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## ***Shiftwork and the use of prescription medication for sleep, anxiety and depression: a prospective cohort study***

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### **Introduction**

There is only limited evidence to date linking shiftwork with clinical levels of sleep disturbance and mental health problems. Few studies have examined redeemed drug prescriptions using register data, which is the focus of this study.

### **Materials and Methods**

Data were obtained from three waves of the Finnish Public Sector Study (2000, 2004, 2008. 66-68% response rate). Participants were from two cohorts; local government employees in 10 towns - a mixture of healthcare workers and employees from other occupational sectors ('10 Towns Cohort'); and employees of 21 hospitals ('Hospitals Cohort'). The overall sample was N=53,275 (mean age 43.6 (SD=9.8), range 18-69), with approximately 73% coming from the 10 Towns Cohort. Women made up 82% of the entire sample. Responses to surveys were linked to records on redeemed prescriptions (until December 2011).

Data from the two cohorts were analysed separately to examine the associations between work schedule and drug purchase. Cox regressions were used to predict time to first incident use of: 1. Hypnotics & Sedatives; and 2. Anxiolytics & Antidepressants. We separately compared 2- and 3-shift workers (i.e. rotating shifts either without, or with, nights) with dayworkers, matched for occupational group. Each analysis was stratified by age ( $\leq 39$  years, 40-49 years and  $\geq 50$  years). HRs were calculated with adjustments for age, sex, socioeconomic status and marital status (Model 1); and with additional adjustments for alcohol consumption (Model 2). Participants were excluded if they had any recorded purchase of the drug in question prior to follow-up, or if they reported previous diagnosis of depression or other mental disease.

## **Results**

There were fewer significant associations in the Hospitals Cohort than in the 10 Towns Cohort. The 10 Towns Cohort showed significant positive associations between 3-shift work and the use of both categories of medication; with the exception of Anxiolytic & Antidepressant use among the middle-age group. Among the 2-shift workers, the only significant associations were with the use of Anxiolytics & Antidepressants in the lower- and upper-age groups. In the Hospitals Cohort, the majority of associations were either non-significant or negative (i.e. indicative of a protective effect). The main exception was positive associations between 3-shift work and use of Hypnotics & Sedatives among the upper-age group.

## **Conclusions**

The finding of greater use of hypnotics and sedatives by rotating nightshift workers adds to the limited evidence to date linking night with clinical levels of sleep disturbance. The finding of greater use of anxiolytics and antidepressants by some groups of shiftworkers provides limited evidence of a link between shiftwork and mental health problems.

Sensitivity analyses indicated that the disparity between cohorts was neither due to the presence of non-healthcare workers in the 10 Towns Cohort, nor to the presence of former shiftworkers in the control sample of the Hospital Cohort. Other possible explanations are that: the cohorts differ with respect to type of shift schedule e.g. the intensity of nightwork; shiftworkers in the Hospital Cohort may be more selected as it may be easier for them to transfer to daywork.