important occupational determinant of mental health. Prevention policies to eliminate bullying in organizations are urgent, what may help to decrease the prevalence of mental disorders among workers.

Shiftwork

O4A.1 NIGHT SHIFTWORK, DNA METHYLATION, AND TELOMERE LENGTH IN FEMALE NURSES

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Introduction Studies on female nurses have reported a higher breast cancer risk among night shift (NS) workers, without a clear understanding of the underlying biological mechanisms.
Aim To assess the association between night shiftwork and molecular alterations potentially related to a higher carcinogenic risk, in details: DNA methylation of estrogen receptor (ER-Alpha, ER-Beta) and tumor suppressor (BRCA1, BRCA2, p53, p16) genes, global DNA methylation estimated on repeated elements (LINE-1, Alu), and telomere length (TL).
Methods 46 female nurses who had been working in NS for at least two years in a Hospital in Milan, Italy, were matched by age (30–45 years) and length of service (at least 5 years) with 51 female colleagues not working in NS. Each subject was administered a structured questionnaire and withdrawn a 12 ml blood sample. We applied linear regression models adjusted for age, BMI, smoking habit, parity, and oral contraceptive use.
Results Currently working in NS (yes/no) was associated with hypomethylation of ER-Alpha (β: −1.635, 95% CI: −2.715; −0.554). When examining both current and former NS workers, the number of years (NY) in NS was associated with hypermethylation of Alu (β: 0.078, 95% CI: 0.016; 0.138). After graphical inspection of the association between NYNS and TL, we classified the study population according to NS duration (<15 vs.≥15 years). Among workers with at least 15 years of NS, NYNS was associated with TL reduction (β: −0.065, 95% CI: −0.122; −0.008) and hypomethylation of ER-Alpha (β: −2.009, 95% CI: −3.164; −0.853). Association between NYNS and hypermethylation of p53, p16, BRCA1, BRCA2, and LINE-1 was much stronger, albeit not significant, in workers with at least 15 years of NS.
Conclusions Our findings show NS-associated epigenetic alterations that might be involved in processes such as cellular aging, genomic instability, and cancer development.

O4A.2 JOINT EFFECTS OF NIGHT WORK AND SHIFT ROTATION ON TREATED DEPRESSION IN A LONGITUDINAL COHORT OF MANUFACTURING WORKERS

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Past research consistently identifies shift work – a type of scheduled work that includes both night work and schedule rotations – as risk factor for depression. However, relatively few studies have examined whether people working more nights or rotations are more likely to seek treatment for depression.

A total of 5848 workers across 33 plants in the American Manufacturing Cohort (AMC) were followed 2003–2013. The first observed episode of treated depression was defined from insurance claims as two depression-related outpatient visits or two prescribed antidepressants within 365 days. Using detailed timeclock data, night work (≥3 hours between 23:00 and 6:00) was defined as the percent of shifts that included a night shift and was categorized into non-night work 0%; low >0%–30%; medium >30%–70%; and high 70%–100%. Shift rotations (≥6 hours between subsequent shift start times), were similarly defined and classified as none 0%, infrequent <10%, and frequent rotations≥10%. We examined the joint effects of night work and shift rotation on the time to first episode of treated depression using Cox proportional hazards regression.

Shift workers were more likely to be treated for depression compared with non-rotating, non-night workers. Workers with medium exposure to night work had the highest association with treated depression compared with permanent non-night workers, and the joint effects were similar between those with frequent rotations (HR: 1.64, 95% CI: 1.00–2.67) and infrequent rotations (1.53, 0.99–2.37). Associations were slightly elevated among permanent night workers (1.27, 0.72–2.25) and workers with high exposure to night work regardless of rotations (1.36, 0.86–2.17).

Recent shift work exposure may be associated with higher rates of treated depression, and night work, rather than rotation, may be driving the association. However, there may be selection out of night work due to underlying depression and we were unable to differentiate new-onset from preexisting disease.

O4A.3 DO SHIFT WORKERS HAVE A DIFFERENT EXPOSURE TO WORKPLACE CARCINOGENS THAN NON-SHIFT WORKERS?

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Background There is limited information on whether the prevalence of exposure to workplace carcinogens varies among shift workers and non-shift workers.
Methods This analysis used data from the Australian Work Exposures Study-Cancer, a telephone survey which examined exposure to carcinogens in the workplace. Workers were classified as shift workers if they indicated that their usual roster ever included work between the hours of midnight and 5 am. Modified Poisson regression was used to estimate the adjusted prevalence ratios (aPRs) and 95% confidence internals (CIs).
Results Among the 5425 workers, 6.88% reported doing shiftwork. Overall, shift workers were more likely to be exposed to any carcinogen (aPR=1.16; 95% 1.06–1.26) and to multiple carcinogens (aPR=1.17; 95% 1.06–1.30) than non-shift workers.