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EVALUATION OF EXPOSURE TO PESTICIDES THROUGH THE USE OF EFFECT BIOMARKERS IN RURAL WORKERS AND RURAL RESIDENTS IN RIO DE JANEIRO STATE – BRAZIL

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Introduction Brazil is one of the world's largest consumers of pesticides and this intense use impacts not only the environment but also exposes a wide range of individuals, such as rural workers who are occupationally exposed to pesticides and also the residents of the rural area environmentally exposed.

Objectives To evaluate occupational exposure to pesticides and to identify the neurotoxic and genotoxic effects in rural workers (RW) and rural residents (RR).

Methods A sectional epidemiological study was carried out with 104 RW and 23 RR of the city of Casimiro de Abreu (RJ/Brazil). A comparison group (CG) was formed with 103 residents of the urban area of the same city. Genotoxic analyses, through the comet assay and micronucleus test (MN), and the evaluation of the activity of cholinesterase enzymes (AChE and BChE), were performed.

Results A reduction in cholinesterase enzyme activity was observed, mainly for butyrylcholinesterase of RW and RR when compared to CG (RW = 3856.40; RR = 3956.04; CG = 4359.57; $p = 0.002$). An increase in genotoxic effects in RW when comparing CG were observed (comet assay: RW = 21; CG = 10; $p < 0.001$ and MN number: RW = 6.50; CG = 3.00; $p < 0.001$), demonstrating that individuals occupationally exposed to pesticides are more likely to have genotoxic effects when compared to non-exposed individuals.

Conclusion The findings from this research will serve to support the execution of programs to monitor populations exposed to neurotoxic and genotoxic substances and allow the development of strategies for the prevention, control and surveillance of effects generated by occupational and environmental exposures to pesticides.

Policy and Regulation

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POLICY ISSUES ON WORK AND EMPLOYMENT IN SMALL SCALE MINING INDUSTRIES IN THE PHILIPPINES

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Objective Small scale mining (SSM) has contributed 14% of the total Gross Domestic Product (GDP) of the Philippines. The aim of the study is to look into policy issues on work and employment of small scale miners in the Philippines.

Methods The data were based on gray literature, peer-reviewed journals, databases, government statistics, and secondary literature on major mining disasters in the Philippines, and the impact of regulation or lack thereof in this industry.

Results Research findings show that mining work is artisanal, with use of simple tools, and lack of sophisticated equipment and processes. There is massive use of toxic chemicals such

as cyanide and mercury that have been associated with adverse health problems. The study review showed certain health issues due to cyanide and mercury poisoning from mining such as rapid breathing, gasping, tremors, convulsions, headache, dizziness and thyroid enlargement and eventually death, and children ages 17 years old and below experienced cough, wheezing, shortness of breath. In Western Mindanao, workers were found to be exposed to high levels of mercury. Gastrointestinal complaints of the workers were significantly associated with elevated hair methylmercury levels. Despite these, the government has no existing specific regulation and monitoring system for safety and health among small scale miners in the Philippines. Other policy issues included the following-that small scale mining is unregulated and unrecognized, absence of social safety net protection for the sector.

Conclusion Based on the research and policy reviews, there is a need to integrate the small scale mining into the labour economy so as to regulate and prevent hazardous work practices.

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EVOLUTION OF HEALTH INEQUALITIES IN THE CENTRAL AMERICAN WORKING POPULATION, 2011 – 2018

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Objective Monitoring of occupational health inequities is central to establishing effective public policies. The Central America Working Conditions Survey (ECCTS, by its Spanish acronym) was conducted in 2011 and 2018. This study analyzes changes, between these two periods, in the health inequality gap of workers in the six Spanish-speaking Central American countries, by gender, age, education level, occupation, and geographic area.

Methods The ECCTS is a cross-sectional survey of a nationally representative sample of workers (12,024 in 2011 and 9,030 in 2018), age ≥ 18 years, in formal or informal employment. We calculated the prevalence of poor self-perceived health (SPH) and its 95% confidence interval by country, age, education level, occupational category, and geographic area; differences between 2011 and 2018 were measured using chi-square statistics. We also measured absolute and relative population attributable risks, the Kuznets ratio and weighted Keppel index as inequality measures. All analyses were stratified by sex.

Results Overall, the health of the population in this region improved. Poor SPH decreased from 32% to 29% in women, and from 33% to 30% in men. The health inequalities gap among occupational groups remains wide. In women, the gap increased by occupation and geographic area, and decreased by education level. Among men, we found no statistically significant changes in the gap. Inequality between countries increased, evidenced by an increase in the Keppel index from 22% to 39% in women and from 20% to 29% in men.

