0226 USING BIOMARKERS TO MEASURE WORK STRESS: ALLOSTATIC LOAD BY OCCUPATION AND INDUSTRY IN THE CHILEAN WORKFORCE

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Objectives One hypothesised mechanism by which chronic stress results in negative health outcomes is through allostatic load (AL), which is a measure of the cumulative 'wear and tear' experienced by the body when activating physiologic responses in order to maintain homeostasis. This studied aimed to quantify and compare the mean levels of allostatic load experienced by workers in different occupations and industries in Chile.
Method From a weighted national survey of the Chilean population (n = 1199), occupations and industries were categorised by their average AL level, which was measured using a composite of secondary biomarkers of chronic stress exposure that fell outside of a "well-centred" range (extreme normal high value biomarkers). The numbers of biomarkers that fell outside of this range were counted for each worker in order to represent AL. Adjusting by age, sex, education, smoking status, and personal income, Poisson-log generalised linear mixed models were used to generate mean levels of AL for each occupation and industry.
Results An important and statistically significant gradient was observed in mean AL levels between different occupations (from 0.7 to 4.1 mean number of extreme normal high value biomarkers) and industries (from 0.8 to 2.3).
Conclusions There is a clear occupational gradient of AL in the Chilean workforce. Preventive and clinical activities should focus on workers of those occupations with highest AL, because previous studies have observed an association between AL and mortality. The work-related risk factors that generate these occupational and industrial gradients in AL should be examined further.

0227 BENZENE OCCUPATIONAL EXPOSURE ESTIMATES IN BRAZIL USING A JOB-EXPOSURE MATRIX

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Objectives To estimate the number and prevalence of occupational exposure to benzene in Brazil.
Method This study was carried out with the economic active population of Brazil, using 2010 Census data. Benzene data from the Finisth National Job-Exposure Matrix, FINJEM, by occupational groups and sex were used to estimate the weighted number and prevalence of occupational exposure to benzene in Brazil. Because of differences in the Brazilian and Finish occupational classification codes, an assessment of acceptance by occupational safety and health experts was also made.
Results From a total of 86 353 839 workers, 7 376 761 have jobs in occupations potentially exposed to benzene. Based on FINJEM parameters, approximately 778 025 workers were identified as probable exposed to benzene in their jobs, a weighted prevalence of 9.1/1000 workers, higher among men (11.2/1000) than among women (6.0/1000). Most of the benzene exposed workers were from the group of machine repair and engine mechanics (66%). The nine experts who ranked the occupational codes regrouping agreed with 97% of the proposed matches.

Conclusions Benzene is targeted by health surveillance in Brazil but little data are available on occupational exposure. Job-exposure matrix can be an useful tool for epidemiological monitoring of benzene exposure for surveillance purpose. There is a need to develop a JEM with national data thus making feasible the evaluation of the Benzene National Agreement impact on this exposure control and workers' health.

0232 DEPRESSION AND ANXIETY AS AN OUTCOME OF JOB STRAIN IN THE CHILEAN WORKFORCE

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Objectives Based on previous analyses, using ROC curves and correlation, we aim to improve agreement assessments between diverse formulations of the Demand Control (DC) Model for Job Strain in order to test its ability to predict anxiety and depression (AD) in a nationally representative population of workers from Chile, a country transitioning to high economic development and with high prevalence of AD.
Method A weighted national sample of 9503 workers representing the entire Chilean workforce was surveyed during 2010–2011 in Chile. Goldberg Health Questionnaire (12 questions) to assess AD and diverse formulation of the DC model were used as dependent and independent variables respectively. Bland-Altman plots for agreement and Poisson-log models (controlled for demographics) for predictive ability were used to assess each formulation.
Results Good agreement between Log and Quotient formulations. For different formulations, high strain jobs had between 1.7 (quadrant and tertile formulations) and 3.7 (extreme tertile formulation), higher prevalence of AD than low strain jobs. Approximately 12–25% of AD cases might be attributed to increased strain.
Conclusions Predictive ability of the DC model for AD was similar in trend to other studies. Most accurate models (extreme formulations) represent less population and might be impractical. At the cost of excluding many people from the evaluation, the extreme tertile model seems to be the best formulation to predict AD among extreme exposures to job strain within the Chilean working population. Better operationalizations of the DC model should be considered in future surveys to allow international comparisons and guide eventual interventions.

0233 LONG-TERM STYRENE EXPOSURE IMPAIRS COLOUR VISION IN FIBREGLASS REINFORCED PLASTICS LAMINATORS

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Objectives Although styrene has been reported to cause colour vision impairment, the results were still inconclusive. Whether the impairment was related to short-term or long-term exposure was not known. The study aims to evaluate colour vision in high styrene exposed fibreglass-reinforced plastics (FRP) laminators.