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Prevalence, subtypes, and correlates of nocturia in the symptoms of Lower Urinary Tract Dysfunction Research Network cohort

J. Quentin Clemens[1], **Jonathan B. Wiseman**[2], **Abigail R. Smith**[2], **Cindy L. Amundsen**[3], **Claire C. Yang**[4], **Megan S. Bradley**[3], **Ziya Kirkali**[5], **Nnenaya Q. Agochukwu**[1], **Anne P. Cameron**[1], **LURN Study Group**

[1]Department of Urology, University of Michigan, Ann Arbor, Michigan [2]Arbor Research Collaborative for Health, Ann Arbor, Michigan [3]Department of Obstetrics and Gynecology, Duke University Medical Center, Durham, North Carolina [4]Department of Urology, University of Washington, Seattle, Washington [5]National Institute of Diabetes and Digestive and Kidney Diseases, Bethesda, Maryland

Abstract

Aims: We determined the prevalence, severity, and correlates of nocturia in a large clinical cohort of patients.

Methods: Patients presenting with lower urinary tract symptoms (LUTS) completed 3-day bladder diaries. Nocturia was quantified based on the mean number of nighttime voids

Correspondence: J. Quentin Clemens, University of Michigan, Taubman Center, Floor 2 Reception C, 1500 E. Medical Center Drive, SPC 5330, Ann Arbor, MI 48109. qclemens@umich.edu.

LOWER URINARY TRACT DYSFUNCTION RESEARCH NETWORK (LURN) COHORT

The following individuals were instrumental in the planning and conduct of this study at each of the participating institutions.

Duke University, Durham, North Carolina (DK097780): PI: Cindy Amundsen, MD and Kevin Weinfurt, PhD; Co-Is: Kathryn Flynn, PhD, Matthew O. Fraser, PhD, Todd Harshbarger, PhD, Eric Jelovsek, MD, Aaron Lentz, MD, Nazema Siddiqui, MD, Jim Hokanson, PhD, and Lisa Wruck, PhD; Study Coordinators: Yasmeen Bruton and Folayan Morehead.

University of Iowa, Iowa City, IA (DK097772): PI: Karl Kreder, MD, MBA, Catherine S. Bradley, MD, MSCE; Co-Is: Bradley A. Erickson, MD, MS, Vince Magnotta, PhD, Daniel Fick, MD, Philip Polgreen, MD, MPH; Study Coordinator: Mary Eno, Stacy McMichael.

Northwestern University, Chicago, IL (DK097779): PIs: James W. Griffith, PhD, Kimberly Kenton, MD, MS, Brian Helfand, MD, PhD; Co-Is: David Cella, PhD, Christina Lewicky-Gaupp, MD, Margaret Mueller, MD, Alex Glaser, MD, Carol Bretschneider, MD, Sarah Collins, MD, Julia Geynisman-Tan, MD; Study Coordinators: Michelle Taddeo, Meera Tavathia, Pooja Talaty, Sylwia Boroska. Dr. Helfand and Ms. Talaty are at NorthShore University HealthSystem.

University of Michigan Health System, Ann Arbor, MI (DK099932): PI: J. Quentin Clemens, MD, FACS, MSCI; Co-Is: John DeLancey, MD, Dee Fenner, MD, Rick Harris, MD, Steve Harte, PhD, Anne P. Cameron, MD, Aruna Sarma, PhD; Study Coordinators: Linda Drnek, Greg Mowatt, and Julie Tumbarello.

University of Washington, Seattle Washington (DK100011): PI: Claire Yang, MD; Co-I: Anna Kirby, MD; Study Coordinators: Alice Liu, MPH and Brenda Vicars, RN.

Washington University in St. Louis, St. Louis, MO (DK100017): PI: H. Henry Lai, MD; Co-Is: Gerald L. Andriole, MD and Joshua Shimony, MD, PhD; Study Coordinators: Aleksandra Klim, RN, MHS, CCRC.

National Institute of Diabetes and Digestive and Kidney Diseases, Division of Kidney, Urology, and Hematology, Bethesda, MD: Project Scientist: Ziya Kirkali MD; Project Officer: Christopher Mullins PhD; NIH Personnel: Tamara Bavendam, MD, Robert Star, MD, Jenna Norton, MPH.

Arbor Research Collaborative for Health, Data Coordinating Center (DK099879): PI: Robert Merion, MD, FACS; Co-Is: Victor Andreev, PhD, DSc, Brenda Gillespie, PhD, and Abigail Smith, PhD; Project Manager: Melissa Fava, MPA, PMP; Clinical Monitor: Melissa Sexton, BA, CCRP; Research Analysts: Margaret Helmuth, MA, Jon Wiseman, MS, and Jane Liu, MPH.

documented over the 3 days. Nocturia subtypes (global polyuria, nocturnal polyuria [NP], reduced global bladder capacity, and reduced nocturnal bladder capacity) were assessed. Bother due to nocturia was measured by the LUTS Tool. Sleep quality was assessed with the Patient-Reported Outcomes Measurement Information System Sleep Scale. Multivariable multinomial regression was used to explore patient characteristics associated with nocturia.

