Oral Presentation

Molecular epidemiology

0290 INVESTIGATING THE REPRODUCIBILITY OF METABOLOMICS PROFILES OF WASHINGTON STATE METAL WORKERS

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Manganese (Mn) is a known neurotoxicant, and given its health effects and ubiquitous nature in metal-working settings, identification of a valid and reproducible biomarker of exposure is of interest. Global metabolomics were previously utilised to determine metabolites that differ between occupational groups defined by Mn exposure status, in hopes of informing a biomarker of exposure. Nine metabolites were found to differ between exposure groups in urine samples collected October 2014. To test the reproducibility of these metabolites, these nine metabolites were investigated in a second set of urine samples collected January 2015 from the same workers.

Levels of the nine metabolites found in October 2014 were compared to the January 2015 data using principal components analysis and descriptive measures. Also, an elastic net regression was fit using the nine metabolites from the October 2014 data; this model was tested in the January 2015 data.

Four of the nine ions remained significantly different between exposed and unexposed workers in the January data, though levels of most ions also exhibited regression to the mean. The elastic net model was able to correctly classify exposure status in 66% of the January samples; slightly better than classification by chance alone.

Metabolomics is a novel technique for exposure assessment, but few studies have looked at the reproducibility of metabolomics data by collecting repeat samples from the same workers. This analysis found several ions that do seem to remain stable over time, and identification of these ions should be pursued as potential biomarkers of Mn exposure.

Oral Presentation

Musculoskeletal

0292 INTERNATIONAL JOB-EXPOSURE MATRIX ON PHYSICAL WORKLOAD: A SECOND STEP ABOUT AN UTOPIA?

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Introduction Job-exposure matrixes (JEM) approaches have been recently developed on physical workload in US, Denmark and France. A comparison between US and Danish JEMs revealed substantial reliability and concordance. We aimed to describe correlation between French, US and Danish

JEMs, in order to confirm that some variable of physical workload JEMs may be internationally generalizable.

Methods US "O*NET" variables, two Danish expert based JEMs (Lower Body and Shoulder), were compared to variables of "MADE", French expert based JEM. The Danish JEMs were based on occupational titles in the Danish version of the International Standard Classification of Occupations 1988 (ISCO88). Exposure estimates for Danish ISCO88 codes had been connected to "O*NET" exposure estimates through ISCO08 and Standard Occupational Classification (SOC) codes. "MADE" is available on French coding system (PCS03) and ISCO08. Crosswalk from ISCO08 to SOC and Danish ISCO 88 has been performed, to allow building a matrix of correlations based on Pearson correlation coefficients.

Results The cross-walk included 337 Danish ISCO 88 common used codes for upper extremity and 372 for lower upper extremity, O*Net, more than 800 occupational titles and "MADE JEM" 673 ISCO08 codes. Information was unique for 379 for "MADE"-O*NET couples, 333 for "MADE"-upper Danish JEM, and 165 for "MADE"-lower Danish JEM. Correlation of relevant variables found good associations ($\rho > 0.7$) for force, computer work, and kneeling, fair for repetitiveness and vibrations (ρ 0.5–0.6). Handling loads was heterogeneous.

Conclusion These results seem to confirm the possibility of international job-exposure matrixes on physical workload.

Poster Presentation

Other

0293 CURRENT RESEARCH PRIORITIES FOR UK OCCUPATIONAL PHYSICIANS AND OCCUPATIONAL HEALTH RESEARCHERS—A MODIFIED DELPHI STUDY

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Objectives Studies identifying occupational health (OH) research priorities have been conducted in several countries, to establish where OH research should be focusing and where funding should be targeted. The UK findings however, are now over 20 years old. OH practice is continuously evolving, with advances in technology, changes in work practices and customer/workforce needs.

Aims To identify the current research priorities for UK occupational physicians (OPs) and occupational health researchers (OHRs).

