MULTIPLE JOB STRESSORS OF NIGHT AND ROTATING SHIFT WORKERS THAT AFFECT HEALTH AND WELLBEING: BASIS FOR COMPREHENSIVE INTERVENTIONS FOR THEIR SOLUTIONS

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Objective To investigate the effects of transition from 8- to 12 hour shifts on sleepiness and vigour of employees during morning and night shifts.

Methods Thirty-nine airline ground crew shift workers (mean age 38.9±8.2 y; mean seniority 13.9±7.1 y, 19 male) volunteered in a pilot study. During each round, employees were assessed during one morning and two night shifts, by completing a sleepiness questionnaire (the Karolinska Sleepiness Scale, KSS) hourly, and a vigour questionnaire (3 times in the 8 hour, 4 times in the 12 hour rounds) per shift. Repeated measures ANOVA was performed to compare changes in sleepiness and vigour levels in 8 hour and 12 hour shift plans, during day and night shifts.

Results For morning shifts main effects were found for sleepiness [F(3,58)=13.1, p<0.001] and for shift plan [F(1,18)=7.4, p<0.014]. Sleepiness levels rose throughout both morning shifts, and were lower during the 12 hour than during the 8 hour shifts. Furthermore, main effects were found for vigour [F(1,25)=11.37, p<0.001] and for shift plan [F(1,18)=14.87, p<0.001]. Vigour levels decreased in both morning shifts, and were higher during 12 hour shifts than in the 8 hour shifts. No interactions were found.

For night shifts main effects were found for sleepiness [F(3,58)=9.9, p<0.001], and for sleepiness*shift plan [F(3,41)=3.2, p=0.023]. During the 8 hour round, sleepiness consistently increased with a slight decrease towards the end of the shift, while in the 12 hour round sleepiness increased until 04:00 am, after which there was a decrease and again increase towards the end of the shift.

Furthermore, main effects were found for vigour [F(1,25)=11.37, p<0.001], and for shift plan [F(1,18)=14.87, p<0.001], during the 12 hour shift round participants’ vigour levels were higher than in the 8 hour shift round. Vigour levels decreased during the night in both rounds, no interaction was observed.

Conclusion An overall improvement was observed in somnolence and vigour indices of employees after the transition to 12 hour shift, which appears to be preferable over the 8 hour shift.
Introduction Sleepiness during work hours is the most common complaint of night shift workers, and is a sensitive indicator of performance decrements. Sleepiness levels vary between individuals, yet few have investigated individual factors as predictors of night shift sleepiness, and these have shown mixed results. We aimed to examine the effects of bio-psycho-social factors on subjective sleepiness of nurses during the night shift.

Methods Female nurses (n=119) working irregular rotating shifts were recruited from two hospitals in Northern Israel, using convenience sampling by clusters. Inclusion criteria were working at least 75% of full time, with at least one night shift per week. Exclusion criteria were pregnancy, a diagnosed sleep disorder, and/or chronic medical conditions. Subjective sleepiness was measured hourly during two night shifts using the Karolinska Sleepiness Scale (KSS). Sleep was monitored by actigraphy 24 hours before and until the end of the night shifts. Participants completed a socio-demographic questionnaire, the Munich ChronoType Questionnaire for Shiftwork (MCTQshift), the Pittsburg Sleep Quality Index (PSQI) and the Pre-Sleep Arousal Scale (PSAS).

Results Mixed models stepwise analyses found main effects for hour, age, cognitive pre-sleep arousal and number of children on nighttime sleepiness (all \( p<0.01 \)). Effects of chronotype on sleepiness were inconsistent. Interactions were found for age*number of children (\( p<0.01 \)), pre-sleep cognitive arousal*chronotype (\( p<0.05 \)), and age*chronotype (\( p=0.06 \)). Older nurses were less sleepy than younger nurses, but this impact was attenuated by early chronotype and having more children. High cognitive pre-sleep arousal, but not sleep, predicted increased sleepiness, especially in nurses with late chronotype.

Discussion The impact of bio-psycho-social factors on night shift sleepiness is complex and depends on mutual interactions between these factors. Nurses who are young, late chronotypes and with high cognitive pre-sleep arousal require special attention and support, and must develop personal strategies for maintaining vigilance on the night shift.

Abstracts

1602e CAN ON-SHIFT NAP BENEFIT NIGHT WORKERS’ HEALTH? STUDIES ON BLOOD PRESSURE AND OBESITY IN NURSING TEAMS

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Introduction On-shift napping can benefit night workers as regards sleep deprivation, adjustment of circadian rhythms, and alertness. But possible benefits of nap on health outcomes are scarcely investigated. Considering that night work is pointed as a risk factor for hypertension and obesity, we investigated the possible attenuation of blood pressure and body mass index increase by on-shift napping among nursing teams.

Methods A cross-sectional study was conducted in a public hospital in Rio de Janeiro, Brazil with nursing professionals who were formally allowed to nap for up to three consecutive hours during working nights. Current and accumulated doses of night work (NW) were studied through the number of working nights/2 week-span and years of NW, respectively. Four outcomes were measured using standard equipment and techniques: systolic blood pressure (SBP), diastolic blood pressure (DBP), hypertension (SBP \( \geq 140 \) mmHg or DBP \( \geq 90 \) mmHg or prescription of antihypertensive medication), and body mass index (BMI). The associations between exposure variables and outcomes were based on logistic regressions (hypertension) and generalised linear models (SBP, DBP and BMI).

Results Among non-nappers (but not among nappers), current doses of NW (number of working nights) was significantly associated with increased SBP (\( \beta \)-value=1.39; 95% CI: 0.31 to 2.49) and DBP (\( \beta \)-value=0.80; 95% CI: 0.10 to 1.50), as well as increased odds for hypertension (OR=3.35; 95% CI: 1.74 to 6.57). This association was not observed for accumulated doses of NW. As regards BMI, both current and accumulated doses of NW were significantly associated with increased BMI levels (\( \beta \)-value=0.364 [95% CI: 0.002 to 0.749]) and \( \beta \)-value=0.092 [95% CI: 0.011 to 0.173], respectively) only among non-nappers.