

**Objectives** To examine the diagnosis, common workplace allergens and prevention practices in workers seen for patch testing in a tertiary referral centre in Toronto, Canada.

**Methods** Demographic, clinical, patch test and workplace information were collected for patients seen between 2012 and 2019. Basic descriptive statistics were generated to compare workers in common industries and jobs.

**Results** Out 3714 patients evaluated, 1261 were diagnosed with occupational skin disease. Comparison across the health-care, services, manufacturing, automotive and construction sectors revealed differences in diagnosis and causative agents, workplace characteristics and prevention practices. 308 health care workers included 154 nurses, 34 personal support workers, 28 dental workers and 22 cleaners. 90% had a diagnosis of occupational irritant contact dermatitis and 34% had occupational allergic contact dermatitis. Dental workers had the highest percentage of allergic contact dermatitis and higher proportions of occupationally relevant rubber (carba mix and thiuram) and methacrylate/acrylate positives on patch testing. They were more likely to work in a small workplace and less likely to take time off work, file a compensation claim or have health and safety training.

**Conclusion** Collection of detailed work-related descriptors and clinical information in a patch test database facilitates an understanding of the causative agents and the workplace characteristics that may place workers at increased risk for occupational skin disease, providing a focus for prevention activities.

**P-393** **HAND AND WRIST MUSCULOSKELETAL DISORDERS ASSOCIATED WITH BIOMECHANICAL RISK FACTORS AMONG TUNISIAN WEAVERS**

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10.1136/OEM-2021-EPI.307

**Introduction** The informal industry of handmade carpet is particularly developed in the Tunisian central region with use of ancestral tools. The hand and the wrist are continually solicited during the different performed tasks, which may result in musculoskeletal disorders.

**Objective** This study aimed to assess the biomechanical constraints of the wrist and hand among Tunisian weavers.

**Methods** A 6 months study was conducted among a representative sample of traditional weavers in a region of central Tunisia. The survey was based on semi-quantitative ergonomic assessment of biomechanical risk factors, with video recordings during a period of full activity (25 to 40 minutes). Each recording was stopped at fixed time intervals and converted into one hundred images. For each image, the postures of the wrists and hands were encoded and analyzed with ERGONOM software. The Gestural Variability Score (GVS) and the subjective BORG scale were used to estimate postural variation and the level of exerted force.

**Results** The average duration of the working day was  $7.45 \pm 2.5$  min. The weavers spent 57.5% of the working time with a wrist extension  $>30^\circ$  with a relatively high Flexion/Extension GVS of 46%. In the coronal plane, radial and ulnar deviation were found during 11.5% and 9.4% of the activity time, respectively. Pinching grip of hand tools was spread over 83.4% of the working time range with a relatively low GVS (22.2%). According to the BORG scale, 78.5% of the weavers

estimated the force exerted by the hands and wrists as 'medium' to 'strong' during the weaving activity.

**Conclusion** During artisanal weaving, the hand and the wrist are deviated from the neutral position adopting awkward postures. Moreover, they are exposed to forceful gripping and repetitive movement, which may lead to musculoskeletal injuries. The prevention of these damages should focus on rethinking poorly designed hand tools.

**P-394** **MUSCULOSKELETAL DISORDERS AMONG MILITARY DENTISTS: SEMI-QUANTITATIVE ERGONOMIC RISK ASSESSMENT**

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10.1136/OEM-2021-EPI.308

**Introduction** The activity of the dentist, notably in the military force, is faced like many others the scourge of musculoskeletal disorder (MSD).

**Objectives** This study aimed to identify the MSD hazards among dentists and identify work situations that can contribute to their appearance and offer appropriate ergonomic remedial measures for their prevention.

**Methods** This is a semi-quantitative study conducted in a military dental surgery service in Tunis by observing biomechanical constraints during three different dental acts. These observations were then analysed using ERGONOM software.

**Results** The MSD hazards identified in this study as common to all dentists were strained postures, repetition, static shoulder postures and bad working position. The neck was in more than 40 degrees flexion or extended over 63% to 95% of the working time. The shoulders were in sustained contraction over 40 to 72% of the working time with a low variation suggesting an isometric shoulder contraction. The elbows were in flexion over 56 to 91% of the working time with low variation flexion/extension. The preferred wrist position was hyper-extension or hyper-flexion over 20 to 64% of working time and ulnar or radial deviation over 14 to 35% of working time. Isometric dental instruments grasp spread over almost the whole working time for the three observed dental acts.

**Conclusion** Our study confirmed biomechanical constraints and MSD hazards to which dentists are exposed and guided us in our preventive approach in order to propose the most adequate and appropriate solutions to the military command.

**P-395** **WORKPLACE BULLYING AMONG HEALTHCARE WORKERS: PREVALENCE AND IMPACT ON MENTAL HEALTH**

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10.1136/OEM-2021-EPI.309

**Introduction** Workplace bullying (WPB) is a peculiar form of workplace violence. This behavior affects the healthcare sector in general and particularly intensive care units such as anaesthesiology.

**Objectives** The purpose of this study was to assess the prevalence of WPB among anaesthesiology caregivers and to identify its impact on their mental health.

