

036-4 EVALUATION OF THE IMPACT OF HIGH AMBIENT TEMPERATURES ON WORK-RELATED INJURIES IN SPAIN (1994–2013)

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Introduction Extreme heat has been associated with higher rates of mortality and morbidity. Excess heat may also influence the occurrence of work-related injuries, but this hypothesis has not been previously explored in detail. We analyse the relationship between high ambient temperatures and work-related injuries in Spain.

Methods Daily number of work-related injuries with at least 1 day of leave and daily maximum temperature were obtained for 50 provinces of Spain. We restricted the analysis to the warm period (May 1st–September 15th) of years 1994–2013. Poisson regression models were used to quantify in each province the association between daily injury claims and maximum temperature, adjusting for day of the week, month, year, holidays and year-specific splines of time with 3 degrees of freedom. We used a random-effects meta-analysis to obtain a national summary estimate. Analyses were stratified by sex, age, occupational class, duration of leave and economical sector.

Results The study included 5,636,300 work-related injuries (average of 2,042 per day). There was a positive and statistically significant association between daily maximum temperature and work-related injuries in 21 provinces. Overall, a 1°C increase in maximum temperature was associated with an increase in work-related injuries of 0.28% (95% confidence interval (CI): 0.24%, 0.32%). The highest associations were found among men (percentage change: 0.35%, 95% CI: 0.30%, 0.39%), workers younger than 24 years (0.38%, 95% CI: 0.31%, 0.44%), manual workers (0.30%, 95% CI: 0.26%, 0.34%), injuries with 4–15 days of leave (0.32%, 95% CI: 0.27%, 0.38%) and those workers performing activities in agriculture (0.75%, 95% CI: 0.61%, 0.89%), construction (0.44%, 95% CI: 0.38%, 0.51%) and extractive industries (0.40%, 95% CI: 0.16%, 0.64%).

Conclusions This study found a consistent increase in work-related injuries associated with high ambient temperatures. If casual, specific preventive interventions may reduce occupational injuries among the most vulnerable groups of workers.

036-5 VIOLENCE IN OUR SCHOOLS: STUDENT-RELATED AGGRESSION AND INJURY TO FACULTY AND STAFF IN MINNESOTA, UNITED STATES

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Background Student-perpetrated injury to staff in the educational services sector is a particular and growing concern. Studies have focused on teachers, but much less is known about injuries to other employee groups, particularly educational assistants. Additionally, the type of interaction with students that results in injury is not well-documented.

Objectives Identify rates, consequences, and risk factors for student-related injury among faculty and staff in school districts.

Methods This study utilised workers' compensation data to identify incidence and severity of student-related injury to employees and potential risk factors in 138 school districts in Minnesota over a seven year period. School district and employee demographics, injury characteristics, and potential risk factors were extracted from the data. Employee jobs were broken down into faculty, custodial, food service, educational assistant, special education assistant, transportation, and clerical. Adjusted injury rates and multivariate analysis for identification of risk factors were conducted using negative binomial regression, rate ratios (RR), and 95% confidence intervals (CI). Additionally, text of injury claim characteristics were analysed, grouped by student interactions that resulted in injury (e.g. acting-out, lifting, restraining, etc.) and compiled in descriptive tables.

Results Twenty-five percent of all injuries were student-related and fifteen percent resulted in lost work-time. Special and general education assistants experienced the greatest rates and significantly increased risk of injury compared to faculty members. (RR = 6.0, CI = 5.05–7.15; RR = 2.07 CI = 1.40–3.07). Risk also differed based on age, gender, and school district type. Text analyses revealed students acting-out resulted in the highest frequency (45.4%) of student-related injury, whereas staff playing along resulted in the highest percentage of lost-time injury (17.7%).

Conclusion Student-related injury to faculty and staff occurs frequently in schools and can be severe. Education assistants bear the largest burden of injury. However, many student-related injuries were not aggressive in nature, based on information from text analyses.

036-6 UNITED STATES WEST COAST COMMERCIAL FISHING INJURY, FATALITY AND VESSEL DISASTER SURVEILLANCE INFORMING SAFETY MEASURES

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Objectives Quantitative risk assessments for commercial fishing fleets can inform safety requirements and voluntary programs. In collaboration with the United States Coast Guard (USCG) and surveillance data provided by the National Institute for Occupational Safety and Health (NIOSH) we have analysed fatal and non-fatal injuries and vessel disasters.

Methods Washington, Oregon and California commercial fishing data from 2002–2014 are included. Data on vessel disasters and fatalities were collected by a NIOSH surveillance program. Non-fatal injury data were abstracted from USCG investigation reports and then coded and entered into a study database. Location, weather, factors, demographics, work process, injury characteristic, and vessel details were included in the database. Descriptive analysis was performed to identify risk factors.

