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Graugaard-Jensen C[1], Falkenberg A B[2]
1. *Department of Urology, University Hospital of Aarhus, Skejby Section, Denmark,* ***2.*** *Ferring Lægemidler A/S, Kay Fiskers Plads 11, 2300 Copenhagen, Denmark*

AN EXPLORATIVE EPIDEMIOLOGICAL PATIENT-REPORTED SURVEY INVESTIGATING A POTENTIAL RELATION BETWEEN NIGHT TIME WORK AND NOCTURIA

Hypothesis / aims of study

Night time work has been documented to have negative influence on both physical and mental health. This is due to the body's inability to synchronize the biological circadian clock to the work schedule, often leading to sleep deprivation (1).

Nocturia (waking up to void ≥1 time per night) is one of the most frequently reported reasons for sleep fragmentation in adults working regular hours. 55-86 % of nocturia incidents are due to nocturnal polyuria (2,3), a condition, which sometimes can be caused by an impaired circadian rhythm of arginine vasopressin secretion resulting in a larger ratio of urine being excreted during nighttime.

The potential health problems of night time work have been investigated in many ways, but it has never been explored if there is a relation between changes in circadian rhythm due to night time work and nocturia. We therefore wanted to study if nocturia is a problem for night time workers.

Study design, materials and methods

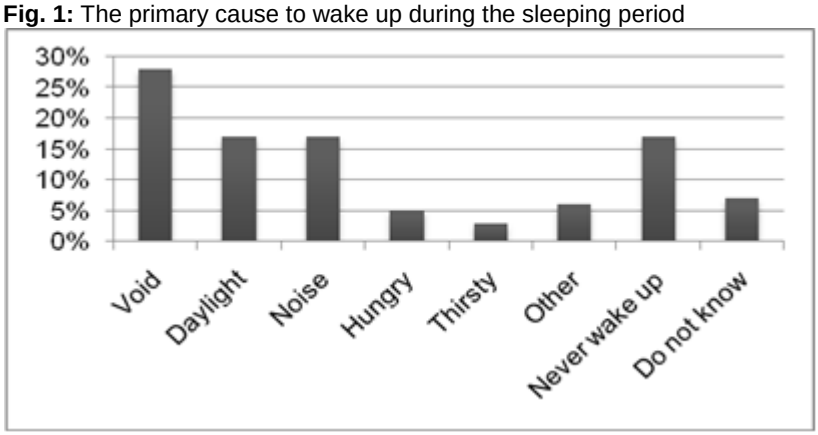
10.013 men and women (18-65 years) in a Danish and Swedish IT-panel were asked to participate in this cross sectional observational survey, if they worked at night at least once a week. 12% (n=1193) had night work and received a semi-structured, self-reporting questionnaire consisting of 26 questions with a further possibility to ask 10 detailed questions exploring the level and burden of nocturia.
The dropout-rate was 2.70% in Denmark and 3.26% in Sweden. The data were tested using Chi^2-test and t-test. Results were considered significant at p< 5 %.

Results

56% (n=668) estimated that they had slept < 6 hours after last night shift. 33% (n=221) of the respondents sleeping less than 6 hours felt that their overall wellbeing was 'very decreased' or 'extremely decreased' when they suffered from nocturia.

52% (n=624) woke up sometimes due to nocturia. 28% (n=334) stated that the primary reason for waking was the need to void (see table 1).

Fig. 1: The primary cause to wake up during the sleeping period



Of the respondents stating that they woke up due to nocturia (n=624) more than 51% of the responders felt that their overall wellbeing was 'to some extent', 'very' or 'extremely' decreased (see table 1).

Table 1: Did you feel bothered about getting up to void during the sleeping period?

Answers:	Number of patients	Procentage of patients
Not at all	106	17%
Slightly	187	30%
To some extent	187	30%
Very much	87	14%
Extremely	44	7%
Don't know	12	2%
Total	624	100%

34% (n=546) used more than 10 minutes to fall asleep after voiding.
In the group of night time workers who went to void 2 or more times per night there were significantly ($p < 0.05$) more responders who worked >1 night shift per week and who always had more than one night shift in a row.
71% (n=1193) stated that they did not reduce their fluid-intake during the night work to avoid voiding in the sleeping-period.

Interpretation of results

The results of this survey reflect the pattern reported from several studies in populations with regular working hours: 1) Nocturia is reported as the main reason for waking up at night. 2) Nocturia is considered quite bothersome. It is, however, not possible based on this survey to evaluate whether a larger proportion of night time workers suffer from nocturia compared to people with daytime jobs or if they feel more bothered.

The survey shows a significant correlation between several night shifts a week and an increase in number of nocturnal voiding episodes. A potential explanation could be that the impaired circadian rhythm due to night time work is interacting with the impaired circadian rhythm of arginine vasopressin secretion.

Concluding message

This exploratory, cross sectional survey showed that nocturia is indeed a problem for night workers, that it is quite bothersome and that more night shifts in a week correlates with a higher level of nocturia.
The survey warrants a deeper investigation of whether nocturia is a larger problem in night workers due to disturbance of the circadian clock leading to a disruption of the vasopressin production.

References

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Is this a clinical trial?	**No**
What were the subjects in the study?	**HUMAN**
Was this study approved by an ethics committee?	**No**
This study did not require ethics committee approval because	**Cross sectional observational surveys do not need Ethics Committee approval in Denmark**
Was the Declaration of Helsinki followed?	**Yes**
Was informed consent obtained from the patients?	**Yes**