P4 - Posters/Visit to posters

Salud ocupacional
——————
Occupational health

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THE EPIDEMIOLOGY OF WORKPLACE CHEMICAL EXPOSURES AND RISK ASSESSMENT

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The aim of the study is to come up with an epidemiological study on chemical exposures at work and related illnesses. Based on the data, a risk exposure assessment will be established as a guide to occupational health practitioners in assessing the indicators and parameters of hazard exposures. The study used a multi-state stratified sampling of manufacturing industries in export zones in the Philippines. Thirty-one industries were measured in terms of noise, heat chemical exposure, radiation and ventilation. Five hundred workers were given questionnaires to assess their chemical exposures and the consequent health effects. There was 100% use of chemicals in the industries used as raw material or solvent for processing. The industries generated dust and vapours, as well as acids and caustics. The blood lead result of the 285 subjects revealed that 40.7 percent of the total number of subjects had blood lead result within the 21-30 ug/dL which is considered by the Department of Health dangerous. When hazards and illness were correlated with alpha set at 0.05, radiation exposure was associated with bone pain, and dust exposure with eye strain, and viral exposure, solvent exposures with respiratory illnesses, abortion, and anemia. Based on the results, a proposed exposure rating for chemical exposure is done. This allows an easy guideline for the assessment of chemical hazards considering factors such as contact with the body surface, generation of vapor within the breathing zone, threshold limit values (TLV) and exposure time. For example, exposure rating estimate of 0 means no exposure either through dermal contact or within the breathing zone of the worker. Very high exposure is exposure above the TLV which varies per chemical and where the exposure time is beyond the 8 hour work duration.
Exposure Ratings for Chemical Exposure
Exposure Rating Estimate Category Qualitative Description Exposure Time
0 No exposure No contact Not within breathing Zone No exposure time
1 Low exposure Minimum contactMinimum concentration Within breathing zone Less than the specified TLV-Ceiling
2 Moderate Moderate ContactModerate concentration Within breathing zone Less than 50% of the 8-hour workday.
3 High exposure High contactHigh concentration Within breathing zone More than the specified TLV-Ceiling; and TLV-TWA
4 Very High Exposure Very High contactVery High concentration Within breathing zone More than the specified TLV-Ceiling; and TLV-TWA
Conclusion: This study looked into actual chemical and other hazard exposures of workers. The proposed hazard rating matrix will allow the concerned to quantify and address problems that may arise from chemical exposures. This study is also seen to significantly contribute to the importance of epidemiology in establishing risk assessment in the workplace and the eventual prevention of occupational illnesses.

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BREAST CANCER RISK AMONG FINNISH CABIN ATTENDANTS - A CASE-CONTROL STUDY

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Introduction: Some earlier studies have found elevated breast cancer risk among female cabin crew. This has been suggested to reflect either occupational exposure to cosmic radiation, hormonal alterations due to repeated jet lag, life-style factors or confounding factors, such as age at menarche and menopause. The contribution of various factors has remained unclear, mainly due to the fact that earlier reports have been on cohort studies with limited information on potential confounders. We conducted a nested case-control study among cabin attendants in Finland. Our objective was to assess the contribution of occupational versus lifestyle factors to breast cancer risk.
Methods: We collected information with standardised self-administered questionnaire on demographic, occupational and lifestyle factors from 1041 cabin attendants, who were identified through Finnair and Finnish Cabin Attendant Association. A total of 28 cases and 516 controls completed the questionnaire. For each case, up to four controls were chosen with matching on year of birth (±1 year). Breast cancer diagnoses were confirmed by a record linkage with the Finnish Cancer Registry. Exposure to cosmic radiation was estimated based on self-reported flight history. Conditional logistic regression model was used for analysis.
Results: In a multivariate analysis early menarche (OR=4.0, 95% CI: 1.0;16.1) and family history of breast cancer (OR=6.5, 95% CI: 1.6;26.9) were associated with elevated risk, whereas parity (one or more births versus none, OR=0.7, 95% CI: 0.2;2.8) seemed to have a protective effect. Cumulative radiation dose was not associated with breast cancer risk (OR=1.0 per mSv, 95% CI: 1.0;1.0).
Conclusions: Our results suggests that breast cancer risk among Finnish cabin attendants is related to general, well-established risk factors of breast cancer, such as early age at menarche and family history. Occupational factors do not exert a strong influence on breast cancer risk.

