

0391 HEART RATE VARIABILITY IN PARTICLE EXPOSED TRAIN DRIVERS IN THE STOCKHOLM SUBWAY

^{1,2}Carolina Bigert, ²Magnus Alderling, ³Magnus Svartengren, ¹Nils Plato, ⁴Martin Anderson, ²Andreas Wiklund, ^{1,2}Per Gustavsson. ¹Institute of Environmental Medicine, Karolinska Institutet, Stockholm, Sweden; ²Center for Occupational and Environmental Medicine, Stockholm County Council, Stockholm, Sweden; ³Department of Medical Sciences, Occupational and Environmental Medicine, Uppsala University, Uppsala, Sweden; ⁴Department of Clinical Physiology, Södersjukhuset, Stockholm, Sweden

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Objectives Exposure to particulate matter in urban air is a recognised risk factor for cardiovascular disease, but little is known about possible effects from exposure to the high levels of metal-rich particles prevailing in underground subway systems. This led us to investigate heart rate variability (HRV) in occupationally exposed subway drivers.

Method 29 train drivers (18 men and 11 women) in the Stockholm subway were investigated from November 2004 to March 2005. All were non-smokers in ages 25–50. Personal particle exposure levels were obtained in an occupational hygienic investigation (mean PM_{2.5} 19 µg/m³, DataRAM 33 µg/m³). We registered continuous ECG over 24 h. The HRV measures obtained were LF, HF, LF/HF, HR and SDNN. The arithmetic mean (based on 5-minutes intervals) in the group was calculated for each measure and exposure situation, as well as the mean in group of the individual quotients between the exposure situations. One-sample t-tests were used to analyse whether the quotients differed from one.

Results The mean quotients between working in tunnel and working outside tunnel were significantly above one for LF (p = 0.04) and significantly below one for HR (p = 0.03) and SDNN (p = 0.00). The quotients between total working-hours and leisure-hours were significantly above one for HR (p = 0.03) and significantly below one for SDNN (p = 0.00).

Conclusions Overall, our results do not indicate any clinically significant effects on the cardiac autonomic function, as measured by HRV, for particle exposed subway drivers in Stockholm, even though there were some indications of a decrease in SDNN.

0392 WORKPLACE BULLYING AND POSTTRAUMATIC STRESS SYMPTOMS AMONG FAMILY PHYSICIANS IN LITHUANIA

Vilija Malinauskiene, Lina Bemotaite. Lithuanian University of Health Sciences, Kaunas, Lithuania

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Objectives The study investigated the associations between workplace bullying and posttraumatic stress symptoms as compared to and controlled for associations between the latter and other psychosocial stress factors at work and in everyday life, employing a representative sample of Lithuanian family physicians.

Method With a response rate 89.2%, a total of 323 family physicians filled in anonymous questionnaire on workplace bullying, post traumatic symptomatology (IES-R), other psychosocial stressors at work and in everyday life, personal health resources (sense of coherence), behavioural characteristics and demographic variables. The statistical software SPSS 14.0 for Windows was used in the analysis. Associations were tested by way of multivariate logistic regression analysis.

Results A high prevalence of bullying was found among the family physicians in Lithuania, with 13% experiencing severe workplace bullying and 17.3% more occasional incidents of bullying. The prevalence of posttraumatic stress symptoms was also high (15.8%). The Odds ratio (OR) of severe bullying for posttraumatic stress after adjustment for age and gender was 8.05, 95% confidence interval (CI) 3.80–17.04. In the fully adjusted model it increased to 13.88, 95% CI 4.68–41.13, indicating cumulative effects of all the investigated stressors.

Conclusions Workplace bullying is prevalent among Lithuanian family physicians, as is symptoms of posttraumatic distress. Strong associations between posttraumatic stress and exposure to severe bullying indicate that bullying is a significant source of mental health problems among physicians and more so than most other well known psychosocial stressors at work and in daily living.

