

Oral Presentation

Shift Work

0125

SHIFT WORK, CHRONOTYPE AND THE RISK OF CARDIOMETABOLIC DISTURBANCES

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Introduction Shift work has been associated with cardiometabolic risk factors, but the relation is not clear for all risk factors, and the role of chronotype is largely unknown. We examined associations between shift work and cardiometabolic risk factors, and explored these associations in different chronotypes.

Methods Risk factors (anthropometry, blood pressure, lipids, glucose, gamma-glutamyltransferase, C-reactive protein, uric acid, and glomerular filtration rate) were assessed among 7768 adults in 1987–1991, with repeated measurements every five years. In the ongoing 6th examination wave data on shift work history have been collected, with data from 2013–2015 being available. In 2016, linear mixed models and logistic generalised estimating equations were used to estimate associations between shift work and risk factors one year later.

Results Shift workers had more often overweight (OR: 1.44, 95% CI: 1.06–1.95) and a higher body mass index (BMI) (β : 0.56 kg/m², 95% CI: 0.10–1.03) than day workers. A significant difference in BMI between day and shift workers was observed among evening chronotypes (β : 0.97 kg/m², 95% CI: 0.21–1.73), but not among morning chronotypes (β : 0.04 kg/m², 95% CI: –0.85–0.93). No other significant associations between shift work and risk factors were found in the chronotype strata, except for glucose among intermediate chronotypes (β : –0.36, 95% CI: –0.62–0.11). No differences by frequency of night shifts and duration of shift work were observed.

Conclusions Shift workers, in particular evening chronotypes, have a higher risk of overweight than day workers. More research is however needed to verify our results, and establish whether tailored interventions by chronotype are wanted.

Oral Presentation

Policy/Impact

0126

OCCUPATIONAL BURDEN ESTIMATION: IS IT HAVING ANY IMPACT?

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Introduction Several recent occupational burden estimation studies have identified major risk factors contributing to important morbidity burdens. This paper discusses their impact.

Methods European studies include (1) the British occupational cancer burden study and (2) an EU socio-economic health impact assessment of introducing binding occupational exposure limits (OEL) for 25 workplace carcinogens. The global burden of occupational disease project (3) includes estimation for carcinogens, asthmagens, particulate matter, noise, and risk factors for low back pain and injury.

Results The British study (1) has informed the Health and Safety Executive's long latency programme and their guidance and practical interventions for risk reduction. The results have facilitated estimation of the financial impact of these cancers; the majority of the cost is borne by workers. It has also contributed to the successful Institution for Occupational Safety and Health 'No time to lose' campaigns to help industry to deliver effective workplace cancer prevention programmes.

The EU study (2) illustrates the use of cost/benefit analyses in OEL decision making processes. 'Efficient' cost/benefit ratios and 'disproportionate' compliance costs to small/medium sized enterprises are weighed against health-based predictions.

The global burden study (3) highlights inequalities in work-related disease burden between countries.

Discussion Occupational burden studies increase awareness of occupational disease generally and for particular diseases and galvanise different stakeholders to work together on prevention. They highlight potential inequalities to different sectors of society. However, they can be 'burdensome' regarding cost and effort and debate is needed on timing of and appropriate methods for future updates.

Oral Presentation

Other

0127

IF HEAVY LIFTING CAUSES RETINAL DETACHMENT, WHAT IS THE MECHANISM? IMPLICATIONS OF PATHOPHYSIOLOGY FOR EPIDEMIOLOGY

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Objectives Two epidemiologic studies have found evidence of increasing risk of retinal detachment (RD) with increasing occupational lifting and related physical efforts. Beyond case reports, there is little evidence to explain this association. We hypothesise two alternative mechanisms and explore their implications for epidemiology.

Methods Through literature review and discussions with retinologists, we developed hypotheses that predict different etiologic time windows for an effect of lifting on RD. The role of myopia in RD is better-understood, and provides important clues about possible roles of physical activity. Inter-ocular pressure (IOP) is likely to play a mediating role, and there are experimental studies of the effects of physical activity on IOP that may also provide useful evidence for understanding RD.

Results and Conclusions *Hypothesis 1*: brief increases in IOP caused by lifting increase the risk of retinal tears during posterior vitreous detachment (PVD) - a normal ageing process. This suggests that there may be an elevated risk of retinal tear in the weeks following PVD. If this is correct, lifting

during other times may not increase risk. *Hypothesis 2:* A long, slow pattern of increases in IOP from regular heavy lifting accelerates vitreous liquefaction, so that retinal tears are more likely to occur. Under this hypothesis, changes in IOP don't cause tears directly, but instead a long-term pattern of "peaks" in IOP may increase the chances of an RD. If this is correct, risk of RD would be associated with a longer history of heavy lifting.

