Data Centre of the Federal Employment Agency at the Institute for Employment Research.

O09-5 THE ITALIAN SURVEY ON PERCEPTION OF HEALTH AT WORK: THE ASSOCIATION OF WORKING CONDITIONS AND OCCUPATIONAL RISKS PERCEPTION WITH WORKERS' HEALTH

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Background The last decades have seen significant developments in the economic, political, technological and social landscape as well as in the nature of work that has been re-shaped under these impacts. All these changes have had a high impact on workers' health and have lead to several improvements in occupational health and safety (OSH) policy framework at European and national level. The Italian Workers' Compensation Authority (INAIL) carried out a national survey (Insula project) to investigate the employer's perception related to working conditions, occupational risk exposure and their impact on mental and physical health. This study aimed to provide secondary analysis of INSuLa data to investigated factors mainly associated to workers' health in a national wide representative sample of workers.
Methods A questionnaire has been developed and administered to a sample of 8,000 workers (representative of the Italian working population in companies with more than 5 employees) through CATI interview; a set of logistic and linear regression models were adopted to test effects of the variables on mental and physical health.
Results

- mental and physical health resulted to be positively linked with peer support ($p<0.01$, exp(B)=1.26) and job satisfaction ($p<0.05$, exp(B) = 1.23) and negatively linked with workplace violence and harassment ($p<0.001$, exp(B) = 1.57);
- the perception of OSH risks ($p < 0.001$, exp(B) = 0.75) and work-related stress risk exposure ($p < 0.05$, exp(B) = 0.98) reported negative relationships with mental and physical health and a positive relationship with depression.
- working conditions ($p<0.05$) – except for organisational change – were negative related with depression.

Conclusions This study offers a secondary analysis of Insula project that represents a unique case in Italy in terms of the sample's dimensions and workforce representativeness. Findings suggest specific prevention strategies to protect the health conditions of Italian workers and may offer useful information to drive national policy implementation in the OSH field.

O09-6 DEVELOPMENT OF NURSES OCCUPATIONAL STRESSOR SCALES (NOSS)

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Background and aim Psychological stress has been an important factor affecting nurses' health and work performance. However, the assessments of psychological stress have been mainly on the psychological symptoms, but not addressing the workplace exposure to stressors. We developed Nurses occupational stressor scales (NOSS) to quantify the stressors associated with nursing work.
Methods NOSS was developed by interviewing 20 registered nurses who reported having potential working stressors from work. A group of experts in nursing, public health, and occupational health selected 47 questions by using Delphi methods. A cross-sectional questionnaire survey was conducted using these 47 questions. These questions were later screened by factor analysis, etc. After these processes, 25 questions related to nurses' working conditions remained important and relevant, including five factors, namely, "Hazards from working environment", "Work-life conflict", "Overload", "Shortage of manpower", and "Workplace justice". In 2014–6, a questionnaire survey was carried out in representative 3,786 nurses in medical institutions in Taiwan.
Results A total of 3,222 questionnaires were satisfactorily completed by female nurses and were included for final analysis. The mean age of the participants was 31.5 years, and the average work tenure was 10.1 years. Results indicated that stressors of NOSS, including hazards from working environment, work-life conflict, overload, shortage of manpower, and work justice were able to predict high personal burnout, high client-related burnout, self-perceived job stress, job dissatisfaction and intention to leave nursing job.
Conclusion We conclude that using the approach of examining workplace stressor, NOSS is a good instrument for predicting nurses' burnout, stress, job dissatisfaction, and intention to leave nursing job.

