Conclusion Protective actions for workers most susceptible to death, such as moving to activities with less exposure and/or teleworking, are necessary.

P-480 **CANCER MORTALITY IN MALE WORKERS EMPLOYED IN THE METALLURGICAL SHOP OF AN ENTERPRISE FOR THE BLISTER COPPER PRODUCTION**

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Introduction Currently, in Russia, malignant tumours (MT) are the second leading cause of the population mortality. Long-term, regular and intense occupational contact with exogenous chemical or physical carcinogens can lead to an occupational cancer. Occupational cancer risk assessment is required.

Objectives Revealing the influence of carcinogenic factors of the working environment on the cancer mortality rate among workmen in the metallurgical shop of an enterprise for blister copper production.

Methods A retrospective epidemiological study of cancer mortality among workmen and the population living in the area where the studied copper-smelting plant is located, for 20 years (1995–2014) was carried out. Intensive rates were calculated per 100,000 (age-specific and general, age-standardized). The so-called ‘expected’ mortality was calculated, which is the mortality of the ‘other’ population, standardized by age (in the workmen was taken as the standard). The excess of the observed cancer mortality rates determined the degree of additional risk associated with work, and made it possible to roughly estimate the intensity of the influence of production carcinogenic factors. The confidence intervals were calculated at $p < 0.05$.

Results The intensive cancer mortality rate in workmen for lung cancer was 495.87 ± 201.94 versus 120.51 ± 19.04 (4.1, $p < 0.05$). Significantly higher in the 50–59 age group for all tumours: 1239.67 ± 318.09 versus 307.3 ± 30.38 (4.0, $p < 0.05$). In the same group, the respiratory cancer mortality was significantly higher by 5.5 ($p < 0.05$). The ‘expected’ cancer mortality rates in workmen had statistically significant differences in all tumour localizations are 2.3 times, and for the respiratory cancers by 4.0 times, incl. on the trachea, bronchi and lungs tumours by 3.5 times ($p < 0.05$), as well as the ratio of observed cancer mortality rates to ‘expected’ in workmen.

Conclusion Intensive and standardized cancer mortality rates for blister copper workmen are significantly higher than control, indicating an occupational cancer hazard with the highest levels according to the highest carcinogenic load (respiratory and digestive organs).

P-482 **THE ROLE OF SELF-REPORTED STRESSORS IN RECOVERY FROM LONG-TERM EXHAUSTION: A LONGITUDINAL STUDY**

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Introduction Stress-related exhaustion is characterized by both physical and mental symptoms of exhaustion and for many patients the prognosis seems to be long lasting. Little is known what factors may influence such long-term prognosis. One plausible explanation could be differences in exposure to certain stressors, or vulnerability related to previous life events.

Objectives The purpose of this study was to examine if work and private related stress-exposure, as well as adverse childhood experiences differ between patients that are still exhausted at a long-term follow-up, with a group of patients that have recovered from their exhaustion.

Methods Patient records from 150 patients diagnosed with Exhaustion Disorder (ED) at a specialist outpatient stress clinic was analysed regarding work- and private-related stressors, and adverse childhood experiences. The first part of data analysis consisted of a qualitative text analysis, creating a coding scheme. Frequency statistics regarding each stressor was calculated to compare the two groups. At the 7–10 year follow-up, 34% of the patients still fulfilled the criteria for ED, compared to 66% that had recovered.

Results Compared to the patients that had recovered, significantly more patients with long-term exhaustion, reported managerial responsibilities (8% versus 0%) and caregiver stress related to children (24% versus 6%) at follow-up. Significantly more recovered patients reported work related quantitative demands (73% versus 53%) and managerial responsibilities (14% versus 2%) at first visit, and experienced more caregiver stress related to parents at follow-up (6% versus 0%). There were no differences regarding adverse childhood experiences.

Conclusions The main conclusion is that neither adverse childhood experiences nor any of the stressors at the onset of exhaustion seem to be associated with a lack of recovery. However, stressors at follow-up relating to having responsibility for other people, such as managerial responsibilities or caring for a child with a chronic disease or psychiatric disorder, may be associated with prolonged recovery.

P-489 **SYSTEMATIC REVIEW OF INTERVENTIONS TO MITIGATE PRECARIOUS EMPLOYMENT AND ITS EFFECTS ON THE HEALTH AND WELL-BEING OF INDIVIDUALS AND COMMUNITIES**

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Objectives The review is part of the Sweden-based research programme PWR, which consists of early-career and senior researchers in public health, occupational health as well as social sciences from a range of European countries, the United States, Canada and Chile. PWR started in 2019. The purpose of our review is to identify implemented initiatives that aim to or have the potential to eliminate, reduce or mitigate workers' exposure to precarious employment and/or its effects on the physical and mental health, health equity, safety and well-being of workers.

