also other mental health dimensions. The aim of the study was to investigate the association of work schedule and work experience with mental health of nurses and physicians working in the public sector in Poland.
Materials and Methods: The participants filled in a demographic survey and questions regarding work schedule characteristics. Standardized measures were used to assess insomnia symptoms (Insomnia Severity Index), daytime sleepiness (Epworth Sleepiness Scale), depression (Patient-Health Questionnaire-9) and anxiety (Generalized Anxiety Disorder-7). Statistical analyses included the Mann-Whitney test and Spearman's correlations.
Results: The study included 111 nurses and 173 physicians working 12-hour or 24-hour shifts or combination of both. They had at least one year of work experience and at least one year of shift work experience. The sample was predominantly female. There was no age difference between nurses and physicians in this study. We found differences in work schedule characteristics. Physicians worked signifcantly more hours per week, but fewer nights per month. They had the same numer of days off in the previous four weeks. Nurses had significantly longer experience working night shifts than physicians.
Nurses and physicians did not differ in their scores on Insomnia Severity Index. Their scores differed in Epworth Sleepiness Scale, Patient Health Questionnaire-9 and Generalized Anxiety Disorder-7 scale. Physicians scored higher on all three measures.
Among nurses the number of hours per week was moderately negatively correlated with insomnia symptoms. Length of shift work experience and numer of night shifts per month were weakly positively associated with daytime sleepiness. None of the work characteristics significantly correlated with depression or anxiety scores of the nurses. Among physicians the number of hours per week was weakly to moderately positively correlated with insomnia symptoms, daytime sleepiness, anxiety and depression. The number of night shifts in the previous four weeks was moderately positively associated with insomnia and daytime sleepiness, but only weakly positively linked to depression and anxiety. Depression and anxiety symptoms were moderately negatively associated with the number of days off in the previous month and weakly positvely with the length of shift work experience.
Conclusions: The results of this study point to physicians experiencing more symptoms of mental health disturbance than nurses when it comes to daytime sleepiness, depression and anxiety. The work schedule characteristics and work experience showed to be associated with mental health variables among doctors. Work characteristics were not associated with depression and anxiety among nurses, only with sleep disturbances.
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THE COST OF FAST-ROTATING BACKWARD-SHIFT WORK AMONG NURSES

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Introduction: 24-hour rotating shifts are common among hospital nursing staff to ensure continuity of care. There is mounting evidence that night shift work significantly impacts health and performance due to the alteration of natural homeostatic and circadian sleep processes.
Nurses' adaptability to night shifts is often affected by the speed and direction of the shift rotation (i.e., clockwise [forward] or counterclockwise [backward]). In forward-rotating shifts (FRSs), morning shifts are followed by afternoon and then night shifts. In contrast, backward-rotating shifts (BRSs) consist of night shifts followed by afternoon and then morning shifts. It is commonly assumed that forward rotation is easier to adapt physiologically because the human circadian rhythm moves forward. The association of BRSs with subjective and objective measures of sleep quality, daytime vigilance, sleepiness, and tiredness of health care workers has not yet been established. The present study aimed to investigate the association of shift rotation direction with tiredness, sleepiness, and sustained attention among two large samples of nurses working 8-hour FRSs or BRSs.
Materials and Methods: Data of this cohort study were collected from nurses working at five Italian hospitals. The nurses had either a forward-rotating schedule (i.e., morning to afternoon to night) and or a backward-rotating schedule (i.e., afternoon to morning to night).
Sleep quality was evaluated using the Pittsburgh Sleep Quality Index. Tiredness and Sleepiness data were collected using the Tiredness Symptom Scale and the Karolinska Sleepiness Scale. Sustained attention was measured using the Psychomotor Vigilance Task (PVT).
Results: A total of 144 nurses (mean [SE] age, 41.3 [0.8] years; 92 women) participated in the study; 80 nurses working FRSs and 64 nurses working BRSs. Both groups showed similar poor sleep quality rates (57.5% in FRSs group; 57.8% in BRSs group). Otherwise, there were significant differences between the BRS and FRS groups for sleepiness and all PVT variables. Specifically, nurses working BRSs demonstrated greater subjective sleepiness ($F_{1,139}$=41.23, P<.001) and significantly worse attentional performance on PVT (e.g., longer median reaction times: $F_{1,139}$=42.12, P<.001) than those working FRSs. Moreover, subjective tiredness and sleepiness were higher during the night shifts than the morning and afternoon shift (tiredness: $F_{2,278}$=67.91, P<.001; sleepiness: $F_{2,278}$=43.29, P<.001). Night shifts were also associated with worse performance on the PVT (i.e., median reaction times: $F_{2,278}$=7.78, P<.001; fastest 10%: $F_{2,278}$=10.18, P<.001; minor lapses: $F_{2,278}$=4.37, P=.01; reaction time distribution: $F_{2,278}$=8.88, P<.001). Importantly, these differences were not affected by age, years of employment, and quality of sleep.
Conclusions: In conclusion, this cohort study confirmed the well-established negative effects of night shits and found that fast FRSs for nurses were associated with lower levels of sleepiness and higher levels of sustained attention compared with BRSs. Optimization of shift rotations should be implemented to decrease the combination of the negative outcomes associated with shift work and reduce the related risk of medical errors in health care systems.
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THE IMPACT OF OBSTRUCTIVE SLEEP APNEA TREATMENT WITH CONTINUOUS POSITIVE AIRWAY PRESSURE ON THE BIOLOGICAL CLOCK

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Introduction: Obstructive Sleep Apnea (OSA) is one of the most common sleep disorders worldwide. Untreated, OSA has been associated with multiple comorbidities, among which hypertension, cardiovascular and metabolic diseases. Recent studies show that OSA disrupts the biological clock, which might contribute to the large spectrum of comorbidities observed. Yet, the interplay between OSA, the clock, and OSA treatment is not fully understood. In this context, we aim to explore the impact of OSA and OSA treatment with Continuous Positive Airway Pressure (CPAP) on clock-associated physiological and molecular makers.
Materials and Methods: The levels and temporal profile of clock physiological markers, namely, plasma melatonin, cortisol and body temperature, and the expression of core-clock genes in peripheral blood mononuclear cells (PBMCs), were monitored in 34 OSA patients (age: 55 ± 2), before and