**Methods** A cross-sectional study was conducted over three months among the anaesthesiology caregivers of the three university hospitals of Mahdia and Monastir in Tunisia (n=129). A self-administrated survey was used, including the standardized Negative Acts Questionnaire-Revised (NAQ-R) to evaluate the WPB. The impact on mental health was assessed by the Rosenberg self-esteem scale, the Beck Depressive Inventory and the Hamilton Anxiety Rating Scale.

**Results** The response rate was 55%. The sex-ratio (M/W) was 0.57 and the mean age was 36.1 ± 1.1 years. Among the respondents, the prevalence of bullying, measured by the NAQ-R score, was 36.5%. Moreover, 46.7% of anaesthesiology caregivers self-labelled themselves as victims of WPB. According to the Beck Depressive Inventory, 61.7% of the anaesthesiology staff were depressed. Anxiety disorders were noted in 49.9% of cases. The Self-esteem was 'very low' to 'low' among 40% of the caregivers. Multivariate analysis showed that WPB was significantly associated with female gender (p=0.009), the status of medical residents (p=0.021), atypical working hours (p=0.008), lower self-esteem (p=0.002), and anxiety (p=0.004). No correlation was found between WPB and depression.

**Conclusion** The mental health of caregivers, especially in intensive care units, determines the quality of care and the patient safety. This mental health is negatively impacted by WPB. Thus, the worrisome high rates of WPB observed in the intensive-care and anaesthesiology environment require the implementation of preventive measures in order to overcome this behavior.

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#### SOCIAL SECURITY BENEFITS GRANTED TO BRAZILIAN WORKERS WITH OCCUPATIONAL CANCER

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10.1136/OEM-2021-EPI.310

**Introduction** Actions to control cancer in Brazil were introduced in the early 20th century, conducted with a greater focus on diagnosis and treatment. The emphasis on prevention was limited by the lack of knowledge about the etiology of the disease. Occupational cancer originates from exposure to carcinogenic agents present in the workplace, even after exposure is suspended. It is common for a long period of exposure to elements or risky conditions in the workplace to occur, which makes difficult to diagnose certain types of cancer.

**Objective** To investigate the variation in the occurrence of occupational cancer among Brazilian workers.

**Methods** We conducted an ecological study with an investigation of temporal trends, in a quantitative approach, with exploration of absolute and relative frequencies of data on all Brazilian workers who were affected by occupational cancer and who were beneficiaries of the social system.

**Results** From 2006 to 2012, 798,885 social security benefits were granted to Brazilian workers due to cancer, with an

average of 1092,6 cases/year (SD=502,9) of occupational cancer, and average occurrence rate of 0.62% among all cases of cancer. Considering only occupational neoplasms, there was a higher occurrence of melanomas and other skin neoplasms (n = 2141, 55.99%), neoplasms of the respiratory system (n = 493, 12.89%) and lymphatic and hematological tissue neoplasms (n = 447, 11.69%).

**Conclusion** Although preventable, occupational cancer is recurrent among Brazilian workers. The main strategy for reducing risks is to reduce or eliminate exposure to carcinogenic agents within the work environment. The role of nurses in the work environment has become essential, since it contributes to a significant drop in the rate of accidents and occupational diseases, promoting quality of life, identifying risks and implementing health protective measures.

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#### OCCUPATIONAL DERMATOSES IN PARACHUTE RIGGERS AT A PARATROOPER TRAINING SCHOOL

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10.1136/OEM-2021-EPI.311

**Introduction** Parachute riggers are specialised tradesmen involved in packing parachutes. Occupational dermatoses has never been studied in them despite their job entailing hard manual work.

**Objective** To observe and record hand and nail changes in parachute riggers.

**Methods** Parachute riggers working at the Paratrooper Training School (PTS) Agra consenting to participate in the study were enrolled. A brief history and hand and nail changes seen using a hand-lens were recorded. Data was analysed using R Project for Statistical Computing version R 3.6.2 for Windows.

**Results** Seventy-six parachute riggers were examined. All had some change and many had more than one change. The mean age was 29.66 years and mean duration of employment in PTS was 29.73 months. All were males. Callosities and loss of cuticle were the commonest abnormalities seen and were present in 61 (80.26%) and 57 (75%) subjects, respectively. Other common changes noted were fissures, xeroderma, pigmentation and dermatitis. Onychomycosis, onychoschizia and splinter haemorrhages were the commonest nail changes seen. Multiple correspondence analysis showed that there was a clustering of all findings barring deformities, digital resorption, paronychia and xeroderma. Odds for chronic irritant dermatitis was related to age of worker and duration of employment. This study is the first study documenting occupational dermatoses in parachute riggers. Since most of them did not use protective gear, repeated trauma due to thorns, and seeds ensnared in parachute fabric, micro-trauma resulting from friction and constant dryness were factors predisposing them to irritant contact dermatitis. Constant pressure during packing predisposed them to splitting of nails, and splinter haemorrhages.

**Conclusion** Riggers are special tradesmen involved in all steps of parachute packing. All riggers had some manifestation of occupational skin disease. Most of the changes observed were secondary to repeated friction and pressure insults and dryness of the hands.