Results: In 502 participants with analyzable diaries (285 men and 217 women), the mean number of nocturia episodes over 3 days was 0 in 103 (20.5%), >0 to <1 in 151 (20.1%), 1 to <2 in 165 (32.9%), and ≥2 in 83 (16.5%). Sixty-seven percent of the participants with nocturia ≥1 reported significant bother from their nocturia. NP was the most common nocturia subtype and was present in 17% of those with nocturia = 0, 40% of those with nocturia >0 to <1, 65% of those with nocturia 1 to <2%, and 77% with nocturia 2+. Higher degrees of nocturia were associated with male sex, greater sleep disturbance, and a higher likelihood of exhibiting multiple nocturia subtypes.

Conclusions: Nocturia ≥1 occurred in 49% of LUTS patients and caused significant bother in the majority of them. The most common subtype was NP, but a substantial proportion of patients exhibited additional characteristics.

Keywords

bladder diary; bother; nocturnal polyuria; sleep; voiding diary

1 | INTRODUCTION

Nocturia is one of the most prevalent and bothersome lower urinary tract symptoms (LUTS).[1] The prevalence of nocturia increases with age, with approximately 70% of men and women over the age of 60 reporting at least one episode per night.[2–4] Nocturia increases the risk of falls and hip fractures,[5] and can cause reduced sleep quality and overall quality of life.[2,6–9] There is also an association of nocturia with increased mortality risk.[7,10]

Current management paradigms use bladder diary data to classify nocturia into four subtypes: global polyuria (GP); nocturnal polyuria (NP); reduced bladder capacity; and mixed causes.[1,11] Definitions and reference ranges for the nocturia subtypes have typically been obtained from specific patient subgroups (eg, men over 60 with benign prostatic hyperplasia) or from community samples whose data may not reflect treatment-seeking individuals being evaluated and treated for their symptoms. Furthermore, no studies have systematically evaluated a large, diverse group of care-seeking patients with nocturia and categorized them into nocturia subtypes. The primary aim of this study was to characterize the prevalence, subtypes, and predictors of nocturia in a large cohort of men and women seeking treatment for LUTS.

2 | MATERIALS AND METHODS

2.1 | Study design and population

The Symptoms of Lower Urinary Tract Dysfunction Research Network (LURN) is a National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK)-funded multisite

consortium devoted to the study of the entire range of LUTS. The LURN conducted a 1-year prospective observational study that recruited adult men and women who presented to six US tertiary care sites for evaluation and treatment of their LUTS. Details about inclusion and exclusion criteria have been previously reported.[12] Briefly, men and women presenting to a LURN physician for the first time or a return visit (men only) were enrolled between 2015 and 2017. Data collected at baseline included demographics; medical history; the Functional Comorbidity Index (FCI)[13]; clinical exam results; a 3-day bladder diary; patient-reported urinary, bowel, and sexual function; psychological symptoms; and quality of life.

2.2 | Measures

Bladder diaries in the LURN Observational Cohort Study were collected using a modified version of the International Consultation on Incontinence Questionnaire bladder diary,[14] with detailed information on participant intake and output over a 3-day (72-hour) period (Appendix A), starting the morning of day 1.

Bladder diaries with void and intake data on three consecutive days with no missing void or intake volumes were used for analyses. If waking and sleeping times were not recorded for a given day, participant-specific averages were imputed from nonmissing days. If waking and sleeping times were not recorded for any of the 3 days, waking times of 6 *AM* and bedtimes of 12 *AM* were imputed. The following measures were derived from the bladder diaries: average number of night voids, average evening fluid intake (calculated as the average volume of fluid consumed in the 4 hours before bedtime), 24-hour urine output (for each of the three 24-hour periods across the diary), and the maximum voided volume (over the entire 3-day period). Nocturia was defined using the mean number of nighttime voids over the 3 days, with groups assigned as follows: no nocturia (no nighttime voids recorded over the 3 days), <1 void per night, 1 to <2 voids per night, and 2+ voids per night. A participant was defined as having GP if any of the three 24-hour periods on their bladder diary had 24-hour urine output exceeding 40 mL per kg body weight.[1] The presence of NP was assessed using the NP index (NPI), defined as the proportion of urine output occurring during nighttime hours (nocturnal urine volume/24-hour urine volume). By definition, the first AM voided volume is included as part of the nocturnal urine production when calculating the NPI. A participant was defined as having NP if their NPI exceeded 33%, based on the cutoff proposed by Van Kerrebroeck et al,[1] A participant was defined as having reduced global bladder capacity (GBC) if none of their maximum voided volumes were more than 300 mL.[15] Sensitivity analyses using cutoffs for GBC of 250 and 350 mL were also conducted. The presence of reduced nocturnal bladder capacity (NBC) was assessed using the NBC index (NBCi), defined as the actual number of nighttime voids from the bladder diary minus the predicted number of nighttime voids (PNV).[16] PNV was calculated by [(nighttime urine volume/maximum voided volume over the 3 days) − 1]; any participant with an NBCi more than 2 was defined as having reduced NBC.[16]

