[3]National Institute of Public Health, University of Southern Denmark, Copenhagen, Denmark

10.1136/oemed-2013-101717.295

Objectives To assess ergonomic exposures in a historical cohort study on musculoskeletal disorders among baggage handlers using production statistics from the airport and the involved handling company.

In historical cohort studies information on exposures is typically based on self-reports or assumptions of previous exposures. This may lead to misclassification of cumulative exposures. We analysed production data from the participating companies to improve the exposure assessments of the individual workers.

Methods Data from 1990–2012 regarding the number of flight operations was provided by Copenhagen Airport. The handling company provided data from 1998–2012 on total baggage weight, number of operations and number of baggage handlers on duty. Additionally, information existed back to 2002 on type of aircrafts, percentage of wide-bodied aircrafts (where some of the baggage was loaded in containers) and weight of manually handled baggage. It was possible to receive information about the dimension of the baggage compartments, which is decisive for the postures adopted in the hold (standing, stooping, squatting, kneeling and sitting). Information also existed on the time of introduction of technical lifting gear.

Results Although the number of passengers almost doubled during the past 20 years, the number of flight operations decreased as the number of passengers per flight increased. However, the weight of manually handled luggage out on the ramp decreased, probably because the number of wide-bodied aircrafts increased. Seasonal and daily variations existed. Because of the detailed production statistics it was possible to create a job exposure matrix by job tasks and calendar periods. This information will be combined with individual information on job tasks back in time.

Conclusion Although production statistics cannot provide information on individual factors such as the worker's lifting technique and his use of lifting gear, production statistics may be a valuable tool in exposure assessments in epidemiological studies.

296 INFLUENCE FROM NON-OCCUPATIONAL FACTORS ON SELF-REPORTED OCCUPATIONAL LIFTING AMONG PREGNANT WOMEN: FINDINGS FROM THE DANISH NATIONAL BIRTH COHORT

[1]P F Frost, [2]Svendsen, [3]Mocevic, [3]Jørgensen, [4]Nybo Andersen, [3]Bonde. [1]Aarhus University Hospital, Aarhus C, Denmark; [2]Herning Regional Hospital, Herning, Denmark; [3]Bispebjerg University Hospital, Copenhagen, Denmark; [4]University of Copenhagen, Copenhagen, Denmark

10.1136/oemed-2013-101717.296

Objective To establish exposure estimates based on prospective interviews in a cohort of pregnant women using a job and industry group-based approach, and to evaluate whether non-occupational factors should be considered when a group-based strategy is chosen based on self-report.

Methods Within the Danish National Birth Cohort, a job exposure matrix (JEM) based on information from participants still pregnant at date of interview had been constructed. Job titles were coded using the Danish version of the International Standard Classification of Occupations (DISCO-88) and the Danish Industrial Classification of All Economic Activities of employment industry was obtained from Statistics Denmark. We calculated the mean number of kilograms lifted per day within groups defined firstly by identical four digits DISCO-88 codes and employment industry, secondly by identical four, three or two digits DISCO-88 codes, depending on a compulsory group size of ≥10 participants. Level of self reported occupational lifting in relation to JEM-estimate and non-occupational factors including gestational age at interview, mother's age, parity, smoking and body mass index (bmi) was analysed with restriction to participants with identical job and industry codes. We used multivariate regression with bootstrap to obtain regression coefficients and 95% confidence intervals.

Results A total of 41,405 women were included in the analyses. Gestational age >97 days at interview and increasing mother's age were associated with reporting of lower levels of occupational lifting, whereas bmi ≥30 kg/m^2, smoking while pregnant, and being a mother was associated with reporting of higher levels. Differences ranged from -15 kg to 35 kg.

Conclusion We constructed a JEM based on self-report to obtain group-based exposure estimates, striving to minimise information bias and attenuation in exposure response analyses. Non-occupational factors influence reporting of occupational lifting among pregnant women. This should be considered when a group-based strategy is used for exposure assessment based on self-report.

