

Poster Presentation

Respiratory

0443 SANDSTONE MINING: PERIL OF SILICOSIS

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Approximately 25 000 workers are engaged in mining of sandstone in a small district of Madhya Pradesh, in the centre of India. Most of the quarry are small, unregistered, and unorganised, mining soft stone where silica content can be as high as 70%. 88 workers of average age of 25 years, minimum age being 13 years and maximum being 70 years were examined during a screening camp. 77 male workers and 11 female workers are engaged in the process of stone breaking, cutting, cleaning, loading and unloading for an average of 8 years of work, with minimum 1 month of work to 30 year of maximum work. These workers work under precarious conditions of high silica exposure and high risk of accidents and injuries. These workers, mostly malnourished live in very unhygienic conditions. 50% of the workers have normal pulmonary function test, and rest of the 50% workers have varying degrees of abnormal pulmonary function test, the most common being mild obstruction in 15 workers. Only one female out of 11 female workers have normal pulmonary function test. Based on detailed occupational history, clinical examination and X-ray reading as per ILO standards and their pulmonary function test outcome, 19 workers were diagnosed of Silicosis, 6 of Silico-tuberculosis. These 25 workers have a varying degrees of respiratory disability based on pulmonary function test recordings, mainly 12 having 20%, 3 having 30% disability, maximum being 100% in one of the 14 year old female worker of 1 year working history in stone quarry.

Poster Presentation

Burden of Disease

0445 A REVIEW OF AUDIOMETRIC CRITERIA FOR IDENTIFYING NOISE-INDUCED HEARING LOSS AMONG WORKING ADULT POPULATIONS

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Objectives Noise-induced hearing loss (NIHL) remains one of the most prevalent occupational diseases worldwide, despite widely adopted workplace hearing conservation efforts. There are no universally accepted criteria for NIHL, hampering epidemiologic comparisons. The primary objective of this review was to characterise audiometric criteria for NIHL in occupational health literature.

Method We searched Medline, Embase, Scopus, and ProQuest's Environmental Science and Pollution Management and Biological Sciences databases for primary studies published through to March 2017 that described NIHL in working adult populations using audiometric measures. Titles and abstracts

were screened against eligibility criteria. From the eligible studies, we extracted NIHL definitions, country/region, population/setting, and study purpose (e.g., surveillance, compensation adjudication).

Results Our search resulted in 1303 unique citations. After title and abstract review 461 studies were deemed potentially relevant, including 137 published in languages other than English. A total of 129 English studies were eligible and included in the final synthesis. Generally, history of work-related noise exposure and either hearing loss at high frequencies or an audiometric notch at 4 kHz constituted NIHL in the included studies. However, the specific threshold in decibels for "hearing loss" and "notch" varied across studies, as did the range of sound frequencies used to calculate pure-tone averages to indicate NIHL.

Conclusions NIHL is a major global occupational health issue of our time. Our review of occupational literature highlights the variability in definitions of NIHL. Without a common definition of NIHL, comparisons between different populations will remain a challenge and inhibit progress in this area of research.

Oral Presentation

Cancer

0446 RISK OF CANCER IN A PROSPECTIVE COHORT OF DANISH METAL WELDERS

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Objectives Over 110 million workers are worldwide estimated as exposed to welding fumes, including a complex mixture of nano-sized particles with a carcinogenic potential. The aim of the present study is to investigate cancer risks with a special focus on lung cancer in a large group of Danish welders.

Methods In 1986, 5866 welders completed a comprehensive questionnaire on lifetime exposures, including years with different types of welding. Information on employments after baseline (1986) was obtained from the Supplementary Pension Fund. Life-long exposure to welding particles was estimated based on a Danish job-exposure matrix based on p1200 welding specific measurements of welding particles. Based on the unique central person number assigned to all residents in Denmark welders were followed-up for cancer (1987–2015) in the nationwide Danish Cancer Registry. Similarly, information on vital status was obtained from the Central Person Register. Relative risks were estimated both by comparison with cancer incidence in the standardised general population and by internal analyses by use of Cox-regression.

Results Overall, significantly increased relative risks were seen for cancer of the pharynx (1.8; 1.0–3.0), lung (1.7; 1.4–2.2), testis (2.5; 1.2–4.9) and multiple myeloma (2.1; 1.0–4.4). Trends with increasing relative risk of lung cancer by increasing cumulative exposure to particles was observed ($p < 0.01$) after adjustments for exposure to asbestos and tobacco smoking.

