

PREVALENCE AND CORRELATES OF NOCTURIA IN MEN – A LARGE COMMUNITY BASED STUDY

Aims of Study

Nocturia is a condition where the individual has to wake up at night one or more times to void.(1) Until recently, nocturia in men was regarded principally as a problem related to prostatic enlargement, but is now increasingly recognized as a clinical entity in its own right. Due to different population samples and definitions, prevalence estimates have varied. Our objective was to establish prevalence estimates of nocturia in a total community population of approximately 30,000 men, and investigate and quantify how the prevalence varies by different definitions. We also wanted to identify factors that correlate with nocturia.

Methods

This study is part of a comprehensive health study (HUNT 2) that was conducted in a county in Norway from 1995 to 97. All citizens 20 years and older were invited, and the overall participation was 70%. A self-administered questionnaire included demographic variables, lifestyle factors, current medications, and urinary history (including questions about nocturia and prostatic enlargement). Self-reported prostatic enlargement was ascertained in two ways: either having been told by a doctor that the prostate was enlarged, or having undergone surgery of the prostate due to hyperplasia. Clinical measurements, including blood pressure and waist/hip ratio, were also performed. Prevalence estimates for nocturia were calculated using three different definitions; having to get up to void (1) one or more, (2) two or more, or (3) three or more times at night. Relevant variables from the health survey were included in logistic regression analyses to identify correlates for nocturia that may also be risk factors for the condition. Using the three definitions of nocturia separately as outcome variables, independent variables included age, life style factors (smoking, alcohol, coffee, physical activity), use of antihypertensive medication, systolic blood pressure, waist/hip ratio, and self-reported prostatic enlargement.

Results

*Figure 1. Prevalence of nocturia according to definitions and age groups in 23 220 men. Nocturia \geq 1: All 3 stacked bars ((Noct.=1)+(Noct.=2)+(Noct. \geq 3)). Overall prevalence: 52.7%
Nocturia \geq 2: Two lowest stacked bars ((Noct.=2)+(Noct. \geq 3)). Overall prevalence: 19.0%
Nocturia \geq 3: Lowest bar. Overall prevalence: 8.4%*

30,556 men returned the questionnaire, and 23,220 (75.9 %) had answered questions about nocturia. Prevalence estimates for nocturia according to the three different definitions are shown in Figure 1. Regardless of definition, the prevalence of nocturia increased gradually with increasing age. Results from multiple logistic regression analyses are shown in Table 1. In addition to age, important independent correlates of nocturia were prostatic enlargement, and to a lesser extent use of antihypertensive drugs. A weak, but statistically significant association was noted with waist/hip ratio. Nocturia risk was inversely associated with systolic blood pressure and smoking. Using different definitions of nocturia did not materially change these results. Coffee consumption was associated with the lowest level of nocturia, while there were no significant association with physical activity and use of alcohol.

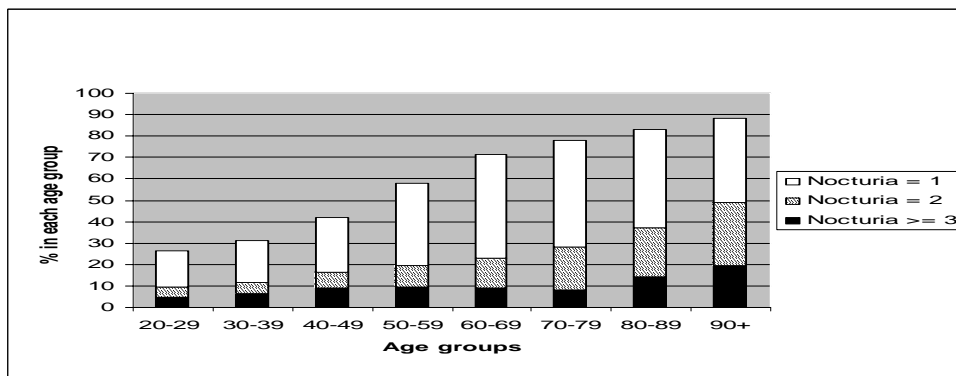


Table 1. Results from multiple logistic regression analyses, Odds Ratio (95% confidence intervals). Reference category: a Age group 20-29; b Waist/hip ratio < 0.851

Independent variables	Dependent variables		
	Nocturia >=1	Nocturia >=2	Nocturia >=3
Age groups ^a			
30-39	1.18 (1.04-1.33)	1.17 (0.98-1.40)	1.35 (1.06-1.73)
40-49	1.88 (1.67-2.10)	1.79 (1.52-2.11)	2.01 (1.60-2.53)
50-59	3.36 (2.98-3.79)	2.05 (1.73-2.43)	2.10 (1.67-2.66)
60-69	5.40 (4.72-6.17)	2.09 (1.75-2.50)	1.67 (1.30-2.15)
70-79	6.52 (5.62-7.56)	2.31 (1.92-2.80)	1.36 (1.03-1.78)
80-89	8.30 (6.52-10.55)	3.41 (2.69-4.32)	2.07 (1.48-2.90)
>= 90	33.8 (4.99-228.9)	6.32 (2.77-14.44)	3.74 (1.43-9.78)
Waist/hip ratio (quintiles) ^b			
0.851-0.881	1.09 (0.99-1.20)	1.11 (0.98-1.26)	1.18 (0.99-1.39)
0.882-0.906	1.06 (0.96-1.17)	1.02 (0.90-1.16)	1.04 (0.87-1.23)
0.907-0.942	1.05 (0.95-1.16)	1.07 (0.94-1.21)	1.04 (0.88-1.24)
>0.942	1.31 (1.18-1.45)	1.34 (1.18-1.51)	1.23 (1.03-1.46)
Prostatic enlargement	2.16 (1.91-2.45)	2.24 (2.01-2.50)	2.01 (1.72-2.34)
Syst. blood pressure >=150	0.90 (0.84-0.97)	0.85 (0.78-0.93)	0.81 (0.71-0.91)
Antihypertensive drugs	1.40 (1.25-1.56)	1.32 (1.18-1.47)	1.22 (1.04-1.43)
Smoking	0.83 (0.78-0.89)	0.85 (0.78-0.93)	0.86 (0.76-0.97)
Coffee >= 5 cups/day	1.10 (1.04-1.17)	1.03 (0.96-1.11)	0.95 (0.85-1.05)
Alcohol	0.91 (0.81-1.02)	0.89 (0.78-1.01)	0.92 (0.77-1.11)

Conclusions

This large study, comprising the total adult population in a county, confirms that nocturia is a highly prevalent condition in men, and that the prevalence increases with age. Any nocturia (nocturia >=1) showed a roughly linear increase with age throughout the life span, while more severe nocturia (>=3) was relatively stable through young and middle age, but increased markedly in the older age groups. From a clinical point of view, this prevalence study does not directly address how many men are in need of treatment, as specific questions about bothersomeness were not included. Not surprisingly self-reported prostatic enlargement was a significant predictor for nocturia, even if nocturia has been recognized as a clinical entity and not only as a result of hyperplasia of the prostate. The negative association between smoking and prevalence of nocturia was notable, as was the negative association with blood pressure. These findings should warrant further investigations.

References

1. Van Kerrebroeck P et al. The standardization of terminology in nocturia: report from the standardization subcommittee of the International Continence Society. *BJU Int* 2002;**90** Suppl 3:11-5.