297 GROUP-BASED EXPOSURE MEASUREMENT STRATEGIES AND THEIR EFFECTS ON TRUNK ROTATION AND LOW-BACK PAIN EXPOSURE-OUTCOME ASSOCIATIONS

[1]P Coenen, [2]Mathiassen, [3]Kingma, [4]Boot, [5]Bongers, [3]van Van Dieen. [1]Vrije Universiteit, Amsterdam, The Netherlands; [2]University of Gavle, Gavle, Sweden; [3]VU University, Amsterdam, Nederland; [4]VU Medical Center, Amsterdam, Nederland; [5]TNO Healthy Living, Hoofddorp, Nederland

10.1136/oemed-2013-101717.297

Objectives In epidemiological studies of occupational exposures (e.g. lifting) and low-back pain (LBP), group-based exposure measurement strategies are common. Workers are classified into exposure groups; exposure is measured only in a selection of workers in each group, and their mean exposure is assigned to all workers in the group. Exposure-outcome relationships are then determined by regression, relating exposure estimates with individual LBP data from all subjects. The objective of this study was to assess the effect of different group-based measurement strategies on exposure-outcome associations.

Methods 1122 workers, classified into 19 groups on the basis of job-related exposure, participated in this study. In each group, videos were collected from ~25% of the workers (in total, 370 workers), and percentage of the work day spent in trunk rotation was estimated by observation of the videos. This estimate of trunk rotation was significantly associated with self-reported LBP during three years of follow-up (OR:1.43 (1.06–1.93)).

Using a bootstrap simulation, workers per group (n = 10, 20, 30, 40) and percentage of observed workers (k = 10, 20, 30, 40, 50%) were varied. For each combination, (nk) workers were selected with replacement in each job group among those observed, and n (100-k) workers among those not observed. The mean exposure of the observed workers was assigned to all group members which was related to individual LBP data. ORs and accompanying p-level was estimated using logistic-regression.

Results A group-based measurement protocol led to significant ($p < 0.05$) ORs when the total number of workers was larger

than n = 30 in each job group, and ≥20% was actually observed.
Conclusions The proportion of observed workers did have an effect on p-values, but it appeared weaker than that of changing the total group size. These results suggest that it may be sufficient to observe only a minor proportion of workers if the overall size of the population is reasonably large.

Session: 15. Occupational injuries

298 FALLS FROM ELEVATION AMONG UNION DRYWALL INSTALLERS: PATTERNS IN RATES OF INJURY AND THE UTILITY OF EVENT NARRATIVES

A Schoenfisch, H J Lipscomb. *Duke University Medical Center, Durham, United States of America*

10.1136/oemed-2013-101717.298

Objectives Despite prevention efforts over the past several decades, drywall installers in the US remain at risk for work-related falls from elevation. These workers are challenging to study from an epidemiologic perspective. The purpose of this study was to describe patterns in drywall installers' rates of work-related injury from falls from elevation and event circumstances.
Methods Using data from the Carpenters Trusts of Western Washington and Washington State Department of Labour and Industries, we defined a cohort of 5,073 union drywall carpenters, their 37 million union work hours in Washington State, and their workers' compensation claims from 1989–2008. Individual-level data were linked using an encrypted identifier. Rates of work-related injury were calculated using Poisson regression. Injury event narratives provided additional details.
Results Falls from elevation made up 7.5% (n = 454/6,066) of work-related injuries among drywall installers. Rates of injury from falls from elevation declined from 7.8 per 200,000 worker-hours in 1989 to 1.1 per 200,000 worker-hours in 2008. Rates varied little by age and time in the union, except among 9% of events in which drywall material was a contributing factor; workers with 10 + union years had lower rates than their less tenured counterparts. Brief narratives consistently identified surfaces from which workers fell, commonly scaffolds (33%), ladders (21%) and stilts (13%). Worker task, described in 17.5% of events, often included drywall hanging, drilling/screwing or moving material. Information was lacking on height fallen, PPE use, work speed and influence of other workers.
Conclusions In addition to continued efforts to prevent work-related falls from scaffolds and ladders, particular attention should be paid to the prevention of drywall-handling-related falls among less experienced workers who may be at greater risk due to greater exposure. Improvements in the consistency of narrative data elements may enhance efforts to identify risk factors or evaluate regulatory changes or interventions.

