

work and extra-work accidents. The long-term effects, such as obesity, cardiovascular disease and cancer, are difficult to study, because of the need for detailed exposure assessment and the long latency periods of these diseases.

Method A review of literature on pubmed from 2000 to 2017 on diet and health effects in night shift workers was conducted to collect epidemiologic evidence of diseases in night shift workers, describing their biological pathways and a set of dietary guidelines.

Results Significant Rate Ratio and Hazard Ratio increases of different diseases associated to modified eating behaviour and poor eating habits among night shift workers are reported. The night shift work is a risk factor for disruption of the circadian rhythms and for some genetic deregulation, because it produces the inversion of the sleep/wake cycle and modifies the alternation between activity and rest.

Discussion Healthy diet and improved dietary practices can reduce shift-workers' chronic disease risk. In literature was shown the importance of eating behaviour in order to prevent diseases in these workers, therefore educational programs are necessary to encourage several important lifestyle changes. Interventions to reduce chronic disease risk among shift workers should incorporate several important lifestyle changes (i.e.: healthy diet, improved dietary practices, decreased drug and alcohol use, physical activity, proper sleep and light exposure). The reported findings suggest a possible role of education programs on eating behaviour as preventive strategies in this group of workers. Actually is missing a deep knowledge of the relationship between specific dietary compositions (i.e. Mediterranean diet) and the prevention programs of diseases among shift workers.

521 NIGHTSHIFT WORK AND PROSTATE CANCER AMONG HONG KONG CHINESE MEN

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Introduction A positive association between nightshift work and prostate cancer risk has been reported in epidemiological studies, but the findings have been mixed. Also, none of the previous studies has attempted to sufficiently consider the possible confounding effect from dietary sources including environmental exposure to bisphenol A (BPA). This study aims to examine the association between nightshift work and prostate cancer risk among Hong Kong Chinese men after take into account more environmental exposures.

Methods We consecutively recruited 431 incident prostate cancer cases and age frequency matched 402 controls who had complete information on nightshift work. After receiving written consents, trained researchers interviewed participants using a standard questionnaire to obtain information on socio-demographics, smoking, dietary habits, habits of using plastic food containers, family cancer history, and occupational history and nightshift work. A newly developed novel cumulative BPA exposure index (CBPAI) was used to estimate chronic BPA exposure. Odds ratio and 95% confidence interval (95% CI) was performed using multiple logistic regression analysis.

Results The mean age of prostate cancer cases was comparable to the controls (69.4 vs 68.2 years). Compared with the controls (39.1%), more cases were less educated with a higher proportion of 'primary school or below' (41.1%). More cases than controls were the nightshift workers (13.5% vs 7.5%). After adjustment of age and socioeconomic characteristics, the OR of nightshift work to prostate cancer was 1.87 (95% CI: 1.16 to 3.01), and the OR retained statistical significance (OR=1.76, 95% CI: 1.07 to 2.89) after environmental exposures mainly from dietary sources were further adjusted.

Conclusions Results from this study provided supportive evidence that there might be a link between nightshift work and prostate cancer. The main merit of this study is that more environmental risk factors were considered in quantifying the association.

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579 WORK SCHEDULE AND PROSPECTIVE ANTIDEPRESSANT PRESCRIPTIONS IN THE SWEDISH WORKFORCE: A 2-YEAR STUDY USING NATIONAL DRUG REGISTRY DATA

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Introduction Mood disorders affect millions of individuals worldwide and contribute to substantial morbidity and disability. A better understanding of modifiable work-related risk factors for depression could inform and advance prevention efforts in this area. This study used a large Swedish longitudinal occupational survey to prospectively examine the effect of self-reported work schedule on registry-based antidepressant prescriptions over a two-year period.

Methods The analytic sample (n=8643) was obtained from the Swedish Longitudinal Occupational Survey of Health. Sex-stratified and unstratified analyses were conducted using logistic regression. For exposure, 8 categories were used to describe work schedule in 2008: 'regular days' (3 categories: night work history=none, ≤3 years, or 4+years) 'night work (regular, rostered, or rotating)', 'regular shift work (no nights)', 'rostered work (no nights)', 'flexible/non-regulated hours', and 'other'. For the outcome, all prescriptions coded N06A according to the Anatomical Therapeutic Chemical System were obtained from the Swedish National Prescribed Drug Register and dichotomized into 'any' or 'no' prescriptions between 2008 and 2010. Estimates were adjusted for potential sociodemographic, health, and work confounders, and for prior depressive symptoms.