0393 EPIDEMIOLOGY OF LOW BACK PAIN AMONG NURSES OF THE HOSPITAL OF SÉTIF (ALGERIA)

^{1,2}Ziadi Boukerma, ¹Ahmed Lakhdar Behloul, ¹Meriem Reggad. ¹Université Farhat Abbas Sétif 1, Sétif, Algeria; ²Laboratoire Santé Environnement Des Hauts Plateaux Sétifiens, Sétif, Algeria

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Objectives Identifying risk factors and quantification of the prevalence of low back pain among nurses and service agents working at the hospital in Sétif (Algeria).

Method A questionnaire containing 45 items was submitted by a physician to 450 people, of which only 300 people have agreed to meet. Responses have been verified by cross-checking with the information contained in the medical records of the occupational medicine service. Controlled data have been analysed by the chi-square test and multivariate logistic regression techniques using the “IBM SPSS 20” software.

Results The prevalence of LBP is 66.67%, it is significantly higher between 30 and 49 years of age and between 2 and 5 years of seniority at the hospital. These low back pains have a gradual onset in 52.0% and radiates along the sciatic nerve in 62.0%. The logistic regression analysis revealed the following associations: low back pain predicted by psychosocial factors (stress, sleep disturbance and fatigue late in the day), the usual working posture and frequent positioning of patients in bed. Regarding sleep disorders, we cannot say if they are a source or a consequence of low back pain even if they are strongly associated with this disease.

Conclusions Occupational factors that have a significant influence on the development of low back musculoskeletal disorders are not only mechanical and postural order but also organisational, social and psychological.

0398 RISK OF NON-HODGKIN LYMPHOMA IN HEALTH OCCUPATIONS

¹Michela Ursi, ¹Marcello Noli, ¹Federico Marras, ¹Carlo Aresti, ²Andrea't Mannetje, ¹Pierluigi Cocco. ¹University of Cagliari, Monserrato, Cagliari, Italy; ²Massey University, Wellington, New Zealand

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Objectives Several non-Hodgkin lymphoma (NHL) risk factors are typical features of health occupations. We investigated risk of NHL and its major subtype among health workers.

Method A pooled analysis of 10 case-control studies was conducted within the Interlymph Consortium. Overall, the study population included 10786 NHL cases and 12069 controls. Each occupation of study subjects was coded using the 1968 ISCO classification. Risk of NHL, diffuse large B cell lymphoma (DLBCL), follicular Lymphoma (FL), chronic lymphocytic leukaemia (CLL) and T-cell Lymphoma, associated with having been working for one year or more in specific health occupations was calculated as the Odds Ratio (OR) and its 95% confidence interval (95% CI) with unconditional logistic regression, adjusting by age, gender and study area. Risk was also calculated for duration of employment > 10 years.

Results Health workers employed 10 year or more showed a significant 19% excess risk of FL, which was restricted to male workers (OR = 1.62; 95% CI 1.02, 2.59). FL risk was highest (OR = 2.23, 95% CI 1.17–4.26) among the medical staff, and it was consistent in both genders. Male personal care workers also showed an increase in NHL risk (OR = 2.52; 95% CI 1.18–5.36). Risk was not increased among nurses. No consistent patterns of increasing risk was observed for the other NHL subtypes.

Conclusions Shift work, ethylene oxide, and viral agents are well known NHL risk factors among health workers. Our results suggest that risk might be more elevated among the medical staff and among men.

0399 EFFECTIVENESS OF A MULTIDISCIPLINARY INTERVENTION AMONG DUTCH CONSTRUCTION WORKERS ON RESPIRABLE QUARTZ EXPOSURE: RESULTS FROM THE 'RELIEVED WORKING STUDY'

^{1,2}Erik van Deurssen, ²Karen Oude Hengel, ²Suzanne Spaan, ²Henk Goede, ²Tim Meijster, ²Erik Tielemans, ¹Dick Heederik, ²Anjoeka Pronk. ¹Institute for Risk Assessment Sciences, Utrecht University, Utrecht, The Netherlands; ²TNO, Zeist, The Netherlands

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Objectives A multidisciplinary intervention study aimed at reducing quartz exposure in the Dutch construction industry was performed. We aimed to assess the effect of the intervention on exposure level and psycho-social and organisational factors.

