

Poster Presentation

Other

0279 OCCUPATIONAL EXPOSURE TO DUST COMPONENTS AND ALTERATIONS IN IMMUNE/INFLAMMATION MARKERS AMONG TACONITE WORKERS IN MINNESOTA

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Background Occupational exposure to airborne silica, dust containing silica (total dust), and dust without silica (mostly iron oxide) have been known to cause cardio-respiratory disease. However, with dust exposure in general, disease detection usually occurs in advanced stages of the disease process, in part due to the lack of sensitivity of current diagnostic tools that would allow for earlier detection of the disease.

Methods Using a multiplexed bead-based assay, we measured plasma levels of 11 immune/inflammation markers in a cross-sectional study of 134 current workers employed in various operations in mining and processing of taconite (a low grade iron ore). These are markers previously demonstrated to be related to silica exposure and/or restrictive/obstructive lung disease in other settings. We used linear regression models to examine the associations between quartiles of silica, total dust, and dust without silica with levels of markers adjusting for age, BMI, gender, and smoking.

Results In adjusted models, of the 11 markers selected, C-reactive protein (CRP) had the strongest association and showed a graded response across quartiles of silica. Total dust and dust without silica had little association with these markers.

Conclusions This study suggests that exposure to silica, total dust, and dust without silica may be associated with alterations in CRP. Total dust and dust containing iron oxide, in general, do not demonstrate associations with other markers in our study. Further research is needed to understand the potential utility of CRP as a marker linking occupational exposures and health outcomes in taconite workers.

Poster Presentation

Injuries

0280 FACTORS ASSOCIATED WITH THE SEVERITY OF WORK INJURIES IN THE FORMAL SECTOR IN PIRACICABA, SÃO PAULO STATE, BRAZIL

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Introduction Work injuries represent a relevant public health issue. Evaluation of associated factors is an important tool for occupational health surveillance. We aimed to identify factors

associated with the severity of work injuries in Piracicaba from 2004–2013.

Methods This is a cross-sectional study and is part of "Work Accident: from socio-technical analysis towards the social construction of changes" supported by the São Paulo Research Foundation. Work injuries data were retrieved from the Work Accident Surveillance System (SIVAT) for formal workers with at least 18 years old for the period 2004–2013. Using a multiple logistic regression model, odds ratios (OR) and their 95% confidence intervals (CI95%) were calculated considering the severity of the injury (severe or fatal versus moderate and light) and selected variables (injury type, sex, age group). All analyses were done using STATA 13.1.

Results In the period 2004–2013, 78 198 work injuries occurred with formal workers in Piracicaba, being 1522 (1.92%) severe or fatal accident. In severe or fatal accident, the frequency was higher among workers from manufacturing industry (750;49%), followed by services (389;26%). Increased risk for severe and fatal injuries was found for men (OR=1.16 CI95%:1.01–1.33), route accident (OR=2.0; CI95%:1.77–2.26), and an upward trend in risk with increasing age (trend test:p<0.001).

Conclusion Action plans to prevent workplace injuries and deaths should be designed considering that men at older ages working in manufacturing industry and in the service sectors are at increased risk. SIVAT represents an important tool to assess worker's health in the Piracicaba region and guide occupational health surveillance.

Oral Presentation

Disease Surveillance

0281 EVALUATING THE COMPLETENESS OF COMPULSORY WORK-RELATED DISEASES/INJURIES NOTIFICATIONS RECORDED BY THREE CITIES IN SOUTHEAST BRAZIL

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Introduction The Brazilian Notifiable Diseases Information System (SINAN) includes eleven work-related diseases and injuries (in nine forms), which communication is mandatory. As a way to evaluate the quality of this database, this study aimed to rate the completeness of information reported by three cities of the São Paulo State from 2007–2016.

Methods Descriptive study as part of 'Work Accident: from Socio-technical analysis towards the social construction of changes' supported by the Sao Paulo Research Foundation. Data from the work-related diseases and injuries forms were retrieved from SINAN for Araraquara, Campinas and Piracicaba for the period 2007-2016(16 094 files). Completeness was assessed by the percentage of filled variables by form and city, and it were categorised as: excellent (<5% unfilled), good (≥5,<10% unfilled), regular (≥10,<20% unfilled), poor (≥20,<50% unfilled), and very poor (≥50% unfilled). Analyses

were done using STATA 13.1.