Participants completed the LUTS Tool questionnaire using a 1-week recall period. The 44-item questionnaire assesses the frequency and bother of LUTS,[17] and includes a measure of night voids, as follows: “During a typical night in the past week, how many times did you wake up because you needed to urinate?” [None, 1 time a night, 2 times a night, 3 times a

night, 4 or more times a night]. The corresponding bother question, “How much does this bother you?” [Not at all, A little bit, Somewhat, Quite a bit, A great deal], was used to assess nocturia-specific bother. Participants also completed the Patient-Reported Outcomes Measurement Information System (PROMIS) Sleep disturbance scale.[18] This scale derives a T-score for each participant normalized to the US population as a reference (mean = 50, standard deviation = 10). Higher scores on this scale indicate higher levels of sleep disturbance. A T-score greater than 57 was considered to represent a “clinically meaningful” sleep disturbance, as suggested in previous studies.[19]

2.3 | Statistical methods

Means (with SDs) and frequencies (with sample percentages) are reported for demographic, clinical, and bladder diary-derived variables by nocturia severity groups (no nocturia [reference], nocturia >0 to <1, nocturia 1 to <2, and nocturia 2+). Unadjusted comparisons of these variables among nocturia severity groups were assessed using chi-square and Kruskal-Wallis tests. The association between age and NPI was explored using simple linear regression. Multivariable multinomial logistic regression models were fitted to assess factors associated with the probability of membership in each category of nocturia severity. Candidate covariates included age, sex, race, body mass index category, FCI, diabetes mellitus, diuretic use, diagnosis of sleep apnea, average evening fluid intake, maximum voided volume, post-void residual, and PROMIS Sleep disturbance T-score. Differences in prevalence of “clinically meaningful” sleep disturbance, GP, NP, reduced GBC, and reduced NBC between nocturia severity groups were assessed using chi-square tests. All statistical analyses were completed using SAS 9.4 (SAS Institute, Cary, North Carolina).

3 | RESULTS

3.1 | Comparison of nocturia severity groups

Of the 1064 participants enrolled in LURN, 502 (285 men and 217 women) had analyzable 3-day bladder diaries and were included in the analysis. The mean age was 60.4 years (SD = 13.2; range, 21–86 years). The mean number of nocturia episodes over the 3-day diary period was 0 in 103 (20.5%) participants, >0 to <1 in 151 (30.1%) participants, 1 to <2 in 165 (32.9%) participants, and ≥2 in 83 (16.5%) participants. Only 21 (4.2%) participants reported a mean of three or more voids per night and were grouped with participants reporting an average of two voids per night. Characteristics of the sample and the four nocturia severity groups are summarized in Table 1. The mean age and prevalence of males both increased with nocturia severity. When compared with the nocturia = 0 group, sleep disturbance scores were, on average, higher for the nocturia 1 to <2 and nocturia 2+ groups and lower for the nocturia >0 to <1 group. No group had an average PROMIS Sleep disturbance T-score above 57, indicative of “clinically significant” sleep disturbance.[18] However, the nocturia 1 to <2 and nocturia 2+ groups had higher proportions of patients above this level, and these proportions were shown to be significantly different across nocturia groups ($P = .0166$). In addition, 23% of men and 31% of women exhibited “clinically significant” sleep disturbances. It is notable that 67% of participants with nocturia ≥1 (59% with nocturia 1% to <2% and 81% nocturia 2+) were at least “somewhat” bothered by their symptoms.

The trends noted in Table 1 were confirmed in multivariable analyses (Table 2). Odds of reporting 1 to <2 nocturia episodes (compared with the odds of reporting no nocturia episodes) were significantly increased with older age and male sex. Odds of reporting 2+ nocturia episodes (compared with the odds of reporting none) were significantly increased with male sex and higher sleep disturbance scores. The odds of reporting >0 to <1 nocturia episodes (compared with the odds of reporting none) were not significantly associated with any of the factors tested in this model.

