Aims Demonstrate the different aspects of ear injuries that have been considered as accidents at work.

Methods Retrospective cross-sectional study of patients with work-related injuries who consulted the Occupational Medicine Department at the Charles Nicolle Hospital over a six-year period from January 2016 to November 2022.

Results We have collected eleven cases of patients with atrial trauma. The average age was 41±10 years. They were all male with a mean age of 41±10 years [28–58]. The patients were employed as police officers (n=6), workers (n=3), doctor (n=1), and welder (n=1). The patients were victims of a work-related accident of the following types bomb explosion (n=5), a fall from one’s own height (n=3), exposure to excessive noise (n=2), exposure to gunfire (n=1), a commuting accident (n=1), and a fall of a metal object in the temporal region of the cranium (n=1), which resulted in perforation of the eardrum in five patients. Hearing deficits were noted in all patients sensorineural hearing loss (n=7), mixed hearing loss (n=4), conductive hearing loss (n=1), and cophosis (n=2). The associated symptoms were hearing loss (n=7), tinnitus (n=4), otalgia (n=6), and ringing in the ears (n=3). The calculated average hearing loss was 31±17 dB [7.5–60] for the left ear and 36±14 dB [12–60] for the right ear. All cases of acoustic trauma were considered to be work-related. Six patients received compensation and the average of permanent partial disability rate was 20±7% [12–30].

Conclusion According to our study, ear injuries can even lead to a permanent loss of hearing. A re-evaluation of medical fitness for work is sometimes necessary.

Carcinogens/Cancer

P-195 WORK-RELATED FACTORS AND BREAST CANCER SURVIVAL IN SWISS WORKING WOMEN (1990–2014)

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Introduction Occupation and socio-economic status may both contribute to differences in risk and stage at diagnosis of breast cancer. We aimed at determining whether occupation, skill level required for the occupation and the socio-professional category affect the breast cancer survival (BCS) up to 10 years after diagnosis.

Material and Methods We used cancer registry records to identify women diagnosed with primary invasive breast cancer between 1990 and 2014 in western Switzerland and matched them with the Swiss National Cohort. The effect of work-related variables on BCS was assessed using non-parametric and parametric net survival methods.

Results Study sample included 8,678 women. In the non-parametric analysis, we observed a statistically significant effect of all work-related variables on BCS. Women in elementary occupations, with low skill level, and in paid employment not classified elsewhere, had the lowest BCS, while professionals, those with the highest skill level and belonging to top management and independent profession category had the highest BCS. The parametric analysis confirmed this pattern. Considering elementary occupations as reference, all occupations but Craft and related trades had a hazard ratio (HR) below 1. Among professionals, technicians and associate professionals, and clerks, the protective effect of occupation was statistically significant and remained unchanged after adjustment for age, calendar period, registry, nationality and histological type. After adjustment for tumor stage, the HRs increased only slightly, though turned non-significant. The same effect was observed in top management and independent professions and supervisors/low level management and skilled laborers, compared to unskilled employees.

Conclusion These results suggest that work-related factors may affect BCS. As this study was conducted using a relatively small sample and limited set of covariates, further larger studies are required for a more detailed analyses of at risk occupations and working conditions and assessing the potential interaction between work-related variables and tumor stage.

Radiation

P-207 A SURVEY OF RADIATION EXPOSURE AMONG NON-DESTRUCTIVE TESTING TECHNICIANS IN TAIWAN

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Introduction Five workers engaged in non-destructive testing (NDT) were diagnosed with leukemia and visited the Occupational Injury and Disease Prevention Center for the help of assessment for occupational disease in Taiwan during 2018 and 2019. NDT belongs to industrial radiography in the classification of radiation work, and the purpose of this study is to investigate the ionizing radiation exposure among workers in the industry.

Method Using the National Radiation Workers Dose Database of the Atomic Energy Commission of Taiwan Executive Yuan from 2000 to 2019 to analyze the values of the ionizing radiation badges among the industrial radiography group and other groups exposed to ionizing radiation over these years. The cumulative personal measurement was also analyzed using the characteristics of the longitudinal databases.

