Discussion These findings show that some groups of workers face a higher risk of work-related MSD and that further monitoring and targeted measures are needed to support employers and employees especially at a time of economic recovery.

Full results and description of the methodology can be found at http://www.esri.ie/publications/work-related-illness/

538 USING GENERAL POPULATION JOB-EXPOSURE MATRIXES TO ESTIMATE WORKPLACE BIOMECHANICAL EXPOSURES: NEW OPPORTUNITIES AND INTERNATIONAL COMPARISONS

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Introduction Job Exposure Matrixes (JEMs) are commonly used in epidemiological studies of chemical and physical hazards; recent work has used JEMs to estimate workplace biomechanical exposures in studies of musculoskeletal disorders (MSDs). We conducted cross-national comparisons of general population JEMs from Denmark, France, and the USA. Prior studies using the Danish and US JEMs showed associations between MSD and workplace exposures to force, repetition, and posture.

Methods JEMs were constructed in the three countries using different methods to estimate workplace biomechanical exposures: Denmark (expert assessment), France (pooling of self-reported exposures from >28 000 current workers), and the USA (combined methods using O*NET, a national job demands database). Each JEM assigned multiple exposures to workers at the level of the job code. We created cross-walks between the respective national coding schemes (DISCO, PCS, and SOC) to compare estimated exposures at the level of the job.

Results Comparison between the Danish and US JEMs showed fair to moderate agreement for 7 lower extremity exposures across 168 job codes (kappa 0.25 to 0.56 across 7 exposures), and moderate to substantial agreement for 10 shoulder exposures across 336 jobs (kappa 0.38 to 0.77). Similar agreement was found when comparing 8 exposures between the French and American JEMs across 335 job codes. We will report additional analyses now in progress, including the strength of association between MSDs and exposures estimated by different JEMs when applied to the same datasets.

Discussion JEM for biomechanical exposures are a useful and efficient means to estimate workplace biomechanical exposures, particularly in large general population studies where exposure data are otherwise limited. Cross-national comparison studies are a useful methodological step as the use of JEM for studies of MSD continues to increase. Ongoing validation studies will increase the usability of JEMs in providing exposure-response estimates and further guidance for prevention of MSDs.

540 POST-OFFER/PRE-EMPLOYMENT SCREENING FOR CARPAL TUNNEL SYNDROME AND OTHER MUSCULOSKELETAL DISORDERS: IS IT EFFECTIVE?

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Introduction Pre-employment examinations, known as post-offer pre-placement (POPP) tests in the US, are performed by many US employers to prevent work-related musculoskeletal disorders (MSDs) such as carpal tunnel syndrome (CTS). However, there is no strong evidence of effectiveness of such screening. We tested the predictive validity of POPP screening using nerve conduction studies (NCS) to identify future cases of carpal tunnel syndrome (CTS) among manufacturing workers.

Methods We used data from a natural experiment in which 1648 newly hired production workers in a manufacturing plant underwent baseline physical exam and NCS, but were hired regardless of test results. Workers were then followed for up to 5 years; outcomes of CTS and workplace physical exposures in different jobs were obtained from the employer's medical and safety records.

Results There was no association between NCV results at the time of hire and future CTS. Varying the diagnostic cut-offs for determining 'abnormal' NCS did not improve predictive validity. However, workers in jobs with high hand/wrist exposure showed greater risk of CTS than those in low exposed jobs (Relative Risk 2.82; 95% CI: 1.52 to 5.22).

Discussion NCS and other screening tests for the musculoskeletal system are commonly used in the US as a primary means to reduce or prevent MSDs, despite little evidence that such testing predicts which workers will incur MSDs in the future. Ours is the third study to find that POPP screening is ineffective as a preventive strategy for CTS. Other common testing strategies for MSDs do not satisfy evidence-based criteria, and their use should be scrutinised. Such screening seems a poor use of health and safety resources, which could better be spent on improving work activities to reduce injury risk for the entire worker population.

603 WORKPLACE PRACTICES AND POLICIES TO PREVENT MSD: DEVELOPING AN IMPLEMENTATION GUIDE

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Introduction Musculoskeletal disorders (MSD) continue to be a major burden for workplaces and workers as well as insurance and health systems. Evidence-based approaches are desired but research-to-practice gaps remain. One reason for gaps is the necessary research of sufficient quality is often not available. However evidence-based practice considers both scientific evidence as well as practitioner expertise. Our objective is to synthesise evidence from the scientific literature, practice evidence (policies and practices), and experiences from stakeholders.