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BOOK OF ABSTRACTS

shift duration) to provide a summary measure of risk. The aim of this study was to quantify exposure-response relationships between the SI and risk of DUL musculoskeletal disorders (MSDs).

A cohort of 536 manufacturing workers was followed for up to 5 years. At baseline, physical exposures were quantified using the SI. Changes to physical exposure were determine quarterly. Age, gender, BMI, and other relevant demographic, health, and psychosocial confounders were determine at baseline. MSD symptoms were evaluated monthly and electrodiagnostic studies and physical examinations were performed to identify incidence cases of carpal tunnel syndrome (CTS), lateral epicondylitis (LE), and trigger digit (TD). Exposure-response relationships were quantified using proportional hazards regression models with time-varying covariates. SI scores were modeled using linear splines.

The SI showed statistically significant exposure-response relationships with each of the three disorders in both unadjusted and adjusted models. Adjusted, peak
hazard ratios (HR) for CTS, LE, and TD were 5.9, 8.6, and 7.1 respectively. Confounders varied in importance between the disorders.

The SI score was consistently associated with increased risk of CTS, LE. And TD regardless of the presence of confounders. This suggests that physical exposure is an important, independent risk factor for developing these occupational illnesses. The SI is a useful tool for quantifying risk of DUL MSDs from job physical exposures.

S02-3

RELATIONSHIPS BETWEEN WORK ORGANIZATION FACTORS AND CARPAL TUNNEL SYNDROME AND EPICONDYLITIS

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Based on analyses of prevalence data on a pooled cohort of 1834 subjects from three research groups, this study examined the relationships between four work organization variables (job rotation, overtime work, having second job and work pacing) and the three musculoskeletal health outcome measures (prevalence of carpal tunnel syndrome (CTS), lateral epicondylitis (LEPI) and medial epicondylitis (MEPI)). There were 249 prevalence CTS cases out of a total 1799 eligible subjects, 65 LEPI out of 1807 eligible subjects, and 14 MEPI out of 1812 eligible subjects in this cohort.
The relationships between the work organization factors and the health outcome variables were assessed using logistic regression models fitted by the generalized estimating equations (GEE) method to account for non-independence of data collected by the same research group. Odds ratios and 95% confidence intervals were estimated for each work organization variable separately, while always adjusting for age, gender, and body mass index (BMI).
Varied degrees of associations between these work organization variables and the health outcome variables were found. Job rotation had significant association with CTS cases (OR = 1.23, 95%CL: 1.00 – 1.50). No statistically significant associations were found between the other work organization variables and CTS cases. Contradictory to common believe, overtime work was significantly associated with lower LEPI prevalence (OR = 0.48, 95%CI: 0.28 – 0.84). For the LEPI, job rotation was marginally associated with LEPI cases (OR = 1.69, 95%CI: 0.96 – 2.97). No associations were found between having second job or different types of work pacing and LEPI. No statistically significant associations were found between the four work organization variables and MEPI.

The results demonstrated that while clear associations between many biomechanical/psychosocial factors and the musculoskeletal health outcome variables, the work organization variables have much more complicated impact on these health outcome variables.

S02-4

PERSONAL, PSYCHOSOCIAL, AND BIOMECHANICAL RISK FACTORS FOR WORK DISABILITY FROM CARPAL TUNNEL SYNDROME: A POOLED PROSPECTIVE STUDY

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Introduction: Carpal tunnel syndrome (CTS), the most common peripheral entrapment neuropathy, results from compression of the median nerve at the wrist that leads to more disability than most other upper extremity disorders (Foley 2007).

Method: 4321 workers were followed up to 7 years with repeated symptom surveys and nerve conduction studies to identify prevalent and incident cases of CTS (N=318). Work disability was derived from SF12 and quickDASH questionnaires, and defined as symptom driven: (1) change in work pace, (2) lost time, or (3) job change. Workplace psychosocial exposure was assessed using the Karasek Job Content Questionnaire. Job level biomechanical exposures were time weighted averages of peak hand force, HAL scale, total repetition rate, forceful repetition rate, % time all hand exertions, and % time in forceful hand exertions(≥1kg-pinch or ≥4kg-grip). Adjusted hazard ratios were estimated using Cox proportional hazards models.

Results: Being female was associated with increased work disability(HR= 1.75; 95% CI: 1.23-2.5) as was having rheumatoid arthritis(HR=1.85; 95%CI: 1.04-3.26). High job strain compared to low job strain more than doubled the rate of disability(HR=2.38; 95%CI:1.03-5.51). The HAL Scale(HRmiddle =3.91;95% CI: 1.82-8.38;HRupper=3.20;95%CI:1.43-7.19), total repetition rate(HRmiddle=2.30; 95% CI: 1.15-4.58; HRupper =2.58; 95% CI: 1.23-5.38), % time in forceful exertions(HRupper =2.03; 95% CI: 1.02-4.05) and % time in all exertions(HRupper=2.53; 95%CI: 1.17-5.43) were associated with job change. Forceful repetition rate was associated with lost time (HRmiddle=2.46;95%CI:1.11-5.48;HRupper =1.86;95%CI:0.91-3.83) and the HAL Scale(HRmiddle=1.97;95% CI:1.24-3.12) and % time in all exertions(HRupper=1.94;95% CI:1.17-3.24) was associated with pace change.

Discussion: These results indicate that personal, workplace psychosocial and biomechanical factors are associated with an increased rate of work disability from CTS and should be taken into account for secondary prevention programs.