC 13.5% SBétha 4.8% not reported 47 controls	10.09 (5–17)	SCD: P:25.4% B:39.7% AA: P:14.9% B:21.3%	Male	Not reported	Not reported	Not reported
Portocarrero et al. 2012 [19]	Cross-sectional study	155 SS 100 AS	11.12 (5–17)	SS: P: 32.3% AS: P: 5%	Male	Not reported	Primary enuresis: 86% No monosymptomatic enuresis: 58%	Urinary incontinence: 23.2% Urinary urgency: 33.5% Pollakiuria: 31.6%
Eneh et al. 2015 [20]	Cross-sectional study	70 SS 70 AS	8.37 (5–11)	SS: P: 31.4% AS: P: 21.4%	Male	Not reported	Not reported	Not reported
Anele et al. 2016 [6]	Cross-sectional study	239 SCD 78.7% SS 13.8% SC 6.7% SBétha 0.8% SO arab 104 AA 57 AS	SCD: 31 (24–38) AS: 32 (28–38) AA: 23 (21–38)	SCD: P: 2.9% B: 39.7% AS: P: 0% B: 9% AA: P: 0% B: 40%	Female	SCD: 12 AS: 7.5 AA: 7.5	Not reported	OAB score : SCD: 13.3% AS: 3.3% SS: 6.7%
Eneh et al. 2017 [21]	Cross-sectional study	70 SS 70 AS	8.37	SS: P: 31.4% AS: P: 21.4%	Male	Not reported	Not reported	Not reported
Esezobor et al. 2018 [22]	Cross-sectional study	243 SCD 243 controls	9.9 (5–17)	SCD: P: 49.4% Controls: P: 29.6%	Male	Not reported	SCD: Primary enuresis: 90% No monosymptomatic enuresis: 59.2% Controls: Primary enuresis: 83.3% No monosymptomatic: 29.2%	Not reported
Porter et al. 2021 [23]	Cross-sectional study	248 SCD 59.3% SS 25.8% SC 8.9% HbSb+ 6% HbSb0	11.3(6–17)	SCD: P: 21.4% B: 46%	Male	Not reported	Not reported	Not reported

Table 3 Physiopathology, associated factors and management of bedwetting and/or overactive bladder in selected studies

Authors	Types of studies	Population: numbers and phenotypes	Mean age	Physiopathology	Factors associated with the occurrence of enuresis	Treatment
Barakat et al. 2001 [17]	Cross-sectional study	217 SS	11.9 (5–22)	Not reported	Heavy sleeper Laziness Family history of enuresis	Dietary measure Alarm Drugs (1%) Imipramine
Jordan et al. 2005 [18]	Cross-sectional study	126 SCD 64.3% SS 17.5% SC 13.5% SBétha 4.8% not reported 47 controls	10.09 (5–17)	Not reported	Heavy sleeper Hyperhydration at night Laziness	Dietary measure Alarm medication (5.8%): Imipramine, desmopressin and others…
Portocarrero et al. 2012 [19]	Cross-sectional study	155 SS 100 AS	11.1 (5–17)	Not reported	Not reported	A patient received unspecified treatment
Eneh et al. 2015 [20]	Cross-sectional study	70 SS 70 AS	8.37 (5–11)	No urine concentration disorders	History of enuresis in parents	Not reported
Anele et al. 2016 [6]	Cross-sectional study	239 SCD 78.7% SS 13.8% SC 6.7% SBétha 0.8% SO arab 104 AA 57 AS	SCD: 31 (24–38) AS: 32 (28–38) AA: 23 (21–38)	Not reported	Priapism	Not reported
Eneh et al. 2017 [21]	Cross-sectional study	70 SS 70 AS	8.37	Not reported	History of enuresis in parents	Not reported
Esezobor et al. 2018 [22]	Cross-sectional study	243 SCD 243 controls	9.9 (5–17)	Not reported	History of enuresis in parents, age	Not reported
Porter et al. 2021 [23]	Cross-sectional study	248 SCD: 59.3% SS 25.8% SC 8.9% HbSb+ 6% HbSb0	11.3 (6–17)	Not reported	General physical deterioration Sleeping troubles Severity sickle cell disease	Not reported

Table 4 Contribution of the animal model on enuresis and overactive bladder in sickle cell disease

Authors, year	Population	Methods	Results	Clinical implications
Claudino et al. 2015 [39]	Transgenic sickle cell mice (SS) and wild type (WT)	Detrusor contraction and relaxation study Urethral contraction Bladder histological studies	Decreased diuresis Decreased contractility and detrusor relaxation Decreased urethral contractility Decreased bladder capacity	Bladder dysfunction in sickle cell disease may play a role in bedwetting
Karakus et al. 2019 [40]	Transgenic sickle cell mice (SS) and wild type (WT) and mice deficient in eNOS and nNOS	Nitric oxide nanoparticle injection into the bladder Cystometry studies Study level of expression eNOS, protein kinase B, nNOS and MYPT1 in the bladder	Detrusor hyperactivity and molecular derangement in homozygous SS and eNOS-deficient mice Correction of troubles by NO-np	Nitric oxide treatment may improve overactive bladder in sickle cell disease
Musicki et al. 2019 [41]	Transgenic sickle cell mice (SS) and wild type (WT)	Cystometry Evaluation of eNOS et nNOS phosphorylation in the bladder and urethra	Decreased eNOS, nNOS and PDE5 phosphorylation in bladder and urethra, decreased plasma nitrite levels, increased relaxation of urethral tissue Increased diuresis compared to wild mice Correction of dysfunctions by nitrate	Treatment targeting NO/PDE5 dysregulation may improve overactive bladder in sickle cell disease
Karakus et al. 2019 [42]	Transgenic sickle cell mice (SS) and wild type (WT) and mice deficient in eNOS and nNOS	Cystometry Study of bladder and urethra samples by tissue myography in vitro	Increased diuresis in eNOS and SS mice Increased frequency of non-voiding and voiding bladder contractions Decreased bladder compliance Increased relaxation of the urethra	Bladder overactivity in sickle cell disease secondary to disturbances in NO signaling