Results 669 variables were analysed, one of them is a compulsory field (occupation) and its completeness was very high ($\geq 97\%$) for all cities. Araraquara had 71.63% variables with excellent completeness, but the occupational dermatosis file had 34.29% variables classified as very poor. Piracicaba showed 56.24% variables classified as excellent, and the occupational dermatosis and cancer files had 41.46% and 55.07% filled very poorly, respectively. Campinas had 40.80% variables filled as excellent, and more than 30% of variables were classified as poor or very poor in all files.

Conclusion There are differences in the completeness among the cities. Routine quality data assessments are crucial to ensure information quality used by health surveillance agents.

Oral Presentation

Burden of Disease

0282 QUANTIFYING THE IMPACT OF SHIFT WORK ON BREAST CANCER: RESULTS FROM THE BURDEN OF OCCUPATIONAL CANCER IN CANADA STUDY

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Objectives To estimate the proportion and number of annual incident female breast cancer cases in Canada attributed to shift work, a probable carcinogen.

Methods Levin's equation, which contains exposure and relative risk (RR) parameters, was used to calculate an attributable fraction (AF) range. The proportion of Canadian women who ever worked night or rotating shifts between 1961 and 2001 was retrospectively assessed based on data from the 1996 Survey of Labour and Income Dynamics. Low and high RR values, selected from a comprehensive review and quality assessment of recently published meta-analyses, were used to represent the probable association between shift work and breast cancer risk. The AF range calculated from these data were applied to 2011 Canadian breast cancer incidence statistics to obtain the number of attributable cases.

Results Approximately 11%, or 1.5 million, Canadian women ever worked night or rotating shifts during 1961–2001. Combined with low and high RR values of 1.15 and 1.40 from a high-quality meta-analysis published in 2013, the AF for breast cancer ranged from 2.04% to 5.23%. This corresponds to an estimated 460–1180 newly diagnosed breast cancers each year in Canada probably due to shift work. A large number, approximately 200–510, of these cancers occur among women in the health care and social assistance sector.

Conclusions The burden of occupational breast cancer in Canada could be substantial, reflecting the high prevalence of shift work and incidence of breast cancer. Although more research is needed on unravelling this probable association, preventive approaches should be widely considered.

Oral Presentation

Exposure Assessment

0283 EXAMINING EXPOSURE ASSESSMENT IN SHIFT WORK RESEARCH: A STUDY ON DEPRESSION AMONG NURSES

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Objectives Exposure misclassification is a common challenge in shift-work epidemiology. This study used a large national survey of Canadian nurses to examine shift-work's effects on depression; multiple exposure definitions with varying levels of specificity were applied to illustrate the impacts of exposure assessment.

Methods The analytic sample (n=11,450) was obtained from the 2005 National Survey of the Work and Health of Nurses. Logistic regression was used to assess relationships between shift-work and depression for high, moderate, and low specificity definitions of shift-work exposure. The low and moderate specificity definitions described shift timing (day/shift and day/evening/night/rotating, respectively); the high specificity definition described both shift timing (day/evening/night/rotating) and frequency of rotation (slow/medium/rapid/undefined). All model estimates were bootstrapped and adjusted for the potential confounding effects of sociodemographic, health, and work variables.

Results The high specificity shift-work definition model showed the strongest relationships, with increased odds of depression in the rapid rotating shift group (OR=1.51, 95% CI=0.91–2.51) and in the undefined rotating group (OR=1.67, CI=0.92–3.02), relative to the regular day group. Odds of depression were decreased in the slow rotating group (OR=0.79, 95% CI=0.57–1.08). For the low and moderate specificity exposure definition models, weak relationships were observed for all shift categories (OR range 0.95 to 0.99).

Conclusions This study's findings support associations between shift-work and depression, and the need for specific and hypothesis-driven exposure assessment in future studies to correctly identify exposure-response relationships and to appropriately target health interventions.

Oral Presentation

Exposure Assessment

0284 CAREX: AN OCCUPATIONAL EXPOSURE SURVEILLANCE SYSTEM OVERVIEW

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The CAREX system for occupational carcinogen exposure surveillance was developed by the Finnish Institute of Occupational Health in collaboration with IARC and European exposure experts in the early 1990s, and was shortly thereafter adapted for use in approximately 15 other countries in the European