factor + heparanase complex, protein C, D-dimer and fibrinogen. Sleep quality was assessed by self report (Pittsburgh Sleep Quality Index, PSQI).
Results: PAI-1 levels were significantly higher among shift work nurses compared to day work group (36.6 ng/ml vs. 24.3 ng/ml, $p < 0.05$). In shift workers, Heparanase procoagulant activity was 2-fold and tissue factor + heparanase complex was 1.5-fold compared to day work nurses (both $p < 0.05$). Sleep quality was significantly lower for shift compared to day workers ($p < 0.001$). No group differences were found for Protein C, D-dimer and fibrinogen.
Conclusions: PAI-1 and heparanase markers were significantly elevated and sleep quality reduced in rotating shift work compared to day work nurses. Such alterations in healthy rotating shift workers suggest preclinical disturbances in the haemostatic system, which together with reduced sleep quality may contribute over time to future cardiovascular morbidity.

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OS 3.3

THE PROSPECTIVE INFLUENCE OF SLEEP DISCREPANCY IN OCCUPATIONAL BURNOUT

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Introduction: Occupational burnout has been increasingly studied as an outcome of chronic stress. In addition to a significant body of research that demonstrates the influence of stressful work conditions on experiences of burnout, insufficient sleep has been shown to be a significant factor contributing to burnout. In such studies, self-reported average daily sleep durations of less than 6 hours are typically classified as insufficient sleep. However, distinct from between-person differences in sleep duration, adults also report differences in the duration of sleep they feel they need for good functioning. Recurring discrepancies between the sleep adults perceive they need and what they obtain may be a more powerful predictor of burnout than classifications of insufficient sleep duration that ignore individual differences in perceived sleep duration needs. In the present study, we examined the prospective influence of sleep duration discrepancy (defined as non-congruence between average sleep duration and duration needed for good functioning) on burnout. We hypothesized that sleep discrepancies would account for unique variance in burnout, beyond that accounted for by stressful work conditions and other sleep characteristics.
Methods: Data were derived from an ongoing longitudinal study investigating the effects of age and working conditions on work capacity and worker well-being. Our analyses included data from a total of 330 workers from 5 manufacturing organizations in New England who completed surveys at two different time points approximately one year apart. The surveys include measures of work schedule, stressful work conditions (schedule control, decision authority, psychological and physical work demands), and self-reports of sleep quality, noncontinuous sleep, sleep duration, sleep duration needed for good functioning, and burnout at both points in time.
Results: Hierarchical multiple regression was used to examine prospective relationships between stressful work conditions, various sleep indicators and burnout. Organization, job type, work schedule, gender, age and second job status were used as controls in each analysis. Polynomial regression was used to test the incremental relationship between sleep discrepancy and burnout, and response surface analysis was used to examine the nature of the relationship. Consistent with prior research, stressful work conditions were significantly related to burnout. In addition, low sleep quality accounted for significant variance in burnout after work conditions were included in the model. Furthermore, as predicted, high sleep discrepancy was related to burnout, accounting for significant unique variance in burnout beyond that accounted for by work conditions and other sleep variables.
Conclusion: In addition to traditional measures of stressful work conditions, subjective indicators of sleep quality and sleep discrepancy may help predict burnout among manufacturing workers. Further, organizations should seek ways to support and encourage their workers to achieve greater congruence between the amount of sleep they typically get and the amount they believe they need.

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OS 3.4

PERMANENT AND ROTATING NIGHT WORK AND MORTALITY: PROSPECTIVE STUDY AMONG FINNISH EMPLOYEES IN 1977-2008

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Introduction: There is a considerable amount of evidence showing that night work is associated with increased morbidity. However, only few studies have focused its relation to mortality. This study investigates the relationship between the type of working time arrangement (permanent night work, rotating night work and day work) and mortality among wage and salary earners.
Methods: The data consisted of pooled representative working conditions surveys (1977, 1984, 1990, 1997, 2003) on Finnish employees (n = 22593), which was merged with register-based follow-up data in Statistics Finland covering years 1977-2008. In the working conditions surveys employees were asked what their working time arrangement was: regular day work (06:00-18:00 h), regular evening work, regular night work, 2-shiftwork, 3-shiftwork, or other working time arrangement. The analysis was restricted to employees who worked 20 hours or more per week. In this study we compare employees with permanent night work (regular night work, n = 134), rotating night work (3-shiftwork, n = 1289) and regular day work (n = 14763). The relative risk of death was examined by conducting Cox proportional hazards analyses for the permanent, rotating night workers and day-time workers (as reference group). The results were adjusted to background (age, gender, level of education, family situation), health (longstanding illness, pain symptoms, and psychosomatic symptoms) and work related factors (physical and psychological demands, perceived hurriedness, and flexitime).
Results: Permanent night workers had a 1.82-fold higher risk of mortality (95% CI 1.13-2.95) than day-time workers after adjusted for background, health- and work-related factors. Among rotating night workers no significant association was observed.
Conclusions: The present study indicated that permanent night workers had higher risk of mortality than day-time workers. Additional research on other potential factors and mechanisms behind the factors linking permanent night work to mortality is needed.