3.2 | Prevalence of nocturia subtypes

To classify participants as having NP, we first explored the distribution of NPI in our cohort and tested for differences by age and sex (Figure 1). For all 502 participants, there was a poor correlation between age and NPI value ($r = .085$), and there was no difference in the mean NPI value between sexes (mean NPI = 0.34 for men, 0.35 for women, $P = .523$). Therefore, we did not adjust the definition of NP based on age or sex. We also assessed the association between nocturnal urine production and age and similarly found poor correlation ($r = .046$).

The distribution of nocturia subtypes is summarized in Table 3 and Figure 2. NP was the most common subtype and was present in 17% of those with nocturia = 0, 40% of those with nocturia >0 to <1, 65% of those with nocturia 1 to <2, and in 77% with nocturia 2+. "Mixed" subtypes (the presence of more than one nocturia subtype) was also more common as the degree of nocturia increased. Reduced NBC was uncommon in participants with nocturia = 0, >0 to <1, and 1 to <2 (0%, 0%, and 5%, respectively), but was present in 36% of participants with nocturia 2+. GP and reduced GBC were observed with similar frequency across the four nocturia severity groups (range 9%−22% for GP and 19%−28% for reduced GBC). Sensitivity analyses at differing cutoffs for defining GBC showed slight changes in the proportion of GBC across severity groups (range 8%−15% for 250 mL and 21%−32% for 350 mL), but similar results when comparing across severity groups (ie, there was no statistically significant difference in the proportion of reduced GBC across nocturia groups).

4 | DISCUSSION

We found that 49.4% of LUTS patients seen in clinic by urologists and urogynecologists have at least one episode of nocturia per night (on average), and 16.5% have at least two episodes per night. Nocturia ≥1 was noted to cause significant bother ("Somewhat" or greater) in 67% of these patients. In addition, 42% of patients with less than 1 mean nocturia episodes also reported significant bother. These results contrast with data from community-based studies (based on self-report), which suggest that nocturia is not bothersome for most people until it reaches at least twice per night.[9,20] This discrepancy may be due to the fact that we required bladder diary documentation of nocturia episodes (as opposed to patient self-report). Another potential explanation is the timing of the bladder diary, as the week being recalled on the questionnaires may not necessarily be the same week as when the bladder diary is completed. Finally, our study participants (treatment-seeking patients) may possess certain clinical, psychosocial, or demographic factors that cause them to be more bothered and seek care for their symptoms, as compared with a community-based sample of

individuals; this may also explain the discrepancy. Regardless, our data clearly suggest that even one episode of nocturia per night is bothersome for most LUTS patients who present for urologic care and that this degree of nocturia warrants evaluation and treatment.

In our multivariable analysis, increased age and male sex were associated with a higher likelihood of having increased nocturia episodes. The association between age and nocturia severity is well established[4] and appears to be due to multiple factors (medical comorbidities, medications, sleep disturbances, etc). However, most studies have found no clear association between sex and nocturia severity; hence, our findings were somewhat unexpected. Despite our statistical adjustments, it is possible that additional uncontrolled factors (eg, unmeasured medical comorbidities) may be present to a different degree in men vs women, which could explain our observed sex-specific differences. Alternatively, our findings may represent a valid observation that men who seek care for LUTS have more severe nocturia than women who seek care for LUTS. For example, multiple studies report that women utilize more healthcare services than men,[21] suggesting that men may delay seeking care until their symptoms (such as LUTS) are more severe.[22]

The standard approach to the clinical management of nocturia is to use bladder diary data to categorize patients based on the underlying nocturia subtype.[23,24] We started by examining NP, as this is the most common subtype. In young individuals (<35), the recommended NPI cutoff value is 0.20, while in older individuals (>65 years), the recommended cutoff value is 0.33.[1,25] These cutoff values are based on very limited empirical data, and to our knowledge, no cutoff values have been defined for the age group 35 to 65. In our analysis, we found that NPI values did not differ by age or sex, suggesting that a single NPI cutoff value of 0.33 can be employed for all patients. This may reflect the fact that our cohort was limited to men and women who are seeking care for LUTS; it is possible that any “normal” age or sex differences in NPI values are blunted by other clinical factors that are present in clinic patients. It is also important to acknowledge that our sample had few participants under the age of 35 (n = 17 men and 12 women); therefore, these findings may not be valid for these youngest individuals.

