Poster Presentation

Exposure Assessment

0288 DEVELOPMENT OF QUANTITATIVE ESTIMATES OF WOOD DUST EXPOSURE IN A CANADIAN GENERAL POPULATION JOB-EXPOSURE MATRIX BASED ON PAST EXPERT ASSESSMENTS

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Objectives The CANJEM general population job-exposure matrix summarises expert evaluations of 31 673 jobs from four population-based case-control studies of cancer conducted in Montreal, Canada. Intensity in each CANJEM cell is represented as relative distributions of the ordinal (low, medium, high) ratings of jobs assigned by the experts. We aimed to estimate quantitative concentrations for CANJEM cells using Canadian historical measurements, taking exposure to wood dust as an example.

Methods Wood dust measurements came from the Canadian Workplace Exposure Database (CWED). We selected personal and area samples in occupations (2011 Canadian National Occupational Classification) with a non-zero exposure probability in CANJEM in period 1930–2005 (minimum 10 samples/occupation in CWED). Concentrations were modelled with sampling duration, year and type, source database and proportion of jobs at medium and high intensity in cells (fixed effects), and occupations (random effects).

Results 5170 samples from 31 occupations spanning 1981–2003 were retained. Estimated geometric mean (GM) concentrations for a cell with all jobs at medium or high intensity were respectively 1.3 and 2.3 times higher than a cell with all jobs at low intensity. An overall trend of −5%/year in exposure was observed. Predicted GMs for 8 hours, breathing zone and year 1989 for CANJEM cells associated with exposure ranged 0.49–1.67 mg/m3.

Conclusions The model provided estimates of wood dust concentrations for any CANJEM cell with exposure, even for those without measurements by using the calibrated intensity ratings. This framework could be implemented for other agents represented in both CANJEM and CWED.

Poster Presentation

Exposure Assessment

0289 "DAVID´S CHEESE BREAD" METHOD: WORKLOAD QUANTITATIVE EXPOSURE THRESHOLDS DETECTION USING ADJUSTED HAZARD MULTIVARIATE PARAMETRIC MODELLING, USEFUL IN CUMULATIVE-TRAUMA DISORDERS PREVENTION AND WITHIN THEIR CAUSAL ASSESSMENT

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Background Qualitative methods are frequently used for workload assessment due to their relative low-cost but their evidence lack, high subjectivity and inaccurate conclusions lead to develop quantitative evidence-based methods for Cumulative Trauma Disorders evaluation. This research aims to generate robust and reliable evidence useful in prevention systems and within workers´ compensation processes (causal assessment) by measuring cumulative effective working time to define suitable exposure thresholds.

Methods A retrospective cohort study was assembled with workers from different positions. Inclusion/exclusion criteria were rigorously applied to finally accept 328 workers (656 shoulders). Entire clinic history was analysed towards obtaining important clinical variables. Each shoulder workload was assessed independently getting cumulative exposure time to movement angles, repetitive motions, load lifting, exertion and vibration, adjusting by rest/break periods and other important covariates, controlling confusing effects. The exposure thresholds were obtained using an adjusted multivariate Weibull regression modelling. Huber's M-estimator was used warranting robust estimators to correct both shoulders non-completely independent measures. Final model was built according with Hosmer-Lemeshow-May´s covariates purposeful selection principles.

Findings/conclusions Within the adjusted multivariate final model, we could set hazard rate ratio (HRR) into five different clusters across cohort exposure time-line: "D" or baseline hazard zone; "a" zone (HRR≈1;p-value≥0.05); "v" or risk zone (HRR >1;p-value<0.05); "i" or survivors zone (HRR≈1; p-value≥0.05); and "d" or super-survivors zone (HRR <1;p-value<0.05). Shortest cumulative times within "v" zone were selected as exposure thresholds. For workload factors, we were able to clearly define zones and thresholds. We´ve also named "v" cluster as "cheese" zone and others as "no-cheese" areas.