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ASSOCIATION BETWEEN OCCUPATIONAL LEAD AND CADMIUM EXPOSURE AND SERUM CHOLESTEROL

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Introduction: The special literature shows that occupational exposure to lead and cadmium affect the human health and generate toxic effects. The monitoring of lead and cadmium exposure is necessary because they can alter the organism reactivity, increase the sensitivity for the pathogen agents, stress and other noxes and so generate a varied pathology with long recovery. In this study we determined the prevalence and associations of risk markers for IHD, by measuring major and minor IHD risk factors, serum cholesterol levels, as well as associations with blood lead and blood cadmium.
Methods: We examined 145 lead and cadmium exposed workers from a metallurgical plant, with the mean age=38.22±6.69 years and mean time of exposure=16.42±7.04 years. We made: clinical examination, completed a standard questionnaire regarding the effect of Pb and Cd on the human organism, an interview including cardiological and family history, ECG registering, ambulatory blood pressure monitoring, biochemical and biotoxicological investigation. Air concentration of lead and cadmium by AAS were performed.
Results: From the total workers 57.34% were smokers and 7.69% ex-smokers; 55.94% had family history of cardiovascular disease and hypertension; 9 workers had ECG alteration suggestive for ischemic heart disease; 10.48% had high blood pressure; 18.18% had heart pains and 18.88% had alteration of the cardiac rythm. High values of blood lead, over 40 mg/dl, were found in 4.37% of workers (exposure over 10 years) and 0.72% (exposure above 10 years); values between 15-40 mg/dl were found in 27.73% of workers (exposure over 10 years) and 13.13% (exposure above 10 years); values above 15 mg/dl was found in 39.41% of workers (exposure over 10 years) and 14.59% (exposure above 10 years). Values of blood cadmium over 1.5 mg/dl were found in 9.61% of workers (exposure over 10 years) and 5.76% (exposure above 10 years); values above 1.5 mg/dl were found in 73.07% of workers (exposure over 10 years) and 11.53% (exposure above 10 years).
Conclusions: The coronary risk level was: low = 41.25%; mild = 36.36%; moderate = 20.27%; high = 2.09%. Regarding the HDL-cholesterol values: 0.69% had good prognostic; 28.47% had standard risk; 70.83% had high risk. Air lead exceeded the maximum accepted value. There were no significant differences between workers aged up and under 40 years, and with the length of exposure above and less than 10 years regarding the blood and cadmium values. Occupational exposure to lead is associated with alterations in lipid metabolism. The impact of high lead-inducing alteration of cholesterol levels on the morbidity and mortality of cardiovascular disease deserves further study.

