

**05A.4 OVEREXERTION RELATED AGE-SPECIFIC WMSDs CLAIMS AMONG CONSTRUCTION WORKERS IN OHIO, USA: 2007–2013**

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**Background** As the proportion of older workers in the U.S. increases, understanding the health and safety needs of an aging workforce is critical, especially in the hazardous and physically demanding construction industry. According to the Bureau of Labor Statistics (BLS), in 2016 the rate of work-related musculoskeletal disorders (WMSDs) in construction was 32.7 per 10 000 full-time equivalent workers, which was 11% higher than the rate for all industries combined. The objective of this study was to examine the rate and cost of WMSDs due to overexertion, the leading cause of WMSDs, among construction workers by age group in Ohio using workers' compensation claims.

**Methods** Overexertion related WMSDs allowed claims, submitted to Ohio Bureau of Worker's Compensation (OBWC) by workers in the construction industry for injuries occurring from 2007–2013 were analyzed to compute rates of allowed claims and claim costs by age group. The American Community Survey of the U.S. Census Bureau was used to determine the proportion of construction workers in each age group in Ohio. For this study, age was categorized as 14–24, 25–34, 35–44, 45–54 and  $\geq 55$  years old.

**Results** There were 7434 overexertion related WMSD claims accepted by OBWC for construction workers who were injured due to overexertion in 2007–2013. Workers 35–44 years old experienced the highest claim rate of 7.28 per 1000 for WMSDs due to overexertion. However, the highest mean medical compensation cost for WMSD claims due to overexertion was for construction workers 55 years and older.

**Conclusion** Overexertion-related WMSD claims appear to rise and then fall with age ( $\geq 55$ ). There is a need to understand how aging interacts with WMSDs risk factors. Age-specific interventions to reduce WMSDs may help to retain older and skilled workers whose knowledge and experience might otherwise be lost when workers need to leave work because of debilitating WMSDs.

**05A.5 OCCUPATIONAL DRIVING OF LIGHT VEHICLE FOR MAIL AND PARCEL DELIVERY AND RISK OF MUSCULOSKELETAL DISORDERS**

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**Background** Occupational light vehicle driving is becoming increasingly important in the parcel delivery/messaging sector faced with new consumer practices. Our objective was to analyze the effect of driving of light vehicle for the mail/parcel delivery on low back pain (LBP) and upper-extremity musculoskeletal disorders (UEMSDs) taking into account work

organization. We also aimed to identify the protective factors from MSDs that could be implemented into this specific workplace.

**Methods** The study was carried out in 406 postal workers (306 with driving delivery activity, 100 with foot delivery/manual handling activities). Subjects completed a self-administrated questionnaire about personal characteristics and working conditions assessing occupational driving, physical constraints, psychosocial factors and work organization. Work organization was also assessed at the establishment level. MSDs were assessed by the Nordic Questionnaire, with some additional questions for LBP. For UEMSUs, a medical examination using a standardized clinical methodology of the European consensus was carried out. Statistical analysis was performed separately in men and women by multivariable logistic regression modeling for the UEMSUs and by item response theory approach for LBP.

**Results** Driving time and high perceived driving-related physical constraints are associated to LBP in men. Carrying loads  $> 3$  Kg, awkward postures and high perceived physical demands related to parcel loading and delivery are associated with MSDs for both sexes. The main psychosocial risk factors are the lack of reward, being mobbed and the necessity of undertaking tasks that the worker disapproves. Protective factors are the use of vehicles fitted with automatic gearbox and taking breaks from work; at establishment level, drive training and use of supplementary staff during peak periods.

**Conclusion** The effect of driving of light vehicle on MSDs seems quite limited whereas physical and psychosocial constraints are clearly risk factors. Targeting work organization could protect postal workers with driving delivery activity from MSDs.

**05A.6 OBJECTIVELY ASSESSED ARM ELEVATION AND THE COURSE OF NECK AND SHOULDER PAIN DURING A 2-YEAR FOLLOW-UP: A COMPOSITIONAL APPROACH**

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**Purpose** To use a compositional data analysis approach and objective exposure assessments to study the association between the duration of arm elevation and the course of neck and shoulder pain (NSP) during a 2-year follow-up in physically demanding occupations.

**Methods** Construction (n=59) and healthcare (n=59) employees wore accelerometers on the dominant upper-arm during a full working day at baseline. Objective assessments using accelerometers addresses biases found in previous studies that estimate duration of arm elevation with self-reports. At baseline and every 6 months for two years, participants reported on NSP (scale 0-3). Duration of arm elevation within predefined ranges ( $< 30^\circ$ ;  $30-60^\circ$ ;  $\geq 60^\circ$ ) formed the parts of the composition. Compositional data analysis is a new statistical analysis method within occupational health and it is the correct way of analysing data with a compositional nature. The associations between the relative importance of the duration within the levels of arm elevation and the course of NSP during the 2-year follow-up were estimated with compositional linear mixed models, adjusted for confounders.

**Results** In non-adjusted analyses, only duration arm elevation  $< 30^\circ$  was associated with NSP at baseline ( $\beta = 0.37$ ;