Meanwhile, governmental efforts to further reduce air pollution should continue.

P-200 'IMPAIRED KIDNEY FUNCTION DUE TO LEAD EXPOSURE AMONG MEXICAN CRAFTWORKERS'

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Objective Approximately 12.4% of the Mexican population is affected by chronic kidney disease (CKD). Leading risk factors for CKD are diabetes, hypertension, obesity and hypercholesterolemia. Other factors, including heavy metals and pesticides, are associated with decreased kidney function even at low exposure levels. Lead exposure in Mexico remains a public health problem and its effects on renal function remains unclear. The aim of the study was to determine the role of lead exposure on kidney function among Mexican craftworkers.

Methods A cross-sectional study was performed on 399 craftworkers and/or users of lead-glazed pottery. We obtained socio-occupational data and calculated creatinine clearance and glomerular filtration rate (GFR). A complete blood count, blood lead (BPb) and biochemical profile tests were performed. A multiple linear regression model was constructed to analyze GFR determinants.

Results 48.37% (193) of the participants were men. The mean age was 44.34 ± 14.34 [17–84] years old. GFR: 104.07 mL/min/1.73 m2 ± 14.42 [61.9, 144.2], BPb: 17.57 μg/dL ± 14.68 [-2, 109], cholesterol: 181.38 mg/dL ± 38.05 [87, 411], systolic blood pressure (SBP): 122.42 mmHg ± 14.75 [89, 189]. CKD was present in 6.03% (24) of the population. The model explained 56.17% of GFR variability. The main determinants were: BPb β = 0.125 [0.055, 0.196]; age β = -0.675 [-0.751, -0.598]; males β = -3.393 [-5.458, -1.328]; CKD β = -4.825 [-9.165, -0.486]; cholesterol β = -0.033 [-0.060, -0.006] and SBP β = -0.069 [-0.147, -0.007].

Conclusions The Mexican population is exposed to multiple nephrotoxic risk factors, including pesticides and heavy metals. The results suggest that the increase in GFR is probably an early sign of kidney dysfunction due to lead exposure.

P-201 'OCCUPATIONAL NOISE, ORGANIC SOLVENTS AND LEAD EXPOSURE, AND ITS ASSOCIATION WITH HEARING LOSS AMONG PRINTING WORKERS IN MEXICO'

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Objective Noise has been considered as the main risk factor for occupational hearing loss. In addition, ototoxic substances, such as organic solvents and heavy metals, contribute to this disease. However, conjoint exposures of these risk factors need further attention. Therefore, the aim of the study was to determine if there is an association between hearing thresholds and exposure to organic solvents and lead, alone or in combination with noise, in Mexican workers.

Methods A cross-sectional study was conducted including workers at a printing press in Mexico City exposed to noise and organic solvents (n=279); and workers from Tlaxcala in central Mexico exposed to lead who produce glazed clay pottery at small workshops (n=188). Organic solvents exposure was assessed by questionnaire; noise was measured with a sound level meter. Moreover, lead exposure was defined according to blood lead levels. Individuals were categorized as exposed or non-exposed in both samples. Hearing thresholds were compared across exposure categories. Multiple linear regression models were built to explain changes in hearing thresholds.

Results Exposure to organic solvents >10 years and blood lead levels >30 micrograms per deciliter were associated with worse hearing thresholds. Compared to the non-exposed group, mean hearing thresholds in exposed workers increased as years of exposure to organic solvents increased (≥5 years: 2.7 dB [0.46, 5.01]; >5–10 years: 6.3 dB [3.87, 8.77]; >10 years: 8.2 dB [6.00, 10.4]). The same behavior was observed with increasing blood lead levels, compared to workers with >30 micrograms per deciliter: 3.26 dB [0.09, 6.42]). When analyzed altogether, there was no evidence of interaction between noise, organic solvents and lead on hearing thresholds.

Conclusion Occupational exposure to organic solvents and lead was associated with worse hearing thresholds among workers from different job settings.

P-205 WHAT ARE THE EFFECT OF WORK-RELATED FACTORS ON THE DECISION TO RETIRE? A SYSTEMATIC REVIEW OF PUBLISHED STUDIES 2000–2017.'

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Introduction Ageing populations in high income countries, have the potential to greatly increase the proportion of retired people in relation to workers. Recent policy changes to extend working lives have focused on increases in state pensions ages. However, work-related factors may also present an opportunity for employers to design effective interventions to delay retirement.

Objectives We conducted a systematic review of published studies that investigated the relationship between work-related factors and the decision to retire.

Methods Studies that investigated retirement after 1st January 2000 at ages 50+ were included, whilst studies investigating intention to retire or transitions to unemployment and/or disability retirement were excluded. Six online databases were searched and results were independently screened against the inclusion criteria by two researchers. Data extraction and risk of bias check were carried out independently by two researchers. Reference lists of eligible studies were screened for further studies.