Results In unadjusted analyses, an increased odds ratio for depression was observed for 'Other' work hours in unstratified (OR=1.75, 95% CI: 1.21 to 2.51) and female (OR=1.62, 95% CI: 1.05 to 2.51) models; in adjusted models effects persisted but confidence intervals widened to non-significance at the p=0.05 level. In models adjusted for previous depressive symptoms, females in 'flexible/non-regulated' schedules showed an increased odds ratio for depression (OR=2.01, 95% CI: 1.08 to 3.76), while a decreased odds ratio was observed for the unstratified model 'regular shift work (no nights)' category (OR=0.61; 95% CI: 0.38 to 0.97). **Discussion** This study's findings support prospective relationships between work schedule and antidepressant prescriptions

in the Swedish workforce. Future research should continue to assess sex-stratified relationships, using detailed shift work exposure categories and objective registry data where possible.

1656 SHIFTWORK AND CANCER

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Aim of special session What practical advice can Occupational health practitioners give to those at risk and to management for employees:

- with no obvious risk factors for cancer other than shiftwork,
- for those with risk factors (strong FHx, gene markers of susceptibility, obesity, benign breast disease, HRT, late menopause, early menarche, late first birth... for breast cancer),
- those with cancers under treatment or in remission in relation to nightwork,

Also is there a threshold effect? (years of exposure, number of shifts, hours of nightwork),

Is there any need for concern or preventive measures?:

- Should shift lengths be shorter?;
- Should rest breaks should be included; and
- how should researchers educate shift workers and employers as to how sleep-wake cycles are controlled and
- How can we maximise sleep quality, sleep duration, and alertness at work?

Speakers Prof Eva Schernhammer, Associate Professor, Harvard School of Public Health, Boston, USA,

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Prof Lin Fritschi, Curtin University Australia/lin.fritschi@curtin.edu.au.

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1656a CAN WE REDUCE HARM FROM SHIFTWORK?

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The association between shiftwork and cancer has been the focus of a number of case-control and cohort studies since the 2010 declaration by the International Agency for Research on Cancer that shiftwork which involves circadian disruption probably caused breast cancer. There is still debate about the association. However shiftwork has also been associated with a range of other health conditions including fatigue, injury, diabetes and cardiovascular disease. In addition, there has been a lot of interest in whether people with different chronotypes (e.g. morning people versus evening people) react to shiftwork differently. Shiftwork cannot be avoided in our 24 hour society, but we have a responsibility to minimise the health impacts upon shiftworkers. We need to consider what

aspects of shiftwork might be related to the different health conditions in order to minimise any effect on workers. Thus, whether shiftwork causes breast cancer or not, there is still useful advice we can give shiftworkers in order to improve the quality of life of those working night shifts. This talk will review some of the potential interventions to improve the health for healthier shift work including sleep hygiene, physical activity, food intake, and control of light types and levels.

1656b NIGHT SHIFT-WORK AND BREAST CANCER RISK – WHAT IS THE EVIDENCE?

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Introduction Night work is increasingly common in the modern world. In 2007, the International Agency for Research on Cancer (IARC) classified shift work that involves circadian disruption as *probably carcinogenic* to humans based on limited evidence from eight epidemiologic studies on breast cancer, in addition to sufficient evidence from animal experiments. The overall evidence was further supported by increased risk in studies of flight attendants, who may be exposed to both shift-work and jet-lag, though night work was not the primary focus in these studies.

Methods Based on a critical review of the scientific literature it is the aim of to present the current epidemiologic evidence and to identify eventual threshold effects, e.g. by duration of night shifts, number of consecutive shifts and menopausal status.

Results After 2007, over 18 new studies with focus on night work and breast cancer are published, which more than triples the number of studies focusing on this issue since the IARC evaluation. The assessment of night shift work is different in all of the studies, which may attenuate the observed increased risk and hinders meta-analysis. There is some evidence that long duration and or high number of consecutive night shifts has impact on the magnitude of increased breast cancer risk. There is also some evidence that increased risk is primarily observed in women who have had night work in young adulthood, and in pre-menopausal women.

Conclusion Overall, there is a tendency of increased risk of breast cancer after long-term night shift or after shorter periods with many consecutive shifts. More studies using harmonised definitions of night work metrics is needed. Finally, evidence based preventive interventions are warranted.

1656c NIGHTSHIFT WORK AND PROSTATE CANCER AMONG HONG KONG CHINESE MEN

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Introduction A positive association between nightshift work and prostate cancer risk has been reported in epidemiological studies, but the findings have been mixed. Also, none of the previous studies has attempted to sufficiently consider the possible confounding effect from dietary sources including