Defining an “abnormal” NPI value has been a subject of debate.[25] Population NPI values appear to be normally distributed,[26] and the International Continence Society (ICS) cutoff of 0.33 is based on the observation that older people excrete an average of 34% of their total urine during nighttime hours. Therefore, the ICS approach defines “abnormal” as any NPI value above the mean. Others have theorized that this cutoff is too lenient, and suggested using an NPI cutoff value set at the 95th percentile of the population (0.53).[26] In our cohort, the 95th percentile NPI value was 0.60, which is very similar to the 0.53 value obtained from a sample of healthy volunteers. However, it is not clear if using this higher cutoff is clinically appropriate, as it is not known whether specific NPI values are associated with a differential response to various treatments. Furthermore, utilizing a more extreme NPI value to define NP would result in a much smaller sample size for analysis in the present study. Given these uncertainties, we elected to use the standard 0.33 cutoff value to define NP for our study purposes.

Similarly, there is no consensus on definitions for reduced GBC. Lukacz et al[15] suggest that "normal" adult functional bladder capacity ranges from 300 to 400 mL.[15] Unfortunately, this range is not well established in the literature, and to our knowledge, no cutoff has been defined. Our result showing similar proportions of participants with reduced GBC across nocturia severity groups was not sensitive to a cutoff; however, our ability to describe this condition within our cohort is limited by this lack of well-established cutoff.

Consistent with prior studies,[23] we found that NP was the most common nocturia subtype, present in 65% of those with nocturia 1 to <2%, and 77% of those with nocturia 2+. As the severity of nocturia increased, the complexity also increased (Figure 2); over half of the participants with nocturia 2+ exhibited more than one nocturia subtype. It is notable that reduced NBC was quite common (36%) in the nocturia 2+ subgroup, suggesting that this might represent a "severe nocturia" phenotype that deserves further study. However, reduced NBC rarely occurred in isolation (only five patients had reduced NBC as the only subtype).

5 | CONCLUSIONS

Objective bladder diary data indicate that nocturia ≥1 is present in 49.4% of patients who present for treatment of their LUTS, and that this level of nocturia causes significant bother and deserves further clinical evaluation. The most common subtype is NP, but a substantial proportion of patients exhibit additional characteristics, such as reduced bladder capacity or GP.

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APPENDIX A:|: LURN BLADDER DIARY

Symptoms of Lower Urinary Tract Dysfunction Research Network (LURN) BLADDER DIARY

Diary reviewed by: _____

Date of baseline visit: _____

Table A1

Example of completed bladder diary

Time	Drinks Amount	Drinks Type	Bladder sensation	Leak (stress, urge, or other)	Urine output (oz)	Pads (✓ if you changed a pad)
7:30 AM			2		12 oz	✓
WOKE						
9:00 AM	8 oz	Juice				
9:15 AM	8 oz	Coffee				
9:45 AM			3		✓	
12:15 PM	16 oz	Tea				
3:30 PM			0		2 oz	✓
4:00 PM	8 oz	Water				
5:10 PM			4	Leak, urge	4 oz	
6:00 PM	16 oz	Water				
7:00 PM			1		8 oz	
9:00 PM						✓
BED						

Please complete this bladder diary in **3 consecutive days**. In the time column, please write the time (including AM and PM) in the time column for each entry, including the words **BED** when you went to bed and **WOKE** when you woke up (you only need to record "BED" and "WOKE" once each day).

Drinks: Write the amount you had to drink and the type of drink.

Bladder sensation: Enter the number that corresponds with how your bladder felt when you went to the toilet using these codes:

1. If you had no sensation of needing to pass urine, but passed urine for "social reasons", for example, just before going out, or unsure where the next toilet is.
2. If you had a normal desire to pass urine and no urgency. "*Urgency" is different from normal bladder feelings and is the sudden compelling desire to pass urine which is difficult to defer, or a sudden feeling that you need to pass urine and if you don't you will have an accident.*
3. If you had urgency but it had passed away before you went to the toilet.
4. If you had urgency but managed to get to the toilet, still with urgency, but did not leak urine.
5. If you had urgency and could not get to the toilet in time so you leaked urine.

Leak: Any unintended loss of urine not measurable in your container. Please indicate whether you leaked because of urgency, stress, or an unknown/other reason. "Urge Leakage" is loss of urine associated with urgency (defined in bladder sensation 1 above). It includes leaks when standing up from a seated position, on the way to the bathroom and with triggers

such as the presence of running water. “Stress leakage” is loss of urine associated with activity such as bending over, sneezing, laughing, coughing, lifting, jogging, running or walking briskly. If you are unsure if you leaked due to stress or urgency, please write “unknown/other”.

Urine output: Enter the amount of urine you passed in ounces (oz) in the urine output column, day and night. Any measuring container will do. If you passed urine but couldn’t measure it, please put a check in this column.

Pads: If you change a pad, put a check in the pads column.

