

OBESITY INCREASES NOCTURIA - A POPULATION-BASED STUDY IN FINLAND

Hypothesis / aims of study

Our aim was to assess the association of nocturia with overweight and obesity.

Study design, materials and methods

A questionnaire was mailed to a random sample of 6000 Finnish people aged 18 to 79 years, identified from the Finnish Population Register Centre. Stratification by age was used, with oversampling of the younger age groups to enhance statistical power. Nocturia was defined as any regular night-time voiding. Information on voiding symptoms was collected using the validated DAN-PSS questionnaire[1], with an additional question from AUA-SI questionnaire[2] Self-reported current body weight and height were used to calculate BMI (body weight in kilograms divided by the square of height in meters). Subjects with BMI from 25 to 30 kg/m² were classified as overweight and greater than 30 kg/m² as obese in accordance with the WHO recommendation[3]. Age-standardized prevalence was calculated using the European standard population.

Results

Of the 6000 subjects, 3729 (62.4%) participated in the survey and 23 were ineligible. Of the respondents, 3560 (95.5%) responded to all the nocturia questions and both anthropometric questions. The mean age of the respondents was 43.5 years (SD 16.3) for men and 42.0 years (SD 15.7) for women. Of the respondents, 53.3% were women.

Age-standardized mean of BMI was 26.3 kg/m² (SD 3.9 kg/m²) for men and 25.2 kg/m² (SD 5.2 kg/m²) for women. Age-standardized prevalence of overweight (excluding obesity) was 45.7% (95% confidence interval, CI 42.4%-49.1%) for men and 30.8% (28.2%-33.5%) for women. Age-standardized prevalence of obesity was 13.5% (11.7%-15.4%) for men and 13.2% (11.5%-14.9%) for women.

Among men, the age-standardized prevalence of nocturia (at least one void per night) was 33.4% (28.5%-38.3%) among non-overweight (BMI < 25.0 kg/m²), 35.8% (31.4%-40.1%) among overweight and 48.2% (38.8%-57.6%) among obese subjects. Corresponding figures with nocturia defined as at least two voids per night were 10.2% (7.48%-12.9%) for non-overweight, 11.2% (8.84%-13.6%) for overweight and 16.6% (11.6%-21.5%) for obese men.

Among women, the age-standardized prevalence of nocturia (at least one void per night) was 37.2% (33.0%-41.5%) among non-overweight, 48.3% (42.5% – 54.2%) among overweight and 53.6% (43.9%-63.2%) among obese. Corresponding figures with nocturia defined as at least two voids per night were 8.23% (6.12%-10.3%) for non-overweight, 14.8% (11.6%-18.0%) for overweight and 22.6% (16.4%-28.9%) for obese women.

Figure 1. Prevalence of nocturia (at least one void per night) of a sample of 1663 Finnish men

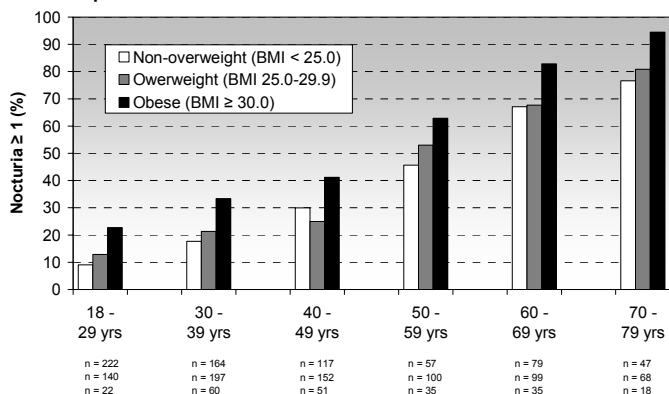


Figure 2. Prevalence of nocturia (at least two voids per night) of a sample of 1663 Finnish men

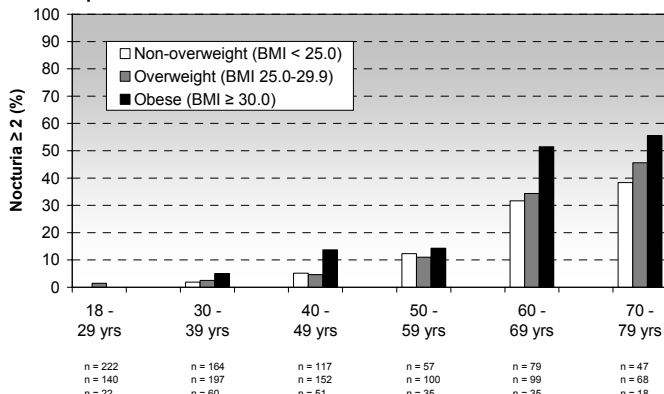


Figure 3. Prevalence of nocturia (at least one void per night) of a sample of 1897 Finnish women

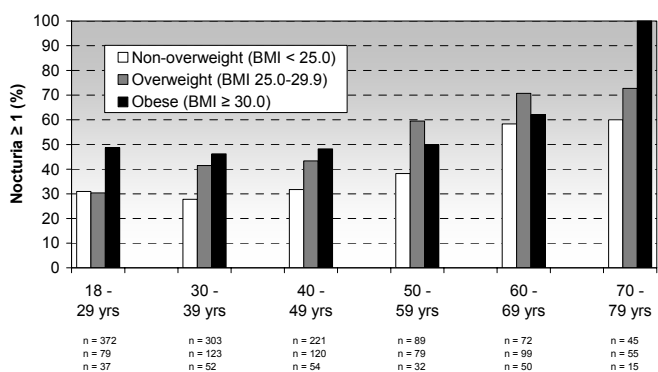
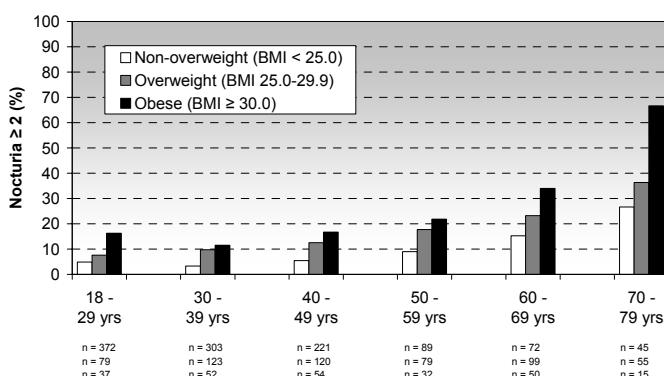


Figure 4. Prevalence of nocturia (at least two voids per night) of a sample of 1897 Finnish women



Interpretation of results

We conducted a questionnaire survey in representative sample of the Finnish population and achieved a high response rate. The age-standardized prevalence of nocturia is lowest among non-overweight and highest among obese men and women, regardless of criteria used. The exception may be the menopausal and postmenopausal women, among whose nocturia (at least once per night) may be most common among overweight (not obese). Prevalence of nocturia increases with BMI in both sexes but more clearly among women than men.

Concluding message

Overweight and especially obesity increases nocturia, more among women than men.

References

1. The value of a new symptom score (DAN-PSS) in diagnosing uro-dynamic infravesical obstruction in BPH. *Scand J Urol Nephrol*, **27**: 489, 1993
2. The American Urological Association symptom index for benign prostatic hyperplasia. The Measurement Committee of the American Urological Association. *J Urol*, **148**: 1549, 1992
3. WHO Expert Committee. *Physical status: the use and interpretation of anthropometry*. WHO Technical Report Series no. 854. WHO: Genova 1995