

## PRIZE AWARD: Award for Innovative Research Presented on Nocturnal Voiding Problems

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### AN EPIDEMIOLOGICAL STUDY OF NOCTURIA IN CHINESE PEOPLE OLDER THAN 40 YEARS OLD

#### Hypothesis / aims of study

It has been reported that nocturia is common in elderly people, and the prevalence is about 68.9-93%, which increases with aging. However, so far there is no epidemiological survey in China in Chinese people older than 40 years old. By means of questionnaires on site, we found that the prevalence rate of nocturia increased with age, the male and the people with diabetes mellitus were more likely to be affected.

#### Study design, materials and methods

A randomized, community-based, cross-sectional study were performed on 10160 inhabitants aged over 40 years old in urban in mainland of China, using a stratified system sampling approach from June 2010 to February 2011. A questionnaire including age, sex, body weight, height, nocturia, diabetes mellitus (DM) was filled by the investigator on site. Nocturia indicate that the individual has to wake at night one or more times to void according to the terminology of ICS [1]. Severe nocturia was to wake at least 2 times per night to void. The fasting plasma glucose (FPG) and 2 hours plasma glucose level post given oral glucose (2hPG) were recorded simultaneously to diagnose DM.

Inclusion criteria: Males or females older than 40 years, with self consciousness, who could understand the requirements of the survey and cooperate with the investigator.

Exclusion criteria: 1. Pregnant; 2. Elderly people with poor health conditions, or have difficulty in communication; 3. History of operation on prostate, urethra or bladder; 4. Suffering from nervous system diseases that might affect urinating; 5. History of bladder or prostate tumor and drug administration that might affect urinating.

Chi-square test was used to determine the differences of nocturia prevalence between genders, age groups, and people with and without diabetes mellitus. A program of SPSS 16.0 was used for statistical analysis.  $P < 0.05$  was considered to be statistical significant.

#### Results

A total of 10160 (57.9±9.7 Y) were investigated and finally 9880 (96.5%) were qualified to enter the final statistical analysis. Of them, 32.1% male (3169) and 67.9% female (6711), the overall prevalence of nocturia was 73.4% (7254/9880), severe nocturia was 31.5% (3117/9880) and more male were affected than female (33.6% versus 30.6%,  $p < 0.05$ ). The prevalence rate of nocturia increased with age, and in people older than 70 years it reached to 81.3% (1066/1311) (whereas severe nocturia prevalence was 48.9%(642/1311)). Subjects with DM were more affected than those without DM. International prostate symptoms scores (IPSS) was higher in people with severe nocturia (5.07±5.31) than in those without (1.68±2.68).

#### Interpretation of results

Bosch et al reported that prevalence rate of nocturia ranged from 28.3% to 61.5% in older people [2]. However, the prevalence of severe nocturia has not been reposted. In addition, we found that male was more affected than female. It is well kknow that high tendency of suffering from benign prostate hyperplasia (BPH) in men over 40 years old. This might be one of the factors induced higher prevalence of nocturia in males. Both polyuria and overactive bladder induced by DM might lead to nocturia. This may explain why present study showed that people with DM are more likely to have nocturia than those without DM. Moreover, high IPSS in people with severe nocturia indicated BPH was one of the causes of nocturia.

#### Concluding message

The nocturia prevalence rate was high in people older than 40 years and increased with age. More men were affected nocturia than women. People with DM were more likely to suffer from nocturia than those without DM. This epidemiology survey illustrated that nocturia was associated with gender, age, diabetes and possibly, BPH in people older than 40 years in mainland China. Other factors related to nocturia including obesity, smoking, alcohol intake, and hypertension needs further evaluation in the future.

#### References

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Disclosures

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