NAME_____DAY 1 DATE: _____/_____/_____

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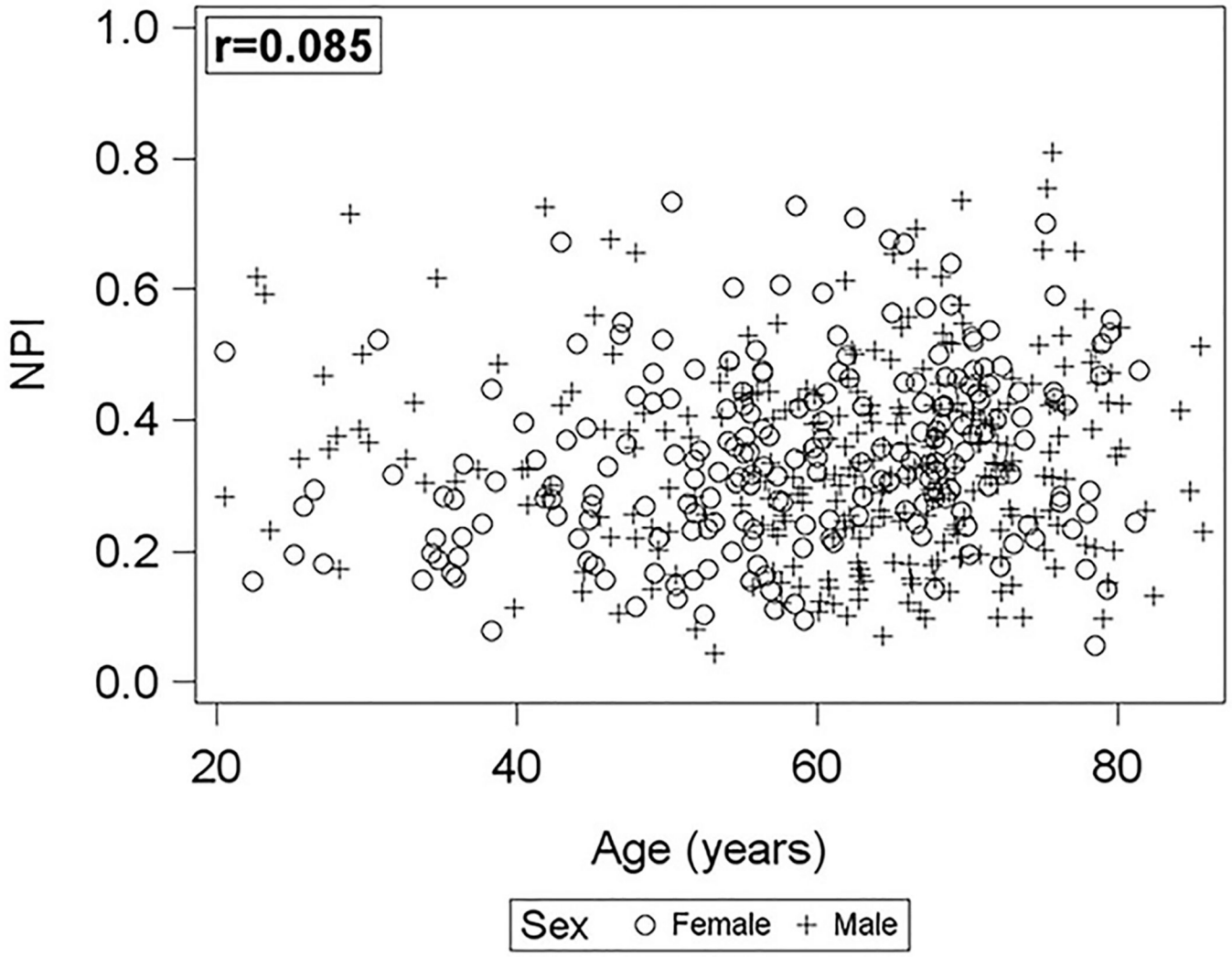

FIGURE 1.

Scatterplot of nocturnal polyuria index (NPI) by age. Circles represent female participants; plus signs represent male participants. Pearson correlation coefficient (*r*) included to quantify trend. NPI calculated as the proportion of output occurring during nighttime hours

TABLE 3 Distribution of nocturia subtypes (categories NOT mutually exclusive)

