

RISK FACTORS FOR PREVALENT AND INCIDENT NOCTURIA AMONG OLDER ADULTS

Hypothesis / aims of study

The purpose of these analyses was to see if several potentially modifiable risk factors were associated with nocturia and the development of nocturia. We hypothesized that presumed risk factors, such as night time fluid intake and hypertension, would be associated with greater nocturia and the development of nocturia.

Study design, materials and methods

This study was a secondary data analysis using cross-sectional and longitudinal data. Respondents to the survey were men and women 60 years of age and older living in a single county in Michigan, USA, during 1983-1986. Measurements were episodes of nocturia, development of nocturia at 2 years following baseline survey, age, gender, hypertension, diabetes, drinking fluids prior to bedtime, amount of fluid intake prior to bedtime, diuretic use, and coffee intake over a 24-hour period. All measures were self-reported. For the nocturia variable, the answer to the question, "Generally, how many times do you usually urinate after you have gone to sleep at night?" was dichotomized into ≥ 2 (nocturia) and <2 (no nocturia) categories. To be categorized as having 'incident' nocturia, a participant had either zero or one episodes of nocturia at baseline and at least two episodes of nocturia at the follow-up. SPSS 11.0 for Windows was used for all statistical analyses. Data were examined for collinearity and effect modification by age or gender. Variables related in bivariate analysis to nocturia variables with $p < 0.10$ were further evaluated in backwards stepwise multi-variable logistic regression using $p < 0.05$ as the criterion for inclusion and $p > 0.10$ for variable withdrawal.

Results

There were 1956 respondents to the initial survey, 1632 of whom answered the question on nocturia. These 1632 respondents had a mean age of 69.7 years, 59% were female, and 1112 (68%) had 0 - 1 episodes of nocturia, and 520 (32%) had ≥ 2 episodes. The results of bivariate and multivariable analyses are shown in **Table 1**. There were 1105 respondents who answered the question about nocturia on both the initial and follow-up survey. At baseline, 748 (68%) had 0 - 1 episodes of nocturia and 357 (32%) had ≥ 2 episodes of nocturia. Among those 748 who had 0 - 1 episodes at baseline, 259 (35%) reported having ≥ 2 episodes of nocturia at follow-up. In longitudinal analysis, **no** baseline factors predicted development of nocturia (except for participant age, in one model).

Interpretation of results

Hypertension, diuretic usage, and each year of additional age over 60 were independently associated in cross-sectional analysis with greater odds of having nocturia. Fluid intake, amount of fluid intake, and coffee drinking, though frequently implicated as causes clinically, were not associated with having more nocturia. In a longitudinal analysis, no examined variable predicted incident nocturia.

Concluding message

In this community-based sample of older adults, several factors were associated with nocturia in cross-sectional analysis. Despite the fact that over a third of the sample with <2 nocturia episodes at baseline reported ≥ 2 episodes at a follow-up interview two years later, baseline factors associated with nocturia in cross-sectional analysis failed to predict incident nocturia.

Table 1

	Bivariate analysis		Multivariable analysis	
	Odds Ratio	95% confidence interval	Odds Ratio	95% confidence interval
Being male	1.02	0.82 - 1.26		
Being told by a doctor that you have hypertension	1.70	1.38 – 2.10	1.52	1.19 – 1.94
Being told by a doctor that you have diabetes	1.51	1.13 – 2.01		
Having fluids at bedtime	0.97	0.76 – 1.25		
Using a diuretic	1.67	1.34 – 2.09	1.31	1.01 – 1.69
Age, in years*	1.05	1.03 – 1.06	1.04	1.03 – 1.06
Fluids at bedtime (% of an 8-ounce serving)*	1.05	0.96 – 1.15		
Number of cups of coffee in a 24-hour period*	0.94	0.89 – 0.98		

* OR for each additional year, portion of 8-ounce (227 ml) serving, or cup of coffee

Funding

Emory Center for Health and Aging