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NURSES AND OCCUPATIONAL HIV EXPOSURE - AN OBSERVATIONAL STUDY

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Objective: To record descriptions of occupational exposures to blood, determine factors predictive of these exposures and identify interventions that might reduce their frequency.
Design: An anonymous questionnaire prepared by A. Lowenfels from N.Y. Medical College, USA, distributed between January and March 2003.
Setting: 7 hospitals located in the city of Szczecin, Poland (2 academic, 5 municipal), 11 situated within 70 miles radius.
Participants: Representative group of 601 members of active nurse staff.
Statistical analysis: Between - group differences were determined using CHI2 test or U Mann-Whitney`s test.
Results: The responding nurses ranged in age from 20 to 58 (median 38 years), most of them were women (99,3%). Almost half of the respondents (257; 42,8%) practised in municipal hospitals, over one third (229; 38,1%) in hospitals situated in the country. For the majority of respondents (565; 94%) it was a full time job. Over one-fourth of the respondents (162; 27%) had one or more occupational contacts with HIV infected patients during their professional carrier, almost three-fourths (450; 74,9%) participated in a special HIV/AIDS training. Almost one half of respondents (276; 46%) reported at least one puncture injury in the preceding year, 134 (22,3%) - sustained contacts via mucous membrane. In individuals with percutaneous contact reported, 215 sustained injuries caused by hollow-bore needles (total number of such injuries reported - 745; 63%), 108 - by instruments (total - 282; 23,8%), 62 - by suture needles (total - 156; 13,2%). The numbers of injuries were independent of age (p>0,26), years in practice (p>0,21) and workplace (p>0,78), but were dependent of the number of HIV/AIDS training attendance (p<0,03). Nurses supplied information about the most recent injury: it most often involved palm (117; 40,5%) and fingers II-V (113; 39%), was the self-injury (236; 81,7%), took place during elective procedure (154; 53,3%) and was underreported (215; 74,6%). The most common reasons for underreporting were conviction that source-patient was not infected or that reporting would not result in avoiding infection.
Conclusions: *1)* Because of the large number of professional blood contacts, nurses should adopt more adequate behavioural strategies to prevent the transmission of blood-borne pathogens, among them HIV. *2)* The efforts to prevent sharp injuries caused by hollow-bore needles - the most frequent among nurses surveyed - should be centred around eliminate the practice of recapping through education and convenient placement of puncture-resistant containers for the disposal of used sharps. *3)* As one-fourth of the nurses surveyed has never attended HIV/AIDS training, the more complete information of the benefit of pre-exposure prophylaxis and blood exposures reporting should be supplied in order to provide a safer workplace.

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SQUAMOUS CELL SKIN CANCER AND OCCUPATIONAL EXPOSURE TO CHEMICALS IN SWEDISH MEN

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Introduction: The incidence rates for squamous cell skin carcinoma (SCC) have steadily increased with time. The dominant risk factor is exposure to solar UV radiation, but several chemical carcinogens have been linked to an increased risk. The objective of this study is to estimate the risk of SCC by anatomic site related to occupational exposure to chemicals in Swedish men.
Methods: The base-population of this historical cohort included all Swedish men recorded as gainfully employed in 1970 census and who were also registered in 1960 census. Information about SCC incidence for the period 1971-1989 was obtained from the Swedish Cancer-Environment Registry. Exposure to 13 chemicals was assessed by linking every combination of occupation and industry to a Swedish job exposure matrix (JEM) which classified them as probable, possible and non exposed, although the analysis was made grouping probable and possible categories due to small number of subjects. The country of Sweden was divided in two geographical regions based on latitude (north and south) as a proxy for sunlight exposure. Relative risks (RRs) adjusted by age, period, geographical area, town size and occupational sector were obtained fitting log-linear Poisson models for each location. Risk estimators were also computed in every latitude category.
Results: After JEM linkage 4127 SCC cases were available for the analysis. For all locations an increased risk was observed for men with occupational exposure to textile dust (RR 1.10, 95% CI 0.97 - 1.27) and peak of pesticides (RR 1.18, 95% CI 1.00 - 1.38). A similar profile was found for head and neck tumours (textile dust: RR 1.11, 95% CI 0.95 - 1.31, and peak of pesticides: RR 1.17, 95% CI 0.97 - 1.40) and lower extremities (textile dust: RR 1.85, 95% CI 1.09 - 3.14). Upper extremities presented a different pattern, with an almost statistically significant risk excess for those exposed to chromium/nickel (RR 1.62, 95% CI 0.98 - 2.67) and oil mixtures (RR 1.42, 95% CI 1.00 - 2.03). Our study failed to detect any significant association between these chemicals and thoracic SCC. No association was detected with arsenic or polycyclic aromatic hydrocarbons for any SCC location. For all the above-mentioned exposures, RRs were greater in the south area.
Conclusions: We have found a different risk pattern in upper extremities SCC respect to the rest of locations, suggesting site-differences in etiological mechanisms. The higher effect estimators found in the south compared to the north may reflect the influence of sunlight exposure.