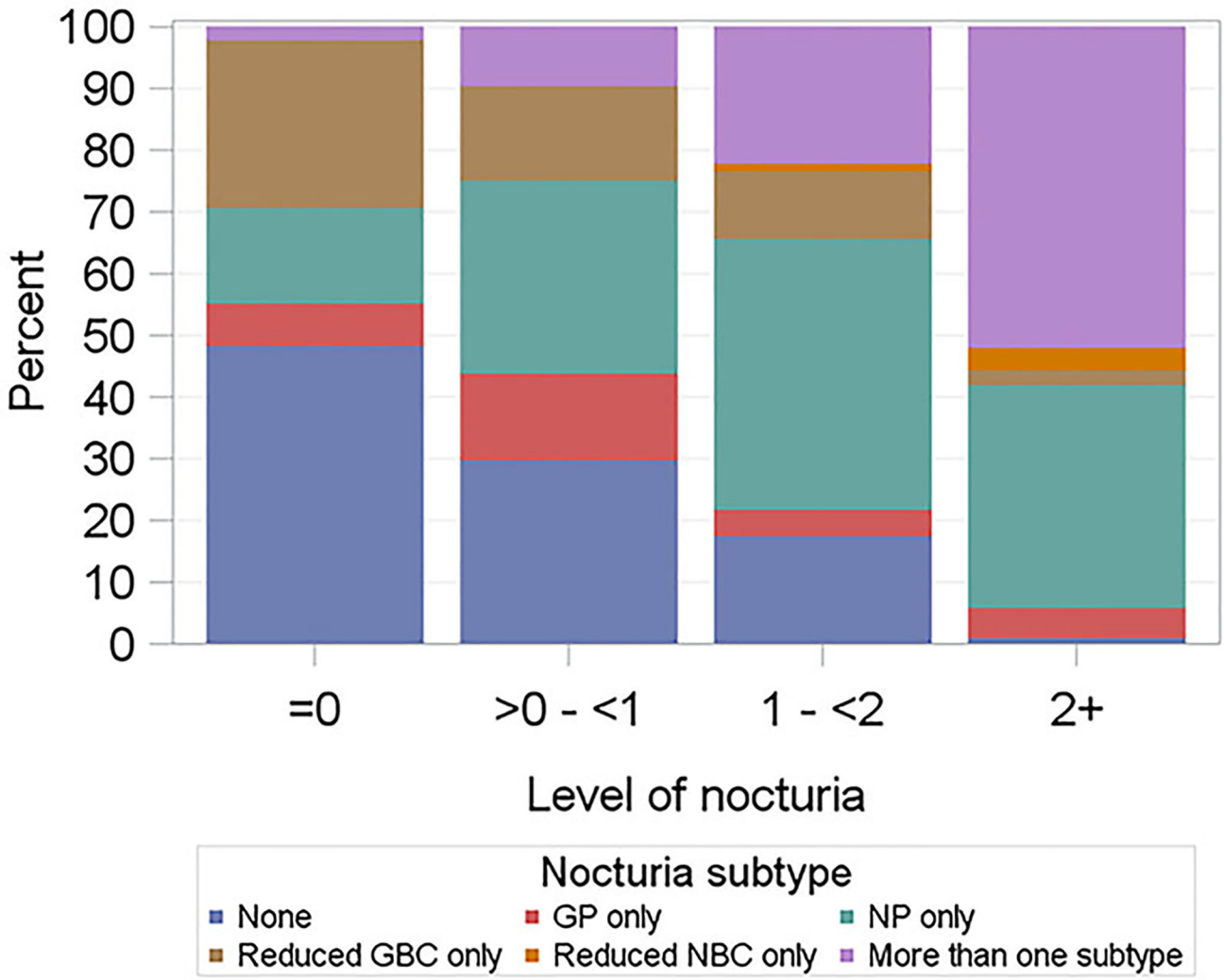

FIGURE 2.

Stacked bar chart of the percentage of participants with no nocturia subtype, only one nocturia subtype, and more than one nocturia subtype, by nocturia group. GBC, global bladder capacity; GP, global polyuria; NBC, nocturnal bladder capacity; NP, nocturnal polyuria

TABLE 1

Characteristics of patients with complete diaries (nocturia = 0, nocturia >0-<1, nocturia 1-<2, nocturia 2+)