Results During this period, workers with dose values greater than the lowest measurable value accounted for 13.29% of the total population potentially exposed to radiation at work, compared to 26.57% of workers in industrial radiography. We also found that the mean annual median dose value for all workers possibly exposed to ionizing radiation was 0.43 mSv and in industrial radiography it was 1.21 mSv. Since 2005, most of the practitioners in the industrial radiography industry have an annual cumulative exposure of more than 20mSv. Moreover, the average personal 20-year cumulative measurement is 7.82 mSv for all ionizing radiation workers and 29.26 mSv among workers engaged in industrial radiography.
Conclusion Industrial radiography workers may have higher exposure to ionizing radiation. This is important to prevent ionizing radiation-related occupational diseases in industrial radiography or NDT workers.

Irritants and allergens

**P-210 PREVALENCE AND INCIDENCE OF HAND ECZEMA IN HAIRDRESSERS A SYSTEMATIC REVIEW AND META-ANALYSIS**

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10.1136/OEM-2023-EPICOH.107

**Introduction** Hairdressers are at increased risk for hand eczema (HE) due to frequent skin contact with irritants and allergens in the workplace. Individuals with (a history of) atopic dermatitis are more susceptible to develop occupational HE. This study aims to review the current prevalence and incidence of HE in hairdressers, as well as the pattern of disease onset and severity. Furthermore, to assess the contribution of atopic dermatitis on HE in hairdressers.

**Material and Methods** A systematic review was conducted according to the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) guidelines. Studies published from 2000 to April 2021 that fulfilled predefined eligibility criteria were retrieved.

**Results** Nine studies (n = 10,952 participants) reported on the life-time prevalence, yielding an estimate of 38.2% (95% CI 32.6-43.8). A pooled 1-year prevalence of HE amounted to 20.3% (95% CI 18.0-22.6), and a pooled point prevalence to 7.7% (95% CI 5.8-9.6). A pooled lifetime prevalence of 37.5% and 37.0% was obtained for hairdressing apprentices and fully trained hairdressers, respectively. The pooled incidence rate of HE was 51.8 cases/1000 person-years (95% CI 42.6-61.0). The prevalence of AD in hairdressers was comparable with estimates in the general population.

**Conclusions** This systematic review reveals that hand eczema is common in hairdressers and starts early in the career, often during apprenticeship. The prevalence of atopic dermatitis in hairdressers is comparable with estimates in the general population, pointing to the occupational exposures as the main risk factor for HE in hairdressers. This emphasizes the need for targeted and collective prevention strategies in hairdressing sector, starting already during apprenticeship.

**Solvents**

**P-220 QUALITY OF LIFE IN EMPLOYEES EXPOSED TO ORGANIC SOLVENTS A STUDY OF 196 CASES**

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10.1136/OEM-2023-EPICOH.108

**Introduction** Occupational exposure to organic solvents remains a real risk for exposed employees, particularly on mental health and quality of life.

**Objectives** To evaluate the quality of life of employees exposed to solvents

To research the professional and extra-professional determinants of this quality of life.

**Material and Methods** This is a descriptive cross-sectional study that compared 196 employees exposed to solvents with 64 non-exposed employees from the same socio-professional environment. An environmental study combining an evaluation of working conditions and atmospheric monitoring was carried out to identify and quantify exposure to solvents. Quality of life was assessed using the SF36 questionnaire in its Arabic version.

**Results** The solvent mixtures to which the employees were exposed mainly contained hexane, toluene, ethyl acetate and perchloroethylene. The study population was relatively young (34.1 years ±9.8), predominantly male (sex ratio=2.2) with an average work experience of 10.3 years (±8.2) and represented mainly by manual workers (75.4%). The pathological history of the exposed patients was dominated by chronic neuropsychological disorders (48.1%). The SFG 36 score was worse in the solvent-exposed group (SFG= 64.1±(21.1)) versus 70.1±(23.3) in the non-exposed group, the difference being borderline significant (p=0.05). Among the eight dimensions of the SF36, a very significant alteration of the dimensions ‘perceived health’, ‘psychological health’ and ‘repercussion of psychological health on daily activities’ was noted in the solvent-exposed group. The main determinants of the quality of life of workers exposed to solvents were level of education, frequency of exposure, length of exposure, and company.

**Conclusion** According to this study, organic solvents can affect the quality of life of exposed employees by acting essentially on ‘perceived health’, ‘psychological health’ and the ‘impact of psychological health on daily activities’.

**COVID-19**

**P-221 EPIDEMIOLOGICAL PROFILE OF HEALTHCARE WORKERS WITH COVID-19 IN BRUNEI DARUSSALAM**

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10.1136/OEM-2023-EPICOH.109

**Introduction** During the COVID-19 pandemic, healthcare workers (HCWs) played a key role in the management and