Method Eight participating construction companies were randomly allocated to an intervention (n = 4) or control group (n = 4). Following the Intervention Mapping approach, the intervention aimed at engineering, organisational and psycho-social factors. Pre and post-intervention respirable quartz measurements (n = 300) were taken from workers from all eight companies. Questionnaires and observation forms were used to assess pre and post psycho-social and organisational factors.

Results Pre-intervention assessment demonstrated highest respirable quartz levels for concrete drillers, tuck pointers and demolishers (GM respectively 0.20, 0.18 and 0.12 mg/m³), exceeding the Dutch occupational exposure limit (OEL) in 62% of the measurements. Identified control measures resulted in 30% reduction in quartz exposure. More social influence was associated with a 1.5 fold increased use of control measures. The post intervention assessments will become available early 2014.

Conclusions High exposure levels exceeding the Dutch OEL were observed. Associations between organisational, psycho-social and use of control measures found during the pre-intervention, were taken into consideration when developing the intervention strategy. A comparison between pre and post intervention outcomes will be presented during the conference. The effect of changes in exposure levels as a result of the

intervention will be assessed with a health impact assessment model incorporating population dynamics.

0403 AN EXPOSURE ASSESSMENT MODEL FOR LONG WORKING HOURS

¹Sadie Conway, ¹Lisa Pompeii, ²David Gimeno. ¹The University of Texas School of Public Health, Houston, Texas, USA; ²The University of Texas School of Public Health, San Antonio, Texas, USA

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Objectives To operationalize a definition of long working hours that overcomes limitations of existing heterogeneous definitions and to examine the temporal trends of long working hours across worker characteristics in the US.

Method We examined 25 years (1985–2010) of repeated working hour measures from a representative sample of workers in the US Panel Study of Income Dynamics. Self-reported working hours included total annual hours worked, total annual overtime worked, jobs worked, and weekly hours worked by job. An exposure assessment model was produced through the creation of a directed acyclic graph, and a corresponding multivariate model was constructed for purposes of examining long working hours as an independent risk factor for various health outcomes, including cardiovascular disease.

Results An improved measure of working hours was produced in the form of a model that included dimensions of working hour intensity and duration. Descriptive analyses evaluating the frequency and temporal trends of long working hours across demographic and occupational strata were calculated on 31 136 participants employed during this study period, with 66.8% and 32.0% who worked more than 40 and 50 h per week on average, respectively, for any year.

Conclusions The longitudinal nature of this study in a large representative sample of US workers using repeated measures of working hours allowed us to operationalize a more comprehensive definition of long working hours, addressing methodological issues identified in previous research and providing enhanced generalizability. We examined the relationship of long working hours with health outcomes while considering participants demographic and occupational characteristics.

0405 INFLUENCE OF FLUORIDE AND HARD MANUAL LABOUR FOR PREVALENCE OF SHOULDER PAIN SYNDROME IN ALUMINIUM POTROOMS

¹Vasilij Shirokov, ¹Vladimir Gurvich, ²Anatoliy Varaksin, ¹Tatyana Derstuganova. ¹Federal State Scientific Institution "Ekaterinburg Medical Research Center for Prophylaxis and Health Protection of Industrial Workers", Ekaterinburg, Russia; ²Institute of Industrial Ecology, The Ural Branch of the Russian Academy of Sciences.

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Objectives To evaluate relative contribution of hard manual labour, fluorides' influence, co-morbid pathology on the prevalence and incidence of shoulder pain syndrome (SPS).

Method One-stage cross-sectional observation of prevalence SPS was investigated. The observed 6094 workers were divided into four groups. The first group was formed by 407 workers of an aluminium plant (elektroliz aluminium), whose professional activity (hard manual labour) is connected the quite big shoulder region loading and fluorides' influence. The 2-nd group consisted of 369 workers with fluorides' influence without manual