

age, SES, number of children, smoking, alcohol and body mass index.

Results 2057 incident cases of breast cancer were identified. Compared to day work, self-reported shift work without nights at baseline was associated with an increased risk of breast cancer during a follow-up period of less than 10 year, after adjustment (HR 1.33, 95% CI 1.15–1.55). In contrast, follow-up for ≥ 10 years showed no increased HR. Night shift work was most notably (HR 2.05, 95% 1.04–4.01) associated with breast cancer among employees 50 years or older after 10 years of follow-up. The risk of breast cancer tended to depend on earlier exposure time. The results of the more recent payroll sub-cohort showed no association of shift work and breast cancer, including intensity and duration of night shift work.

Conclusion This study gives some indications of an increased risk of breast cancer among subgroups of shift-working Finnish public sector employees. However, insufficient information on past exposure to, and intensity of night work, limits the ability to draw firm conclusions.

0-225 EXPLORING THE IMPACT OF NIGHT SHIFT WORK AND MELATONIN ON METHYLATION IN CIRCADIAN GENES

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Introduction Night shift work is associated with increased cancer risk, but the molecular mechanisms are not well-understood. It is hypothesized that melatonin suppression due to night shift work could impact DNA methylation in circadian genes, although this has been evaluated by few studies.

Objectives This study explored the relationship between night shift work parameters and patterns of melatonin secretion on methylation in circadian genes among women.

Methods A cross-sectional study was conducted in 2019–2020 among 74 female healthcare employees who participated in a previous study in which urinary melatonin levels were evaluated over a 48-hour period. Participants provided information on demographics, lifestyle behaviors, and night shift work such as current night shift work pattern, duration in years, and intensity (consecutive nights). The Illumina Infinium MethylationEPIC beadchip was applied to DNA extracted from new blood samples to measure methylation at 1150 CpG loci across 22 circadian genes. Multiple linear regression was used to examine the association between night shift work, melatonin parameters and methylation levels at each CpG site, while accounting for the false-discovery rate ($q=0.2$).

Results Compared to day workers, night shift workers had hypermethylation in the promoter region of CSNK1E ($q=0.15$). Women who worked night shifts for ≥ 10 years exhibited hypomethylation in the body of NR1D1 ($q=0.08$) compared to those with < 10 years of history. Hypermethylation in the body of ARNTL was also apparent for those who worked ≥ 3 consecutive night shifts a week compared to < 3 nights ($q=0.18$). Among night shift workers, melatonin patterns (24-hr concentrations, peak timing) were associated with methylation at three loci (RORA, MTNR1A, PER3) ($q \leq 0.20$). No association between melatonin and methylation was identified among day workers.

Conclusion These findings suggest that circadian misalignment among night shift workers is associated with differential methylation in several circadian genes, but larger studies are needed to confirm.

0-313 NIGHT SHIFT WORK, SLEEP DISORDERS AND LUNG CANCER RISK AMONG WOMEN: RESULTS FROM A POPULATION-BASED CASE-CONTROL STUDY IN FRANCE (THE WELCA STUDY)

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Introduction Night shift work may lead to sleep disorders and circadian rhythm disruption. It was classified as probably carcinogenic by IARC but, unlike breast or prostate cancer, there is only scant evidence of an association with lung cancer.

Objective To explore the role of night shift work and sleep disorders in lung cancer risk among women.

Methods Information on night work and sleep disorders over lifetime was obtained in a case-control study on female lung cancer in 716 cases and 758 population controls in the Paris area (WELCA). Logistic regression models adjusting for tobacco smoking and other relevant confounders were used to estimate odds ratios (OR) and 95% confidence intervals (CI) associated with night work exposure metrics (years of night work, frequency of night shifts), sleep duration per day (< 7 h, 7 h, ≥ 8 h) and sleep disorders (difficulty in falling asleep; waking up at night, too early or too tired; intake of sleep medicine). A sleep disruption index (SDI) was used to classify women by number of sleep disturbances in categories of low (0 or 1), medium (2 or 3) or high SDI (4 or 5).

Results The OR was 1.08 (95% CI 0.75–1.56) in women who ever worked at night. This OR did not increase with duration or frequency of night shifts. Women who slept 8 or more hours per day had an OR of 1.40 (95% CI 1.04–1.87) as compared to those who slept 7 hours. Women who had both high SDI and who worked at night for 6 or more years had an OR of 3.61 (95% CI: 1.27–10.23).

Conclusion Lung cancer risk among women was not associated with ever working at night in our study. The association with longer sleep duration is intriguing and warrants further scrutiny.

0-384 THE ASSOCIATION BETWEEN NIGHT SHIFT WORK AND RISK OF BREAST CANCER: RESULTS FROM THE NIGHTINGALE STUDY

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Introduction and Objectives The International Agency for Research on Cancer confirmed night shift work as a 'probable' carcinogen in an updated evaluation (2019). Noting that evidence from human studies is still inconclusive, in particular due to the lack of prospective cohort studies with detailed exposure assessment. We prospectively examined different