Results During the study period, 101 fatal and 208 non-fatal injuries were reported. In the same period, 184 commercial fishing vessel disasters occurred on the US West Coast resulting in 66 fatal and 28 non-fatal injuries out of 493 total crewmembers onboard. In addition to vessel disasters, falls overboard accounted for 22 fatalities and 3 reported nonfatal injuries. The groundfish and shellfish fisheries suffered the most fatal (23 and 38, respectively) and non-fatal injuries (93 and 55). The majority of non-

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fatal injuries occurred onboard (81%) and the highest risk work tasks associated varied by specific fishery and gear type. For the Pacific whiting fishery, processing the catch and handling frozen fish, and for Dungeness crab, hauling pots accounted for the most injuries.

Conclusion Fatality and vessel disaster data are reliably collected through NIOSH surveillance. Non-fatal injury data reported to the USCG is limited. Our results are currently being used in a regional risk assessment to inform the industry and USCG for developing safety programs. Other sources of data should be explored for ongoing research and monitoring of such programs and for the industry.

Oral Session 37 – Musculoskeletal Disorders 3

037-1 MUSCULOSKELETAL DISORDERS AND TEMPORARY DISABILITY: FREQUENCY AND DURATION IN CATALONIA, 2007–2010

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Objective Musculoskeletal disorders are the first cause of sickness absence (SA) in Spain and the second in Catalonia. A deeper knowledge on this field may allow to refocus social protection policies and interventions to reduce its frequency and duration. The objective of the study is to describe the frequency and the duration of SA due to MSD in Catalonia.

Methods The study population included all incident SA episodes due to MSD during the period 2007–2010, registered in the Institut Català d'Avaluacions Mèdiques (ICAM) database. We selected the 10 most frequent MSD disorders (824.646 episodes) and obtained 607.732 (75%) SA episodes. We calculated the median duration of SA and analysed the differences with Mann-Whitney's U or Kruskal-Wallis tests and studied the differences with a post-hoc test. We also carried out a survival analysis using Kaplan-Meier graphics.

Results The most frequent musculoskeletal disorders were low back pain and neck pain. The median duration was larger for gonarthrosis and calcific tendonitis of the shoulder. The median duration of SA episodes was higher when pain was due to an organic disorder, in women ($Z = 51770950^{\circ}5$; $p < 0.001$), increased with age ($K = 17335^{\circ}72$; $p < 0.001$), and was higher in self-employed workers ($Z = 20965263^{\circ}1$; $p < 0.001$) and in those working in agriculture and livestock ($K = 736^{\circ}822$; $p < 0.001$).

Conclusions Median duration of SA caused by musculoskeletal disorders in our region are influenced by sex, age, type of work and type of social protection.

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037-2 TOWARDS UNDERSTANDING RELATIONS AMONG SOCIAL INEQUALITIES, GENDER AND WORKING CONDITIONS ASSOCIATED WITH WORK-RELATED MUSCULOSKELETAL DISORDERS

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Introduction Reducing health inequalities is a worldwide public health priority. The objectives of this study are to characterise social inequalities related to WMSD-associated work exposures and how they differ by gender/sex.

Method Study data were from the 2007–2008 Quebec Survey on Working and Employment Conditions and OHS. Gender/sex stratified multivariable analyses were performed in three steps: 1) logistic regression models to identify work exposures associated with WMSD; 2) calculation of multivariate risk scores (MRS) based on the sum of workers' exposures weighted by the magnitude of the exposure's association with WMSD (i.e., its logistic regression coefficient from step 1); 3) linear regression models of the relations between MRS and three measures of socioeconomic status (SES).

Results In both genders, WMSD were significantly associated with high physical and quantitative work demands, emotionally demanding work, lack of promotion prospects and unemployment; additionally, in women, WMSD were associated with exposure to sexual harassment, psychological harassment, tense situations with clients, noise, and ≥ 16 hours computer work/week and, in men, low co-worker support and contradictory work demands. In both genders MRS was significantly associated with lower education and the two lowest socio-occupational classes; in men it was also associated with lower household income and technical occupations and, in women, professional occupations.

Discussion The MRS quantified, in a single statistic, the combined work exposures associated with WMSD. Lower occupational classes and educational categories have higher MRS. In women this relationship is more complex, with both less-qualified and professional occupational groups associated with higher MRS. Variations in relations between SES and specific work exposures explain some of these differences. In both genders, the strongest association of MRS was to elementary occupations. Low paid vulnerable workers in such occupations often have less access to adequate OH&S and labour standards protection. These results have implications for targeting preventive interventions.

037-3 RESULTS OF A MULTI-CENTRE RANDOMISED CONTROLLED TRIAL OF THE MANAGEMENT OF DISTAL ARM PAIN: THE ARM PAIN TRIAL

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O36-6 United states west coast commercial fishing injury, fatality and vessel disaster surveillance informing safety measures

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