Poster Presentation

Burden of Disease

0128

THE ECONOMIC BURDEN OF OCCUPATIONAL HEAT ILLNESSES IN ADELAIDE, SOUTH AUSTRALIA, 2001-2015

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Objectives This study aims to investigate the characteristics of economic costs of occupational heat illnesses in South Australia, and to examine the association between high temperatures and occupational heat illness related economic costs.

Methods Workers' compensation claim data were obtained from SafeWork South Australia for the period of 2001–2015. Weather data were collected from the Bureau of Meteorology. The association between heat illness and economic loss was estimated by time-series analysis with generalized estimating equation models after controlling for day of week and long-term trends.

Results There were 306 occupational heat illness claims during the study period, resulting in medical expenditure of \$1,795,640 and 2,787 days of time loss. Male workers accounted for 87.8% and 82.5% of medical costs and time-lost days, respectively. The mining industry had the greatest proportion of medical expenditure (56.0%) and days off work due to heat illnesses (67.4%), followed by "community services" and "agriculture, forestry and fishing". There was a positive relationship between maximum temperature (Tmax), medical expenditure, and days of time lost. A 1°C increase of Tmax was associated with 18.5% (IRR 1.185, 95% CI 1.071–1.312) increase in medical expenditure and 34.6% (IRR 1.346, 95% CI 1.128–1.534) increase in time-lost days due to occupational heat illnesses, respectively.

Conclusions Occupational heat related-illnesses represent a significant economic cost, and interventions in South Australia should be targeted at the mining industry.

Poster Presentation

Musculoskeletal

0129

MUSCULOSKELETAL PAIN AND WORKSTATION ASSESSMENTS AMONG OFFICE WORKERS IN A PUBLIC UNIVERSITY IN COSTA RICA

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Objectives To determine the prevalence of musculoskeletal pain (MSP) and identify workstation factors that might

influence pain among office worker in a public university in Costa Rica.

Methods A sample of office workers (n=162, 13% of population) were selected at the main campus of the Costa Rica Institute of Technology. Information on MSP was collected using the Cornell Musculoskeletal Questionnaire. Collected data on workstations using OSHA Computer Evaluation Checklist. We used descriptive statistics to analyse data, prevalence was summarised in frequencies and percentages using Stata v13.

Results Prevalence of MSP was 88.2%, pain was higher among women (51.2%) than men (37.0%) and lower prevalence (17.9%) among older workers (more than 51 years of age). Musculoskeletal pain was most common in the lower back (68.3%), followed by neck (60.4%), upper back (51.8%) and wrist (24.4%). Main findings regarding workstation and postural problems were wrists not straight (63.6%), wrists/hands rest on sharp or hard edges (54.7%), glare present (51.7%), platform is not large enough to hold a keyboard and a mouse (50.8%), head, neck, and trunk do not face forward (42.1%), top of the screen is not at eye level (38.5%).

Conclusion Prevalence of MSP was common among office workers, but with a higher prevalence among women and younger people. High prevalence of pain highlights the importance of workplace interventions to reduce the influence on discomfort due to workstation design. In addition, office ergonomics training to all office worker could raise awareness and reduce risk factors due to behavioural problems.

Oral Presentation

Respiratory

0130

INCIDENCE OF WORK-RELATED RESPIRATORY ILL HEALTH ATTRIBUTED TO CLEANING AGENTS: OCCUPATIONAL AND CHEMICAL DETERMINANTS

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Introduction Exposure to cleaning products has been shown to be associated with adverse respiratory outcomes. The aim of this study was to investigate the medically reported incidence and occupational determinants of work-related respiratory disorders attributed to cleaning agents, and to explore the role of a chemical taxonomy and 'Quantitative Structure Activity Relationships' (QSAR) in categorising hazards and their mechanisms.

Methods Cases of work-related respiratory disease attributed to cleaning agents were identified and extracted from SWORD (Surveillance of Work-Related and Occupational Respiratory Disease), 1989–2015. Incidence, trends in incidence and incidence rate ratios (IRRs) by occupation were investigated. Agents were classified by chemical type and QSAR hazard indices were determined on selected typical organic chemicals.

Results A reported 667 cases (6% of the non-asbestos related cases) were attributed to cleaning agents. Diagnoses were predominantly asthma (58%) and inhalation accidents (29%). The agents were classified in ten specific chemical categories with the most frequently reported being aldehydes (33%) and chlorine/releasers (25%). An overall decrease in incidence of