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PERSONAL EXPOSURE TO OCCUPATIONAL RADIOFREQUENCY ELECTROMAGNETIC FIELDS: RESULTS FROM A PILOT

¹Maxime Turuban, Hans Kromhout, Javier Vila, Ghislaine Bouvier, Elisabeth Cardis, Michelle Turner, José Antonio Alcolea. ¹ISGlobal, Spain

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Background A Job-Exposure-Matrix (JEM) for occupational exposure to radiofrequency (RF) electromagnetic field (EMF) was previously developed based on source measurements and not on personal measurement data. In the framework of an international study aimed at validating and enriching the JEM, we conducted a pilot study of personal measurements of occupational exposure to RF fields in a rehabilitation department of a Spanish hospital among various groups of workers in order to develop a protocol for the main field study in three countries.

Methods We previously identified and prioritized the types of occupations to be measured based on their presumed levels of exposure to RF fields from the RF-JEM and based on expert judgment. A screening questionnaire was used to identify potential participants, based on their job titles and reported sources of RF exposure. Consequently, personal full-shift measurements were collected. In addition, a worker's diary collecting information on occupational-specific sources of RF used during the measurement day, the use of personal mobile phones and general occupational data was filled in by every participant at the end of the shift.

Results A total of 16 workers (cleaning staff, receptionists and physiotherapists) participated in the Spanish pilot test. Overall geometric and arithmetic personal exposure levels were low; however, peaks of exposure to electric (>125 V/m) and magnetic fields (>0.55 A/m) exceeding the ICNIRP 1998 occupational standards at the frequency of 27,12 MHz were observed for a small number of participants, though peak duration was brief and their frequency scarce.

Conclusion We performed personal measurements of RF occupational exposure in a pilot study within the framework of an international study. Measurements will be performed across a wide range of occupations in Spain, France and the Netherlands and will be used to update and enhance an existing RF-JEM to be use in occupational epidemiological research.

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COMPARISON OF URINE N-METHYLFORMAMIDE AMONG THE MIGRANT AND NATIVE WORKERS AT RISK OF EXPOSURE TO N, N-DIMETHYLFORMAMIDE IN MANUFACTURING INDUSTRIES IN THE REPUBLIC OF KOREA (2012–2019)

¹LEE Kyung-Eun, Park Ga-young. ¹Occupational Safety and Health Research Institute, Republic of Korea, and Korea Occupational Safety and Health Agency, Republic of Korea

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Introduction N-N-dimethylformamide (DMF) which could induce to liver toxicity was the most common chemicals attributing 27.3% of the intoxication accidents of which 33% involved the migrant workers at workplace. Occupational

health studies of the migrant workers at risk of exposure to DMF are rare despite their social vulnerabilities due to the lack of information owing to the deficiencies in the national monitoring system.

Objectives The aim of this study is to assess the urine concentration of N-methylformamide, a biological monitoring index (BEI) of DMF, among the migrant workers at risk of exposure to DMF by comparing with the native workers in manufacturing industry.

Methods This cross-sectional study was designed to target employees aged 20 and more, who were eligible to participate in the special health examination for DMF exposure in 2014–2019. Data were obtained from the workers' special health examination (WSHE) and Work Environment Measurement (WEM) database of 2014–2019, managed by the KOSHA. We assessed the fundamental characteristics known to affect DMF exposure and its metabolism in human body including demographics (sex, age), companies where the subjects are employed (number of workers, types of industries), and DMF exposure factor (Time weighted average(TWA), years of employment). The Mann-Whitney U test and Pearson's chi-squared test were used to compare the baseline characteristics between the native and migrant workers.

Results 60.6% of the migrant workers exposed to DMF were employed in small and medium sized company, while 19.6% of the native workers were. 21.6% of the migrant workers were exposed to TWA of DMF exceeding Threshold Limit Values, which significantly high compared with the native workers (6.3%). The mean concentration of urine N-methylformamide in the migrant workers (1.37 mg/L) was significantly higher than in the native workers (0.47 mg/L, $p < 0.001$).

Conclusions The migrant workers at risk of DMF exposure in manufacture industries were in highly vulnerable environment at workplace.

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HEALTH SURVEILLANCE OF THE WORKPLACE MEDICAL SERVICES IN ECUADOR

¹Fernando Carpio, Altacilio Nunes. ¹PUCE-UCE-USP, Ecuador

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Introduction Thanks to ILO Recommendation 112, companies with more than 100 workers must carry out pre-occupational, periodic and retirement medical evaluations. A study of these services has not yet been carried out in Ecuador. There is an underreporting of occupational diseases.

Objectives 1. To know the health prevention activities of the occupational medical services 2. To know the opinion of the workers about the work of these services.

Methods A representative sample of company doctors belonging to the National Association was obtained. An anonymous questionnaire was administered to 64 doctors, with 42 questions about the characteristics of the company and the workforce, the equipment, the medical evaluations, the health promotion activities they carry out and about professional secrecy. Another survey was carried out on union organizations of 21 companies on similar aspects.