Conclusion A general improvement in the health status was observed, but there was no progress in closing the health gap among occupational groups, and the gap between countries grew significantly. This study is the first to benchmark surveillance information that may contribute to developing,

implementing and evaluating public policies. It could also serve as an initial stimulus to create strong national and regional occupational monitoring systems.

0-311 SETTING PRIORITIES IN OCCUPATIONAL HEALTH RESEARCH IN EUROPE

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Background Employment is an essential component of adult life, and occupation is a major determinant of health. Despite profound changes in working life, there has been little coordinated European occupational health research.

Objectives We present results from the HERA international project funded by the EU Horizon2020 program, to set priorities for an environment and health research agenda in the EU for 2020–2030.

Methods We contacted hundreds of researchers in Europe through an online survey. We also identified major policy needs in the health and environment/occupation nexus by contacting national, regional, and European stakeholders representing authorities, intergovernmental organizations, civil society, and the private sector through surveys and regional meetings. We applied a priori defined criteria to examine novelty, public health importance, importance to the environment, impact on policies, and potential for innovation within the sustainable development goals.

Results

Main research gaps identified include (i) Climate change and worker health; (ii) Ageing workers; (iii) New technologies and chemicals; (iv) Working time; (v) Changing employment patterns and precarious employment; (vi) Mixed exposures and biomonitoring; (vii) Work-life-balance; and (viii) Neglected occupational diseases. In addition, priority actions related to occupational health were identified such as commuting to work, tools, and infrastructure such as the development of big data, biobanks, occupational cohorts, and large population cohorts with occupational information, development of exposure type approaches, and approaches examining societal aspects on employment and productivity.

Conclusions We will discuss challenges in the identification of key areas in occupational health research that will benefit from new scientific evidence and challenges in strategies to ensure the engagement of stakeholders. This large initiative in Europe has systematically evaluated priorities through the engagement of a wide spectrum of stakeholders across the continent. A consultation process will continue over the next year to raise additional research gaps and calibrate recommendations.

0-329 EFFECTIVENESS EVALUATION OF A REGULATORY TRAINING STANDARD TO PREVENT FALLS FROM HEIGHTS IN CONSTRUCTION

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Objective The effectiveness of a regulatory training standard to prevent falls from heights in construction in the province of Ontario, Canada was evaluated. The standard specifies a full day of working-at-heights safety training, including both theoretical and practical elements, delivered by a government-approved training provider. Once the regulatory requirements were in full effect in fall 2017, over 400,000 workers were trained to the standard.

Methods A comprehensive effectiveness evaluation of the working-at-heights training standard was undertaken, including a longitudinal survey of over 600 workers who underwent the training, collection of their pre-post-training knowledge test scores, and a quasi-experimental analysis of lost-time injury claims for work disability insurance.

Results A large increase in mean knowledge test score (out of 10 points) was observed for workers on their day of training: from 6.8 to 9.5 points (p Follow-up after two years, showed a large decline in knowledge test scores (to mean score 7.5). In contrast, the work practice improvements had been sustained. The incidence rate of lost-time claim injuries due to falls targeted by the training (e.g. falls from roofs) declined by 21.0% from 2012–2014 to 2017–2018 in the Ontario construction sector. In comparison, the rate due to falls not targeted by the training (e.g. falls at the same level) increased by 2.9%; and the rate due to non-fall traumatic injuries decreased by 7.3%. These differences in incidence rate changes were statistically significant. (Analyses are currently being updated to include injuries from 2019.)

Conclusion The evaluation findings provide consistent support for a conclusion that the mandatory training standard was effective in reducing the incidence of injuries targeted by the training.

0-483 GEOGRAPHIC VARIATION IN WORK DISABILITY DURATION IN 5 CANADIAN WORKERS' COMPENSATION JURISDICTIONS

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Introduction Prior research has focused on individual or employer-level factors that influence work disability duration. A smaller number of studies identified differences in work disability duration by province or state and the urban-rural spectrum. Variations may also occur across smaller units of geography due to place-based factors, such as labour market characteristics and healthcare access, that play an important role in work disability duration.

Objectives The purpose of this study is to describe geographic variation in work disability duration within five work disability jurisdictions in Canada and examine if variation differs by injury type and jurisdiction.

Methods Using Canadian workers' compensation data, we examined variability in disability days by calculating the coefficient of variations (CVs) across standardized units of geography in cohorts of workers with low back, shoulder and knee injuries.

Results Preliminary results suggest shoulder injuries had the longest disability duration with a mean of 50.10 days (SD