

Shiftwork

1193 NIGHT-SHIFTS, DNA METHYLATION AND TELOMERE LENGTH: PRELIMINARY RESULTS FROM A SURVEY ON A SAMPLE OF ITALIAN NURSES

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Introduction IARC defined shift work as probably carcinogenic to humans (Group 2A), after investigations highlighted an increased breast cancer risk in night-shift female workers. The biological mechanisms underlying this association are still unclear. Hence, we evaluated the relationship between night-shift work and molecular alterations potentially related to increased cancer risk, in detail: DNA methylation of the oestrogen receptor gene (ER-Beta) and tumour suppressor genes (BRCA1, p53, p16), global DNA methylation estimated in repeated elements (LINE-1, Alu) and telomere length (TL).

Methods 46 female nurses (age: 35–45 years) who had been working in night-shifts for at least two years (length of service \geq five years) were recruited at the Policlinico Hospital (Milan, Italy) and matched for age, sex and length of service to 51 colleagues not working in night-shifts. Each subject was administered a structured questionnaire and withdrawn a 12 mL blood sample. Linear regression models adjusted for age, BMI, parity, smoking habit and oral contraceptive use were then applied.

Results Working in night-shifts (yes/no) was associated with BRCA1 hypomethylation (β : -0.512 , 95% CI: -1.039 to 0.015). When considering also former night-shift workers, the number of years in night-shifts (NYNS) was associated with hypomethylation of BRCA1 (β : -0.084 , 95% CI: -0.127 to -0.042), p53 (β : -0.072 , 95% CI: -0.133 to -0.011) and LINE-1 (β : -0.043 , 95% CI: -0.083 to -0.002). After graphically inspecting the NYNS-TL relationship, we stratified our study population by NYNS <15 vs ≥ 15 years. Among nurses with NYNS ≥ 15 years, NYNS was associated with telomere shortening (β : -0.065 , 95% CI: -0.122 to -0.008) and hypermethylation of BRCA1, p53 and LINE-1.

Conclusion Our results show epigenetic alterations that might play a role in cellular ageing, genomic instability and carcinogenesis. We are currently extending our study to other molecular targets involved in the cascade of events that might bring from night-shift exposure to cancer.

1252 LONG WEEKLY WORKING HOURS AND RISK OF ISCHAEMIC HEART DISEASE AND STROKE

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Introduction Studies have indicated that long working hours is associated with circulatory diseases. The aim of the present studies was to test if long working hours were prospectively associated with ischaemic heart disease (IHD), usage of antihypertensive drugs (AD) and stroke, in a large randomly selected sample from the general workforce of Denmark.

Methods Self-reported data on weekly working hours from the Danish Labour Force Survey (1999–2013) was linked to national registers. Participants were followed until becoming a case, emigration/dead due other causes or end of study period (2014).

Poisson regression was used to analyse incidence rates as a function of weekly working hours. The analyses were controlled for calendar time, time since start of follow-up, age, sex, SES, night and health care work (the latter two for IHD only).

Result Around 1 45 000 persons were included with 3635 cases of IHD, 20 648 cases of AD and 1737 cases of stroke. With 32–40 hours/week serving as reference, the estimated rate ratios for IHD were 0.95 (95% CI: 0.85–1.06) for 41–48 and 1.07 (0.94–1.21) for >48 hours/week. The corresponding rate ratios for AD were 0.99 (0.95–1.04) and 1.02 (0.97–1.08).

In the study of stroke 35–40 working hours/week served as reference. The estimated rate ratios for overall stroke were 0.97 (95% CI: 0.83–1.13) for 41–48, 1.10 (0.86–1.39) for 49–54, and 0.89 (0.69–1.16) for ≥ 55 hours/week. The estimated rate ratios per one category increase in working hours were 0.99 (0.93–1.06) for overall stroke, 0.96 (0.88–1.05) for ischaemic stroke and 1.15 (1.02–1.31) for haemorrhagic stroke.

Discussion The analyses cannot confirm long working hours to be associated with IHD, AD or overall stroke. Data suggest however, that long working hours might be associated with increased rates of haemorrhagic stroke.

1426 CLOCKWISE AND COUNTER-CLOCKWISE JOB SHIFT ROTATION DIFFERENTLY IMPACTS ON WORK-LIFE BALANCE

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Introduction Rapidly rotating shiftwork schedule, is common in hospital nurses as it provides continuity to the patients' care. It has been suggested that shift rotation in clockwise (CW) direction produces less disruption of circadian rhythms than counterclockwise (CCW) rotation. Little is known about the effects of different direction of shift rotation on work-life balance, particularly in women characterised by additional commitments and responsibilities in the home and outside of work.

Aim To evaluate if CW and CCW shift rotation differently impacts on family and social relationships in female nurses.

Methods One hundred healthy hospital nurses (F, 20–50 years) were enrolled. Fifty of them worked in CW (Morning, M; Afternoon, A; Night, N; two rest days) and 50 in CCW (A, M, M, N, three rest days) shift rotation direction. A daily