Methods We use the PRISMA guideline for systematic reviews, including its extension for equity-focused reviews. Our comprehensive search covers a combination of social, public health, medical, and public policy databases along with

relevant sources of grey literature. Inclusion criteria: 1. All evaluated initiatives: successful, unsuccessful, and inconclusive; 2. Initiatives implemented in any region, sub-region, or country, etc. no matter the level of economic development or government unit level; 3. Initiatives targeting at micro, meso, or macro-level, within or outside the realm of precarious employment; 4. Reports and peer-reviewed primary studies with a qualitative, quantitative, or mixed-methods design; 5. English, Catalan, Danish, Dutch, French, Italian, Norwegian, Romanian, Spanish or Swedish language studies.

Results Our results will be grouped according to the specific outcomes targeted by interventions, such as health, well-being, health equity, work environment conditions and characteristics, access to social security services or benefits, and worker skills.

Conclusions

By sharing our intermediate findings, we hope to get feedback from key stakeholders and learn of interventions that we may have missed through the literature search. Given the increase in precarious work in both highly-developed and developing countries, we have to strengthen and diversify our efforts to address such challenges.

Rapid-Fire Presentations

Agricultural exposures

RF-33 OCCUPATIONAL RISK EXPOSURES TO PESTICIDES AMONG FARMERS AND FARMWORKERS IN THE PHILIPPINES

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Objective This was a cross-sectional study conducted among 534 farmers in the largest vegetable –producing area in the northern part of the Philippines. This study assessed ergonomic risk factors, and occupational health and safety conditions, among farmers exposed to multiple pesticides.

Methods Methods consisted of interviewer-guided survey questionnaires on pesticide use among farmers, agricultural safety risk factors associated with pesticide exposure, and physical health assessment. Subjects were selected using multi-stage random sampling, yielding a total of 534 farmers.

Results The majority of study subjects were males (53.3%), with a mean age of 47 years old. Occupational exposure accounted for major exposure (84.8%). Farmers often complained of headache (69.4%) and dizziness (41.0%) after their exposure to pesticides. As for common respiratory symptoms, farmers often complained of coughing (39.4%), difficulty of breathing (15.6%), breathlessness (14.9%) and having pulmonary secretions (13.3%). Farmers reported pesticide spills on their body parts while spraying (79%), and 49% complained of getting sick because of their work. Of those who got ill, 69.8% did not receive any medical attention. 40.9% of the farmers were diagnosed with abnormal physical examination findings and less than 10% of the farmers exhibited abnormal laboratory results.

Conclusion The results showed that farmers were exposed to pesticides while undertaking their agricultural work and that certain occupationally-related health symptoms manifested themselves. This underscores the need to improve protection measures so as to reduce the exposure of farmers to pesticides.

RF-152 AGRICULTURAL EXPOSURES AND RISK OF OVARIAN CANCER IN THE AGRICULTURE AND CANCER (AGRICAN) COHORT

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Introduction Ovarian cancer is uncommon, with poor prognosis, and it ranks among the 1st causes of gynecological cancer death in females in developed countries. Few risk (age, genetic, hormonal) and protective (oral contraceptive) factors are established. The role of asbestos, estrogen menopausal therapy and tobacco smoking in ovarian cancers is supported by sufficient evidence in humans (CIRC). The influence of hormones and reproductive factors on ovarian cancer suggests that endocrine disrupters may impact risk.

Objectives We assessed the risk of ovarian cancer among women farmers, and studied associations with livestock, crops and related tasks.

Methods Our analysis included 83,048 women, enrolled in AGRICAN cohort in 2005–2007 in France, who completed an enrolment questionnaire on lifelong agricultural exposures and reproductive life. Ovarian cancer cases were identified by cross-linkage with cancer registries.

Results Until 2015, 186 incident cases of ovarian cancer were identified. Late menopause increased the risk of ovarian cancer, while parity and oral contraceptive use were protective. Decreased risks of ovarian cancer were observed (1) in female farmers compared to non-farmers (HR=0.65[0.43–0.98]), but remained only for those who used oral contraceptive, (2) for some activities (wheat and corn, poultry and sheep/goat), probably due to residual confounding. However, increased risks were observed among (1) female pig-breeders (HR>15 pigs = 1.93[1.08–3.44]), (2) female fruit-growers (HR HR=2.58[1.03–6.41]). Increased risks observed on crops were reinforced among women who did not use oral contraception and results in livestock were unchanged according to oral contraception use.

Conclusion In the AGRICAN cohort established risk (late menopause) and protective factors (oral contraceptive and parity) were confirmed in female farmers. We found positive association for some crops and animal breeding but we also found decreased risks possibly due to residual confounding.

RF-210 EXPOSURE TO PESTICIDES AND RISK OF HODGKIN LYMPHOMA IN AN INTERNATIONAL CONSORTIUM OF AGRICULTURAL COHORTS (AGRICOH)

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Introduction Hodgkin lymphoma is a rare cancer of B-lymphocytes diagnosed in approximately 80,000 individuals worldwide each year. While the use of some pesticides may increase the risk of other lymphoid malignancies, associations with Hodgkin lymphoma remain poorly understood.

Objectives We investigated associations of use of 22 pesticide active ingredients and 13 chemical groups with Hodgkin lymphoma incidence in three large agricultural cohorts from