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Video Demonstration

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Title (type in CAPITAL LETTERS)	VALIDITY OF SELF-REPORTED NOCTURIA AND NOCTURNAL POLYURIA IN OLDER SUBJECTS

AIMS OF STUDY

Nocturia is a common and bothersome problem in the geriatric population, yet standardized definitions and the validity of self-recorded frequency-volume data have not been fully established. This information is critical for designing intervention trials and for interpreting self-reported data used as outcomes measures in these trials. The aim of this study is to prospectively determine the validity of determinations of nocturia, nocturnal polyuria (NP), and nocturnal bladder capacity (NBC) using data from subject-recorded voiding diaries, compared to data collected in a clinical research center (CRC).

METHODS

Twenty-four consecutive community-dwelling, high functioning subjects over 65 years of age (16 women, 75% female, mean age 73) participating in research on the pathophysiology of geriatric nocturia were included. Each was carefully instructed by a research nurse in the proper collection of urine at home using toilet inserts, and asked to complete detailed voiding diaries over 7 consecutive days. The diaries were clearly labeled in large print. In the CRC, research staff collected and measured each subject void over a 24-hour urine period on the eighth day of the study. Subjects were supplied a specified diet and calculated daily fluid intake both at home and in the CRC. Subject-recorded voiding diary data were compared to CRC data using paired t-tests to test for significant differences in mean number of voids, and average, maximum, and total volume voided. Subjects were categorized as having NP if nighttime voided volume (11pm-7am) divided by total 24-hour volume was 35% or greater, and as having a diminished nocturnal bladder capacity (NBC) if the actual number of nighttime voids were greater than predicted nighttime voids (as defined in Weiss, et. al. ¹, and subsequently modified).

RESULTS

Using data from voiding diaries, 16 of 24 (66%) of subjects had NP and all 24 had diminished NBC. Using CRC data, 10 of 24 (42%) of subjects had NP and all 24 again had diminished NBC. Seven subjects who by voiding diary had NP did not have NP using CRC data, and only one subject did not have NP using voiding diary data and had NP using CRC collection data (Table 1).

		CRC data	
		+NP	-NP
Voiding Diary	+NP	9	7
	-NP	1	7

Using CRC data as a comparison gold standard, subject-collected voiding diaries had a sensitivity of 90% (9/10) and a specificity of 50% (7/14) for NP. Means and standard deviations for the group frequency/volume data are presented in Table 2.

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Table 2	Subject Report 7-day/night voiding diary (Mean +/- S.D.) N=24	Clinical Research Center 1 day/night research staff recordings (Mean +/- S.D.) N=24	Paired T-test, Two-tailed P value
Number of voids			
Day (7 a.m. - 11 p.m.)	7.3 +/- 2.1	9.2 +/- 3.5	0.001
Night (11 p.m. - 7 a.m.)	3.4 +/- 1.8	3.5 +/- 1.7	0.802
Total	10.8 +/- 3.2	12.6 +/- 4.6	0.001
Volume Voided (ml)			
Day	1359 +/- 546	1428 +/- 601	0.545
Night	927 +/- 348	799 +/- 325	0.100
Total	2286 +/- 659	2227 +/- 799	0.710
Maximum Voided Volume (ml)			
Day	468 +/- 196	307 +/- 108	0.000
Night	548 +/- 288	373 +/- 133	0.000
Total	577 +/- 234	397 +/- 120	0.000
Average Voided Volume (ml)			
Day	189 +/- 60	166 +/- 66	0.017
Night	302 +/- 117	255 +/- 113	0.049
Total	221 +/- 66	187 +/- 69	0.002

CONCLUSIONS

In a population of highly functional older research subjects, subject-recorded voiding diaries demonstrated high sensitivity, but poor specificity, for the diagnosis of NP. Voiding diary data also showed significantly lower number of daytime voids and lower maximum and average voided volumes than did CRC data. This disagreement may have been due to the subjects' inability to accurately see and record voided volume, their forgetting to record daytime voids, or changes in usual voiding patterns caused by asking subjects to record urine output. In a clinical setting, these properties suggest that voiding diaries are highly useful for excluding NP, but not for confirming NP. For research studies, the disagreement between subject and research staff-collected data calls into question the validity of using maximum and average voided volume as outcome measures in clinical trials. The number of nighttime voids at home was however similar to CRC collected data, suggesting that older subjects can accurately report number of nighttime voids. All 24 of our subjects were categorized as having a diminished nocturnal bladder capacity, suggesting that this measure is very common in an older population, and may not be as useful for categorizing various causes of nocturia as in younger patients.

²Weiss JP, Blaivas JG, Stember DS, Brooks MM. Nocturia in adults: etiology and classification. *Neurourology and Urodynamics* 17:467-472 (1998).