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Respiratory Symptoms of Coke Oven Workers from 1990 to 2000

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Aim: To investigate the association between exposure to coke oven emissions and respiratory symptoms in men using cross-sectional and longitudinal data.
Methods: Data for respiratory symptoms (cough, phlegm, wheeze and shortness of breath) were repeatedly collected from 764 male coke oven workers between 3 July 1990 and 31 May 2000 in the context of a lung function surveillance system. The last sets of data for all subjects were pooled and analysed cross-sectionally. Longitudinal lung function analyses were conducted for 515 subjects with two or more sets of tests. Stepwise logistic regressions were used to select the risk factors for the presence of respiratory symptoms.
Results: Cross-sectional analyses of the pooled last sets of symptoms showed that working in the most exposed position of 'Operation' increased the risk for cough (odds Ratio (OR)=2.37, 95% CI: 1.48 to 3.81), phlegm (OR=2.55, 95% CI: 1.63 to 3.99), and shortness of breath (OR=1.52, 95% CI: 1.01 to 2.27). The stepwise logistic regressions fitted for the aggregated symptom data over time had similar findings.
Conclusion: Exposure to coke oven emissions increased the risk for respiratory symptoms despite the exposure levels being within allowable limits for occupational exposure.

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ASSESSING THE VALIDITY OF SMOKING HISTORIES - A COMPARISON OF COMPANY HEALTH RECORDS WITH QUESTIONNAIRES IN AN OCCUPATIONAL COHORT OF FORMER GERMAN URANIUM MINERS

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Introduction: The German Federal Office for Radiation Protection is conducting an occupational historical cohort mortality study of 58619 employees of the former Eastern German uranium mining company Wismut. We investigate risk factors for lung cancer in a nested case-control study including 2000 subjects, in which further data on smoking behavior is collected from two different sources: company health records (CHR) and questionnaires. A comparison of these data gives insights about their quality and the reliability of the data sources.
Methods: Company health records are available for all study subjects. They cover a period starting around 1970 until the end of employment or longer and contain better smoking information than the data collected for the cohort study. Questionnaires sent to all living study subjects and next-of-kin of deceased persons cover the total life of the subjects.
Results: We present the evaluation of the 514 questionnaires and CHR files of all 1344 controls by comparing *a)* their completeness, *b)* their agreement in terms of non/cigarette/pipe smokers, *c)* abstracted smoking duration, and *d)* smoking prevalence rates.
Conclusions: The comparisons show here are important, because both data sources complement each other: Despite their completeness, the CHR files do not cover the entire smoking history, while questionnaires suffer from a low response rate (38%). The evaluation of both sources is therefore essential to the correct evaluation of the case control study.

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EVOLUCIÓN DEL HÁBITO TABÁQUICO EN EL HOSPITAL GENERAL DE VIC, 1988-2001

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Introducción: Los profesionales sanitarios son el colectivo con mayor capacidad para influir sobre los hábitos tabáquicos de la población. Los objetivos del estudio fueron determinar la prevalencia de fumadores en el Hospital General de Vic (HGV), conocer la evolución durante los últimos 14 años, así como las opiniones y actitudes frente a una campaña de prevención del tabaquismo.
Métodos: Estudio transversal descriptivo mediante un cuestionario anónimo auto-administrado. Período de estudio: octubre 2001-febrero 2002. Estos datos se compararon con los obtenidos mediante el mismo cuestionario y la misma categorización del hábito tabáquico en los años 1988 y 1994.
Resultados: Respondieron 357 personas al cuestionario (52% de 9,0 años y un 75% de mujeres. La distribución(participación) de edad media 37,2 según el grupo profesional y el sexo fue representativa del resto del personal. La prevalencia de fumadores fue del 33,9% (IC95%:29,0-39,0), de ex fumadores del 22,4% (IC95%:18,2-27,1) y de no fumadores del 43,7% (IC95%:38,5-49,0). Se observó un mayor porcentaje de fumadores entre las mujeres (34,0%) que entre los hombres (32,9), sin diferencias significativas. El porcentaje de fumadores por grupo profesional fue: auxiliares de enfermería 41,2%, diplomados en enfermería 35,2 %, administración 32,6%, médicos y otros facultativos 30,2% y servicios generales 23,5%, p<0.05. Desde el año 1988 se observa una disminución significativa del hábito tabáquico en la población de estudio, por sexo, edad y en todos los grupos profesionales. La proporción de fumadores ha disminuido significativamente un 13,0% (IC95%:-19,9 a -6,9) entre el período comprendido entre 1988 y 1994, y un 8,5% (IC95%:-15,2 a -2,0) entre 1994 y 2001, mientras que el grupo de ex fumadores se ha incrementado en un 8,5% durante el período de 14 años. Sobre las opiniones y actitudes ante el tabaco, un 45% del personal considera que deberían existir zonas muy restringidas para fumadores, mientras que el 30% considera que debería estar totalmente prohibido fumar en el hospital. El 56% de los fumadores aceptaría recursos para dejar de fumar y el 98% aceptan la campaña de prevención.
Conclusiones: La prevalencia de fumadores en el HGV continua siendo elevada, sin embargo, destacamos una importante disminución del hábito tabáquico por sexos, edad y grupo profesional. En los últimos años se observa una elevada motivación por parte del personal sanitario para lograr un "hospital sense fum".