Conclusion This study supports that exposure to welding processed particles increases the risk for lung cancer. The increased of testicular cancer and multiple myeloma warrants further attention

Oral Presentation

Shift Work

0447 NIGHT SHIFT-WORK AND RISK OF PROSTATE CANCER IN THE DANISH MILITARY

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Objective The majority of studies on night shift work and cancer have only involved women due to the focus on breast cancer. It has been suggested that mechanisms similar to those for breast cancer may occur for prostate cancer. However, only few studies have been reported for this cancer, which is the most frequent cancer in men.

Methods We conducted a nested case-control study within a historical cohort of 238,068 men employed in the Danish Military at the earliest in 1964 or later. Study subjects were obtained from the Supplementary Pension Fund database, including a unique personal ID provided to all residents in Denmark. We linked based on this ID with the files of the nationwide Danish Cancer Registry, and men aged less than 75 years old with first primary prostate cancer were retrieved for the period 1990 to 2003 (n=157). For each case, we randomly selected 10 cancer free controls frequency matched based on the age distribution of the cohort cases. Study subjects returned a structured questionnaire or were interviewed about their entire work history, including night work, diurnal preference and potential confounders, e.g. education and physical activity. We estimated odds ratios (RR) by logistic regression conditional on age.

Results The overall adjusted RR for prostate cancer after ever having night shifts was 1.3 (0.8–2.1). The RR for the subgroup with longest duration of night shifts (≥ 15 years) was 2.2 (1.1–3.4).

Conclusion We add further evidence to the association between night shift work and prostate cancer.

Poster Presentation

Psychosocial

0448 EFFECTS OF ORGANISATIONAL CHANGE ON WORKPLACE SOCIAL CAPITAL: A LONGITUDINAL STUDY OF HOSPITAL WORK UNITS

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Background Organisational change is associated with adverse health outcomes for employees. The association may be mediated by changes in the psychosocial work environment. Workplace social capital (WSC) is a recent construct, which has been shown predictive of health outcomes when studying the psychosocial work environment. Currently, there is no epidemiological evidence concerning the impact of organisational change on WSC. This study examines the impact of organisational change on WSC in public hospitals in Denmark.

Method An open cohort-study of hospital employees in the Capital Region of Denmark provided longitudinal data on 1639 work units within 11 hospitals. WSC was assessed by employees during workplace evaluations in 2011 and 2014 (41,710 responses, 81% response rate). WSC was rated on 8 items using 5–7 point Likert-scales, and then transformed to a 0–100 scale. Exposure data were provided by work unit leaders, recollecting four types of organisational change from 2011 to 2014; mergers, layoffs, relocations and downsizing. A multilevel model was used to analyse the change of WSC-scores within each work unit. The model estimated the effect of organisational change and adjusted for changes in the size of the work unit and the vocation, age, gender and seniority of the employees.

Preliminary results In work units exposed to one or more organisational changes in the three year period, WSC decreased by 1.5 points (95% CI: (–2.2; –0.7)). Mergers had the biggest impact, decreasing WSC by 1.9 points (95% CI: (–2.8; –1.0)).

Conclusion Organisational changes adversely impacted the workplace social capital, possibly mediating the effect on employee health.

Poster Presentation

Policy/Impact

0449 LEADING AND LAGGING INDICATORS FOR THE PREVENTION OF VIOLENCE TOWARDS WORKERS IN HEALTH CARE

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Objectives Violence towards health care workers is a pressing occupational health concern internationally. There are few frameworks and metrics developed to monitor and track the effectiveness of violence prevention activities. This study's aim was to develop leading and lagging indicators to be used in violence prevention activities in the health care sector in British Columbia, Canada.

Methods A systems framework identifying potential leading and lagging indicators was developed from a review of quantitative and qualitative research literature and from focus groups and key informant interviews with managers and front-line staff in two large health authorities. Evidence was synthesised using a realist review approach and priority indicators were developed in consultation with an employer/labour advisory panel. Data sources for potential indicators were identified and selected indicators were validated using incidence data on violence.

Results Indicators were identified across socio-political, organisational, environmental, patient and caregiver domains. The research literature tended to emphasise patient and caregiver factors, while manager and staff interviews emphasised organisational and environmental factors. Priority indicators were identified in areas of hazard identification and management, staffing and staff mix, communications, and education and training.