Oral Session 10 – Radiation, Ionising and Non-ionising

O10-1 OCCUPATIONAL EXPOSURE TO EXTREMELY LOW FREQUENCY MAGNETIC FIELDS AND RISK OF BREAST CANCER IN THE MCC-SPAIN STUDY

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Background Exposure to extremely low frequency magnetic fields (ELF-MF) is a suspected risk factor for leukaemia in children and possibly for brain tumours in adults. Though early studies suggested an association between ELF-MF and breast cancer, recent meta-analyses have been contradictory and, while some reported positive associations, in particular in post-menopausal women, others reported no evidence of an association. In this study, we examined the association between occupational ELF-MF and breast cancer risk in the MCC-Spain study using a recently updated version of an ELF-MF job-exposure matrix (JEM).
Methods A total of 1,539 female breast cancer cases and 1,602 controls, recruited throughout ten Spanish regions between 2008 and 2013, were included in this analysis. Estimates of lifetime cumulative exposure to ELF-MF were assigned to study participants based on the ELF-JEM, recoded to the Spanish system of occupations (CNO94, four digits), and information collected on the subjects' occupational histories. An analysis was performed using unconditional logistic regression adjusted for age, education, and region.
Results A statistically significant positive association was observed for lifetime cumulative ELF-MF exposure, Odds Ratio (OR) per 10 unit log-transformed geometric mean = 1.10; 95% confidence interval (CI), 1.01–1.20; p = 0.027). Analyses including reproductive and hormonal factors as well as using average exposure and exposure in different time windows will be presented.
Conclusions Occupational exposure to ELF-MF may play a role in breast cancer risk.

O10-2 MATERNAL OCCUPATIONAL EXPOSURE ASSESSMENT TO EXTREMELY LOW FREQUENCY ELECTROMAGNETIC FIELDS (ELF-EMF) AND PREGNANCY OUTCOMES IN THE ELFE COHORT

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Background Despite the widespread and increasing use of electricity in working environments, occupational exposure to ELF-EMF during pregnancy has been rarely documented and was often assessed using the mothers' self-report. Our first aim was to assess maternal occupational exposure to ELF-EMF during pregnancy in the birth cohort study Elfe. Secondly, we studied the link between this exposure and child's gestational age or birthweight.
Methods The Elfe study was initiated in 2011 in France and enrolled more than 18,000 infants born between 33 and 42 weeks' gestation. Mother's job title was collected by a face-to-face interview and coded using the International Standard Classification of Occupation 1968 (ISCO68). The Bowman population-based job exposure matrix (JEM) was used to assess arithmetic-mean-workday ELF-EMF exposure level associated to the occupation held by each mother during pregnancy, expressed in µT/day. This JEM used the Standard Occupational Classification system 1980 (SOC80). ISCO68 codes were translated to their SOC80 equivalent. Exposure levels were categorised according to quartiles and 90th percentile. Multiple linear regression models were used to estimate adjusted differences in mean birth-weight and mean gestational age between exposure groups.
Results A total of 13,340 mothers worked during their pregnancy. Job was coded into SOC80 for 12,671 mothers and mean-workday level was defined for 12,549. Adjusted models did not show differences between any of the exposure groups and the reference category for both birth-weight and gestational age among children born at 33 weeks' gestation or more.
Conclusion Our study, in a large birth cohort, is the first to assess maternal occupational exposure during pregnancy using a JEM based on industrial hygiene measurements. Our next aim will be to use the INTEROCC ELF-JEM (http://www.crealradiation.com), an updated version of the Bowman ELF-JEM. We will also assess environmental exposure to ELF-EMF during pregnancy and its possible association with birth outcomes.

O10-3 ACCOUNTING FOR BERKSON AND CLASSICAL MEASUREMENT ERROR IN RADIATION EPIDEMIOLOGY STUDIES USING A BAYESIAN STRUCTURAL APPROACH: APPLICATION TO THE FRENCH COHORT OF URANIUM MINERS

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Accounting for uncertainty in exposure assessment in occupa-

approach to account for exposure uncertainty and effect modification in a coherent framework. This presents arguably the most flexible approach for the correction of measurement error. It allows to simultaneously account for exposure uncertainty of Berkson and of classical nature arising from retrospective exposure reconstruction, ambient measurements and from personal dosimetry, depending on period of exposure. We describe age at death by lung cancer as a function of cumulated radon exposure and include time since exposure and period of exposure as effect modifying covariates. Applying the proposed methodology to the

observe a risk estimate that is three times bigger than for the total cohort. This endorses the hypothesis that measurement error might be a possible cause of the attenuation in exposure-response relationships frequently encountered in occupational studies, but that exposure uncertainty arising from exposure reconstruction may result in more complex patterns of measurement error than what is generally assumed.

O10-1 Occupational exposure to extremely low frequency magnetic fields and risk of breast cancer in the mcc-spain study

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