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OCCUPATIONAL FACTORS ASSOCIATED WITH PRETERM DELIVERY AND LOW BIRTHWEIGHT AMONG MEDICAL DOCTORS

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Introduction: The role of occupational factors on the risk of preterm and low birthweight is still controversial. The aim of the study was to evaluate these associations among medical doctors. This professional group represents a socioeconomic privileged and homogeneous population, that can be exposed to several types of strenuous work, and is likely to provide accurate information on pregnancy related events.
Participants and methods: Between January 2000 and December 2001, all female medical doctors working in the north region of Portugal were surveyed through a mailed questionnaire. A total of 1001 questionnaires were returned, from approximately 3000 that were sent. The questionnaire was structured and comprised questions on obstetric history and the most recent pregnancy of at least 22 weeks duration (index pregnancy). Detailed information was obtained on working conditions during the index pregnancy (medical specialty, hours worked per week, description of working conditions and degree of tiredness at the end of the day). Age, anthropometric characteristics, lifestyle and complications during pregnancy (hypertensive diseases, diabetes, intrauterine growth retardation, hydramnios, bleeding and others) were also evaluated. We grouped reported specialties into four groups (primary care, hospital medical specialties, surgical specialties and laboratory specialties). Received questionnaires from women with no delivery were excluded from further analysis. The associations between occupational factors and preterm or low birthweight were evaluated through the calculation of odds ratios and respective 95% confidence intervals.
Results: In a total of 654 women with at least one delivery, 8.4% reported a preterm and 4.1% a low birthweight baby. The frequency of preterm was 6.3% in primary care physicians, 9.5% in hospital medical physicians, 8.4% in surgical doctors and 12.8% in laboratory physicians. The frequency of low birthweight in these specialties was 2.5%, 3.1%, 4.6% and 12.8% respectively. Statistically significant differences between specialties were seen only for low birthweight. Data showed no statistically significant association between the number of hours worked per week or the degree of tiredness and the studied outcomes. Although not statistically significant we found stronger point estimates for the association between some occupational factors and low birthweight than between the same factors and preterm. Odds ratios and 95% CI for preterm and low birthweight were respectively 0.3 (0.13-0,88) and 0.77 (0.34-1.78) in office practice, 2.0 (0.55-8.63) and 1.0 (0.47-2.14) in emergency service, 1.3 (0.50- 3.30) and 1.0 (0.50- 2.01) for operating activity and 1.5 (0.59- 3.84) and 0.8 (0.48-1.64) for nocturnal shifts.
Conclusions: In this sample, occupational characteristics were more related to low birthweight than preterm delivery. Type of medical specialty was significantly associated only with low birthweight. Further studies are needed to investigate whether these findings can be explained by low study statistical power, gestational age misclassification or stronger effect of occupational factors on birthweight.