	Nocturia = 0 (n = 103)	Nocturia >0 to <1 (n = 151)	Nocturia 1 to <2 (n = 165)	Nocturia 2+ (n = 83)	*p**
Age	57.3 (14.4)	59.4 (13.6)	63.1 (11.6)	60.8 (13.2)	.009
Sex (male)	46 (45%)	81 (54%)	106 (64%)	52 (63%)	.009
Race					.003
White	79 (79%)	124 (84%)	138 (86%)	75 (90%)	
Black	19 (19%)	10 (7%)	15 (9%)	4 (5%)	
Multiracial/other	2 (2%)	14 (9%)	7 (4%)	4 (5%)	
BMI					.055
Underweight/normal (BMI < 25)	28 (27%)	38 (25%)	24 (15%)	22 (27%)	
Overweight (BMI 25–30)	28 (27%)	56 (37%)	74 (45%)	27 (33%)	
Obese (BMI 30–35)	25 (24%)	28 (19%)	41 (25%)	21 (25%)	
Morbidly obese (BMI > 35)	22 (21%)	28 (19%)	25 (15%)	13 (16%)	
Functional comorbidity index	2.2 (2.0)	2.3 (1.9)	2.4 (1.8)	2.4 (2.0)	.473
Diabetes mellitus	19 (18%)	26 (17%)	29 (18%)	10 (12%)	.652
Diuretic use	7 (7%)	23 (15%)	29 (18%)	16 (19%)	.057
Sleep apnea diagnosis	24 (23%)	40 (27%)	40 (24%)	11 (13%)	.123
Avg evening fluid intake, mL	359.8 (248.3)	371.8 (276.2)	342.1 (237.8)	391.8 (283.3)	.748
Max voided volume, mL	455.1 (211.2)	504.3 (218.9)	458.0 (206.7)	446.6 (197.8)	.102
Postvoid residual, mL	44.9 (77.4)	63.6 (98.8)	74.9 (102.9)	58.7 (124.8)	.026
PROMIS sleep disturbance T-score	51.3 (8.2)	50.8 (8.5)	52.8 (8.7)	54.5 (8.6)	.006
PROMIS “significant” sleep disturbance (ie, T-score > 57)	21 (21%)	30 (20%)	51 (32%)	29 (35%)	.017
LUTS tool question 3 (nighttime frequency bother)					<.001
Not at all	36 (37%)	35 (24%)	22 (14%)	5 (6%)	
A little bit	20 (20%)	49 (33%)	41 (25%)	8 (10%)	
Somewhat	17 (17%)	31 (21%)	49 (30%)	22 (28%)	
Quite a bit	16 (16%)	25 (17%)	30 (19%)	27 (34%)	
A great deal	9 (9%)	8 (5%)	19 (12%)	18 (23%)	

Note: Nocturia groups based on the average number of nighttime voids across three nights of voiding diary. Missingness is 3.0% or less for all variables except postvoid residual (17.3%).

Abbreviations: BMI, body mass index; LUTS, lower urinary tract symptoms; PROMIS, Patient-Reported Outcomes Measurement Information System.

* *P* value comparing all nocturia groups from the χ^2 test or the Kruskal-Wallis test.

TABLE 2

Factors associated with different levels of nocturia (results from multinomial logistic regression model)

	Nocturia >0 to <1 vs nocturia = 0			Nocturia 1 to <2 vs nocturia = 0			Nocturia 2+ vs nocturia = 0		
Variable	**Odds ratio estimate**	**95% Confidence interval**	***P***	**Odds ratio estimate**	**95% Confidence interval**	***P***	**Odds ratio estimate**	**95% Confidence interval**	***P***
Age (per 10-y increase)	1.007	[0.988, 1.026]	.481	1.030	[1.01, 1.051]	**.004**	1.017	[0.994, 1.041]	.142
Sex (male vs female)	1.372	[0.813, 2.315]	.236	2.187	[1.287, 3.718]	**.004**	2.127	[1.153, 3.923]	**.016**
PROMIS sleep disturbance (per five-point increase)	0.999	[0.969, 1.029]	.930	1.030	[0.999, 1.063]	.060	1.053	[1.016, 1.091]	**.005**

Note: Bold values indicate statistical significance $P < .05$.

Abbreviation: PROMIS, Patient-Reported Outcomes Measurement Information System.

TABLE 3

Distribution of nocturia subtypes (categories NOT mutually exclusive)

	Nocturia = 0 (n = 103)	**Nocturia > 0 to < 1 (n = 151)**	***P****	**Nocturia 1 to <2 (n = 165)**	***P****	**Nocturia 2+ (n = 83)**	***P****
None	50 (49%)	45 (30%)	**.002**	29 (18%)	**<.001**	1 (1%)	**<.001**
GP	9 (9%)	30 (20%)	**.015**	18 (11%)	.555	18 (22%)	**.013**
NP	17 (17%)	61 (40%)	**<.001**	107 (65%)	**<.001**	64 (77%)	**<.001**
Reduced GBC	29 (28%)	29 (19%)	.095	41 (25%)	.549	22 (27%)	.802
Reduced NBC	0 (0%)	0 (0%)	…	8 (5%)	**.023**	30 (36%)	**<.001**

Note: Bold values indicate statistical significance $P < .05$.

Abbreviations: GBC, global bladder capacity; GP, global polyuria; NBC, nocturnal bladder capacity; NP, nocturnal polyuria.

*P values for Nocturia >0 to <1 vs Nocturia = 0 from the χ^2 test.;

**P values for Nocturia 1 to <2 vs Nocturia = 0 from the χ^2 test.;

***P values for Nocturia 2+ vs Nocturia = 0 from the χ^2 test.

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