Methods A modified Delphi study of current research priorities for UK OPs and OHRs, is being undertaken. It will be

conducted in two Rounds ('rating' and 'ranking') using a developed questionnaire based on expert panel discussions and key research topics identified from the medical literature, including similar studies.

Questionnaires will be circulated using a survey link electronically. Contacts have been established with the UK Faculty and Society of Occupational Medicine and academic OH institutions and agreement gained to participate.

Results The first 'rating' round was completed between September - November 2016 and the second 'ranking' round has recently been commenced. This survey will remain open until mid-April 2017, with reminders to increase response rate. The results will be collated and written up by June 2017.

Conclusions By achieving consensus on current research priorities, this work will inform the future direction of national OH research strategy and support and encourage research that addresses important knowledge gaps within the specialty. It will facilitate maximum gain for all key stakeholders by establishing where OH research funding ought to be focusing.

Oral Presentation

Exposure Assessment

0294

JOB-EXPOSURE MATRIX ADDRESSING SMOKING IN THE NATIONWIDE DANISH OCCUPATIONAL COHORT, DOC*X

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Objectives To develop a job-exposure matrix (JEM) addressing smoking to allow for confounder adjustment in register-based occupational health studies.

Methods We combined and harmonised questionnaire and interview data on smoking from several Danish cohort studies and surveys in the time-period 1981–2013 for 2 64 054 employees registered with a DISCO-88 code (the Danish version of ISCO-88) in the Danish nationwide JEM database, DOC*X. We modelled the probability of being a smoker, and the amount of smoking (g/d) among smokers. In mixed models, age and sex were included as fixed effects and DISCO as random effect for six different time-periods.

Results The proportion of smokers decreased linearly from 56% in 1981–90% to 19% after 2010, whereas the amount increased from 15.9 g/d in 1981 to 16.5 g/d in 1991–95, and then declined to 13.2 g/d after 2010. In general, the quality of the JEM increased by calendar year, as 23% and 71% of

the DISCO-codes were represented in the first and latest time-period, respectively, on the most detailed 4 digit DISCO-level. This was also reflected in the calculated interclass correlation coefficient (ICC), which increased by calendar year. The within job-group variation was large relative to the between jobs variation, but the range between jobs was in general high, as the probability ranged from 6% to 40% and the amount from 8.0 to 19.5 g/d after 2010.

Conclusions We succeeded addressing a smoking JEM with substantial variability between jobs, which may prove a useful tool for confounder adjustment in register-based occupational studies.

Oral Presentation

Cancer

0295

URINARY CADMIUM CONCENTRATION AND MAMMOGRAPHIC VOLUMETRIC DENSITY – PRELIMINARY RESULTS

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Cadmium (Cd) is a heavy metal with widespread occurrence in the environment. Occupational exposure to cadmium occurs in many occupational settings, such as pigment and batteries production, galvanization and recycling of electric tools. Environmental contamination with Cd comes from industry and agriculture. The interest of the researchers and stakeholders in cadmium as potential risk factor for breast cancer has been increasing over the recent years.

The objective of our ongoing project is to assess the association between Cd and mammographic density - a strong risk factor for breast cancer. Our research hypothesis assumes that Cd, as metalloestrogen, modifies mammographic density therefore affecting breast cancer risk.

The cross sectional study will include, in total, 500 women undergoing screening mammography at the mammography centres in Lodz (Poland). The study procedures include personal interview, anthropometric measurements, blood and urine collection and mammography. Cd is determined in spot urine sample (by ICP-MS technique). Digital mammography is performed according to the standards for screening mammography and volumetric mammographic density is analysed by Volpara software. The potential associations are examined with linear regression model, age and BMI adjusted.

During the first phase of the study we collected data from 200 women of mean age 54 years. The mean Cd concentration was 0.54 µg/L, and mean volumetric density 7.6% (left breast, cranio-caudal view). The preliminary analysis showed an inverse association of the volumetric density with age ($p < 0.01$) and BMI ($p < 0.001$). We did not observe association between cadmium concentration in urine and volumetric density.