Results Searches returned 4,995 references. Results were screened and 30 studies were identified that met inclusion criteria. 28 studies were assessed as low/medium risk of bias, however 19 of the studies had limited generalisability to
cohort of contemporary workers. 169 work-related exposures had been investigated in relation to retirement outcomes. The exposures were grouped into 19 categories to enable comparison and synthesis. The included studies were heterogeneous in terms of outcome definitions and measurement of exposures. However, appreciation at work and higher job control consistently associated with a decreased risk of retirement. The review also highlighted limited evidence that: age discrimination: having a positive culture of working beyond SPA: flexible working hours: and job prospects may influence retirement.

Conclusion Increasing worker’s job control and perception of appreciation at work have may delay retirement decisions. Further research is required to explore the effect of work-related factors on retirement in cohorts of contemporary workers.

**P-206** 'ASSESSING THE IMPACT OF EXPOSURE CONTROL ON FUTURE CANCER BURDEN AMONG CONSTRUCTION WORKERS’

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Objectives Construction workers are exposed to several carcinogens at work. Implementing intervention methods may reduce workers' exposure, which should subsequently reduce the number of cancer cases attributable to the exposure. The current study estimates the future cancer burden due to several common carcinogens among Ontario construction workers, and assesses the impact of implementing interventions on this burden. This presentation focuses on solar ultraviolet radiation and asbestos.

Methods The annual number of new cancer cases attributable to each carcinogen was estimated from 2030 to 2060 using Levin’s equation based on the prevalence of exposure (PrE) and the risk of cancer (RR) associated with exposure. The RR was selected from a review of the epidemiologic literature. The PrE was estimated using CAREX Canada’s estimates of prevalence and level of exposure, combined with historical and projected employment data, labour force characteristics, and survival probabilities. The intervention methods specific to each carcinogen were assumed to be fully implemented from 2020, and incorporated into the model by adjusting prevalence and level of exposure downwards.

Results We estimated that without intervention, 27645 non-melanoma skin cancers would be attributable to sun exposure in Ontario construction workers from 2030 to 2060. Using portable shade structure and hat/long sleeve clothes, a total of 1957 and 2503 of these cases would be prevented, respectively. For asbestos, the two interventions, asbestos ban and portatile shade structure and hat/long sleeve clothes, a total of 1957 and 2503 of these cases would be prevented, respectively. For asbestos, the two interventions, asbestos ban and flexible employment, would prevent 56 and 439 lung cancers out of the 6022 attributable cases from 2030 to 2060 if no intervention was applied.

Conclusions Future work-related cancers can be prevented by reducing workers’ exposure. Combining the economic assessment of both the cancer burden and the costs of implementing exposure controls will help to assess the cost-benefit of different intervention methods, which can be used to direct intervention strategies in construction workplace.

**P-212** 'RETURN TO WORK AFTER VOCATIONAL REHABILITATION’

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Introduction Changes in the workplace environment, precarization and flexibilization of employment, loss of labor rights, and the big economy have had an impact, increasing work accidents, harms, and occupational diseases as well sick leaves. In Brazil, Vocational Rehabilitation (VR) is provided by the National Institute of Social Security system and includes educational, adjustment, and re-adjustment support to facilitate return to work among workers who receive benefits due disease or accidents. However, its scope is quite limited and does not offer a follow-up to workers after discharge.

Objective To understand the return to work after discharge of the VR.

Methods Qualitative study developed in a VR program from Sao Paulo state and carried out in two phases: (i) documentary analysis to identify potential participants who were assisted by VR; (ii) individual interviews by telephone following an open questions script and analyzed through Thematic Content Analysis. This research was approved by the Ethical Committee of Federal University of Sao Carlos; all ethical concerns were addressed.

Results From 2009 to 2020, 263 workers returned to work after discharge of VR: 84 (32%) women and 179 (68%) men received support predominantly due to musculoskeletal disorders (35%) and external causes of injuries (33%). Of these, 71 (27%) returned the same task and 192 (73%) to different ones. 33 workers discharged from VR during 2019–2020 were invited to participate in the interviews and 11 workers were interviewed. Three categories emerged from interviews: difficulties in the return to work process; limits of VR to return to work; necessary advances to VR regarding return to work.

Conclusion Results showed the need for reorganization of VR including review of criteria of inclusion, interprofessional team analysis of potential participants, discharge mechanisms, follow-up of the worker after discharge, and negotiating with employers accommodation to the rehabilitated worker.

**P-213** 'USING PARITY MONITOR AND RANDOM FOREST MODELS TO EXPLORE INDICATORS OF INDOOR AIR QUALITY FOR INDEPENDENT WORKERS IN COFFEE SHOPS’

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Introduction Independent workers often work in Taiwan’s coffee shops. However, there is not enough information for workers to notice poor indoor air quality (IAQ), such as high concentration of particulate matters (PMs) and carbon dioxide (CO2).

Objectives This study aims to explore indicators of IAQ for independent workers in the coffee shop industry.