Results The incidence of occupational accidents was 14.34 x 1000. The prevalence of occupational diseases was 1.01 x

1000. 83% of the services did not have an audiometer or spirometer, 86%. Only 56% of the services met the threshold of audibility during the pre-occupational evaluation. 76.6% of workers who moved weights had a lumbar X-ray. A significant proportion could not maintain professional secrecy, due to company requirements. The opinion of the workers contrasted with the opinion of the medical services. Only 19% of the services delivered the results of the evaluations to the workers. 52.38% considered that the medical service kept professional secrecy.

Conclusions There was a low detection and notification of occupational diseases, little equipment of services for preventive activities, and it is necessary to ensure that the medical service has the power to keep medical secrecy.

P-387 SUCCESS OF REHABILITATION AMONG 185.385 EMPLOYEES UNDERGOING MEDICAL REHABILITATION FROM 2010 TO 2012 IN GERMANY.

¹Maria Weyermann, Nicole Wist. ¹Niederrhein University of Applied Sciences, Germany

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Introduction In Germany the statutory pension insurance fund covers the cost of rehabilitation treatment for employees whose working capacity is endangered due to health problems.

Objectives We aimed to describe success of medical rehabilitation (work ability at discharge, return to work in the year after rehabilitation, early retirement within seven years after rehabilitation) with special consideration of potential sociodemographic determinants among employed persons undergoing medical rehabilitation from 2010 to 2012 in Germany.

Methods Analysis based on Scientific Use Files of administrative pension records from the Research Data Centre of the German Federal Pension Insurance, which include 20 percent random samples of all cases of medical rehabilitation. Risk of low work ability at discharge (LWA) and failed return to work in the year after rehabilitation (FRW) was estimated using logistic regression models, risk of early retirement during seven years after rehabilitation (ER) was estimated using cox proportional hazard models. Age, sex, citizenship, school and vocational education, annual income before rehabilitation and medical diagnosis were considered as potential risk factors.

Results We included 185.385 employed persons aged 18 to 60 years undergoing medical rehabilitation from 2010 to 2012. Low work ability at the end of rehabilitation was reported among 7.9%, 26% showed insufficient return to work one year after rehabilitation, and 9.7% received disability pension during 7-year follow-up, respectively. In fully adjusted models, non-German citizenship, older age, low educational level, as well as low annual income were risk factors for each outcome of work ability. For example, adjusted risk among persons with low annual income (1st quartile vs. 4th quartile, OR/HR [95%-CI]) was 2.3 [2.2;2.4] for FRW, 4.8 [4.5; 5.1] for LWA, and 2.5 [2.3; 2.6] for ER.

Conclusions These results continue to show that success of medical rehabilitation is lower in deprived social groups in Germany.

P-389 RETURN TO WORK AFTER ACUTE MYOCARDIAL INFARCTION: A COMPARISON BETWEEN YOUNG ACTIVE WOMEN AND MEN

¹Amira Omrane, Olfa Jlassi, Majdi Ben Massoud, Majed Hassine, Lamia Bouzgarrou, Taoufik Khalfallah, Habib Gamra. ¹Faculty of Medicine of Monastir, Tunisia

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Background Return to work (RTW) after an acute myocardial infarction (AMI) is an important outcome particularly relevant to young and active patients. Women may be at a greater risk for not returning to work given evidence of their worse recovery after AMI than similarly aged men. However, sex differences in return to work after AMI has not been studied extensively in a young active population (≤ 65 years). This study aimed to assess return to work among patients after an AMI and evaluate the role of gender.

Methods We prospectively followed patients with a first time AMI, employed at the time of the index hospitalization between June 2018 and December 2019, in the Cardiology department in a Public hospital in the central region of Tunisia. Data were obtained by medical record abstraction and patient interviews. Data collected were related to socio-demographic characteristics, clinical characteristics and the validated MacNew Questionnaire.

Results Fifty patients were enrolled aged 35 to 65 years. The study group was made up of 45 (90%) male and 5 (10%) female. Patients who did and did not return to work did not differ in gender distribution ($p=0.79$). Women returned to work later than men (respectively after 65 and 75 days) without statistically significant difference ($p=0.87$). Eighty four percent of the study population returned to work within six months. Smoking, left ventricular ejection, Killip class, in-hospital complications, global physical activity and Quality of Life were found to be significantly associated with return to work in independent univariate analyzes. A stepwise multivariate regression analysis identified only the Quality of Life and the number of children in charge as predictors of RTW.

Conclusion This study revealed a higher probability of RTW in males among a young active population. This difference is explained by disparities in demographic, occupational and health characteristics.

P-390 USING A CLINICAL DATABASE TO INFORM PREVENTION OF OCCUPATIONAL SKIN DISEASE WITH A FOCUS ON THE HEALTH CARE SECTOR.

¹D Linn Holness, Sandy Skotnicki, Joel DeKoven, Irena Kudla. ¹University of Toronto, Canada and St Michael's Hospital, Canada

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Introduction Clinical databases provide useful information on occupational diseases including occupational skin diseases. Patch testing is an important tool in the diagnosis of occupational contact dermatitis. Patch test databases not only contain specific diagnostic information but also identify affected occupations and workplace characteristics allowing comparisons across industries and jobs. Additional workplace information can be added to gain insight into prevention activities.