299 THE ROLE OF MENTAL HEALTH PROBLEMS AND PSYCHOTROPIC DRUG TREATMENTS IN ACCIDENTAL INJURY AT WORK

T Palmer, D'Angelo, E C Harris, C Linaker, D Coggon. *University of Southampton, Southampton, United Kingdom*

10.1136/oemed-2013-101717.299

Objectives some evidence exists that mental health problems and drugs with psychotropic effects may raise risks of accidental injury at work. To confirm this and to quantify risks we undertook a case-control analysis nested within the UK General Practice Research Database (GPRD).
Methods The GPRD logs all primary care information for some 6% of the British population. Medical consultations and referrals are classified by the Read system and drug prescriptions according to the British National Formulary. Using the GPRD, we identified 1,348 patients aged 16–64 years consulting a general practitioner between 1/1/89 and 31/12/09 for a workplace injury (cases - 479 diagnostic codes) and 6,652 age, sex, and practice-matched controls (subjects with no such consultation). Cases and controls were compared in terms of consultations for mental health problems (1,328 diagnostic codes) and prescription of hypnotics, anxiolytics and antidepressants before the index date of injury. Associations were explored using conditional logistic regression with adjustment for recorded alcohol misuse.
Results In all, 1,846 (23%) of the 8,000 subjects had had at least one consultation in one/more of the coded psychiatric categories prior to the index date; 1,682 (21%) had been prescribed one/more drugs of inquiry. Odds of injury consultation were raised 46% ($P < 0.00$) in those with prior mental health consultations, significant associations existing by subclass of diagnosis (psychosis, neurosis, certain other mental health conditions). Additionally, the Odds Ratio in relation to drug treatment was 1.59 (95% CI 1.38–1.83, $P < 0.001$) and significantly increased for each of the drug classes considered.
Conclusions Mental health problems and psychotropic treatments account for an important and potentially preventable minority of workplace injury events.

300 DIABETES AND RISK OF ACCIDENTAL INJURY AT WORK

Harris, D'Angelo, C Linaker, D Coggon, K Palmer. *MRC Lifecourse Epidemiology Unit, Southampton, United Kingdom*

10.1136/oemed-2013-101717.300

Objectives To assess the effect of diabetes on risk of occupational injury, we undertook a case-control analysis nested within the UK General Practice Research Database (GPRD).
Methods The GPRD logs all primary care data for participating general practices (6% of the population). Medical consultations are classified by the Read system and drug prescriptions according to the British National Formulary (BNF). We identified 1,348 patients aged 16–64 years consulting over a 10-year period with workplace injury (cases) and 6,652 age, sex, and practice-matched controls with no such consultation. Groups were compared in terms of their diabetic status (defined by 320 Read codes and 355 BNF drug codes); and for those with diabetes, according to risks from diabetic eye disease, other complications, blood sugar-lowering treatment (insulin or oral hypoglycaemics), and indices of sub-optimal control. Associations were explored using conditional logistic regression.
Results In all, 199 (2.5%) subjects were classed as diabetic before the index date, including 77 with eye involvement, 86 on insulin and 52 with poor diabetic control. Odds of occupational injury consultation were seldom elevated relative to non-diabetics (e.g. OR 1.01 overall, 1.02 in diabetics on insulin) and for some measures were lower (e.g. OR for eye involvement 0.72). Only suboptimal chemical control (HbA1C >7%) in the 12 months before the index date was associated with a slightly elevated risk (OR 1.35); no differences were statistically significant.