Objective Occupational stress (OS) has been associated with musculoskeletal disorders (MSKD) and related sickness absences, but the prevalence of MSKD deeply varies across countries and cultural/social variables and could influence their relationship with OS.

As part of the CUPID international study, we compared OS and MSKD in two groups of nursing personnel from Italian and-BrazilianUniversityhospitals, countries characterised by different social background and economic environment.

Methods The CUPID Questionnaire and Effort Reward Imbalance Questionnaire (ERI) were administered to all subjects (Brazil = 150, Italy = 311) to collect MSKD and related disability/absences, and the perceived OS. Data analysis considered the Wilcoxon's and Chi-square tests to compare answers across the countries, and multivariate logistic regression models to investigate the association between OS and MSKD.

Results The two population resulted comparables distribution of gender (female = 84%). Italians reported more frequently to have been exposed to high physical workload in performing their daily job tasks.

In term of OS, Brazilian nurses reported a sensibly lower perceived "effort" and a higher "reward" (median ERI = 0.52 vs. 0.63, p = 0.001). In contrast, the prevalence of MSKD was comparable across countries (back and shoulder pain), but the frequency of MSKD-related absences in the last year (one week or more) was sensibly lower in Brazil (5% vs. 12%). Even if stress level were different, OS was associated to increased MSKD in both countries (Adj OR for an IQR ERI increase = 1.60 inItaly and OR = 4.14 in Brazil, $p < 0.05$ for both).

Conclusions Reports of OS resulted very different in two groups, but its relationship with MSKD was present in both countries. The observed difference in MSKD-related absences prevalence had no significance.

89 UPPER EXTREMITY MUSCULOSKELETAL PAIN IN LEBANESE BAKERY WORKERS

R Habib. *American University of Beirut, Beirut, Lebanon*

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Background Musculoskeletal (MS) pain in the upper extremities is a major cause of morbidity among workers in many occupations. Research links upper extremity pain of the shoulder, neck, wrists, and elbow with physical exertion in the workplace and psychosocial influences like workplace organisation. Lebanon's bakery industry is an important occupational environment to explore MS pain as it features cramped spaces, highly pressured work tasks, and frequent engagement of the upper extremities. Studies assessing musculoskeletal pain among workers are rare in Lebanon, as are studies of bakery workers from developing countries. This study assesses the magnitude of upper extremity musculoskeletal pain among Lebanese bakery workers and determines associations with physical and psychosocial variables.

Methods Surveys were conducted among 504 randomly selected bakeries across Lebanon between April and November of 2010. Samples were proportionate to the number of bakeries in each district of the country. Surveys were administered through face-to-face interviews at the workplace with the consent of employers and workers. The survey included items on musculoskeletal pain, general health, workplace activities and organisation, and socio-demographics. Descriptive and logistic regression analyses were completed using SPSS 20.0.

Results Almost 23% of workers reported upper extremity pain. Workers reporting poor self-rated health or chronic illness were twice as likely to report painful symptoms, while workers holding a second job were also twice as likely to have MS pain. Workers engaging in tasks with their hands above their shoulders (OR: 2.58; CI: 1.45–4.58) or repeated wrist movements (OR: 2.68; CI: 1.07–6.70) were more likely to report MS pain.

Conclusions Physical exertions were correlated with upper extremity MS pain. These results indicate a need to focus future interventions on improving workplace ergonomic conditions and implement workplace safety training in Lebanese bakeries.

90 WORK-RELATED MUSCULOSKELETAL DISORDERS AMONG WHITE-COLLAR WOMEN EMPLOYEES

[1]H G Gül, [2]Issever, [1]Babaoglu, [2]Hapçioglu. *[1]Istanbul, Turkey; [2]Istanbul University, Istanbul, Turkey*

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Objectives Work-related musculoskeletal disorders (WMSDs) are one of major occupational health problem in developed and developing countries. WMSDs can affect all workers, but literature reviews indicate that women in general report more symptoms. We aimed in this study to evaluate the prevalence of work-related musculoskeletal disorders and possible risk factors among white-collar women workers in Istanbul, Turkey.

Methods The study design was self-reported questionnaire-based cross-sectional study. We collected personal and occupational information and musculoskeletal complaints of women who work in the service sector. We used modified version of a general standardised questionnaire including a picture of the body sites was used for analyses of perceived symptoms of MSDs. For different parts of the body, participants were asked to indicate whether they have had regular or long-lasting complaints. All data was coded for each of the parameters. A $p < 0.05$ was considered statistically significant.

Results Questionnaires of 550 participants were completed and returned back for analysis. Five hundred seven (%92.2) of female had an university graduate and more. In this study, the age range was between 23 and 60 years. Mean age was 34.77 ± 5.71. MSD was increased with age and ($r = 0.127$, $p = 0.003$). Twelve-month prevalence was 89.3% the most prevalent site affected was that of neck (74.9%) followed by back (74.2%) and waist (65.8%) the least frequent disorder was that of elbows (0.7%).

Conclusions The study confirms that white-collar women workers are at higher risk of musculoskeletal disorders. Our findings are similar to the results of the studies on this subject in developed countries. The associations of musculoskeletal disorders with gender and occupational risk factors should be considered especially. Prevention strategies of possible work place risk factors for women can reduce the prevalence of MSDs. It would be helpful to provide continuing education about ergonomic risks in the workplaces.

91 ASSESSMENT OF TRAPEZIUS MUSCLE PARAMETERS AMONG SITTING AND STANDING WORKERS

[1]O K Oha, [2]Pille, [1]Merisalu, [1]Pääsuke. *[1]University of Tartu, Viljandi, Estonia; [2]Tallinn University of Technology, Tallinn, Estonia*

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Objectives Longlasting sitting position has often been associated with the discomfort and/or pain in neck-shoulder region. The objective of this study was to examine the trapezius muscle parameters among sitting and standing workers and to investigate which is more overreaching to trapezius muscle.
Methods A total of 42 female workers in two different companies were recruited in this study. There were 21 workers (sitting workers) who were sitting at the computer most of the working day and 21 (standing workers) who were standing at their workstation and assembling the products. Trapezius muscle mechanical charecteritics were measured by myotonometry, which calculates objective parameters on state of muscle mechanical properties (frequency which characterising tone, decrement which characterising elasticity and stiffness). The upper trapezius muscle was measured at resting position in seated, both on the left and right side. Also the visual analogue scale (VAS) was used to assess the intensity of pain in neck and shoulder region. The differences between two groups were assessed with indenpendent group T-test.
Results The mean neck and shoulder pain VAS score among standing workers was 1.79 (SD 2.36) and 1.36 (SD 2.35) and among sitting workers 2.40 (SD 2.75) and 2.17 (SD 2.52) respectively. The measured outcomes showed that frequency in the right side was 15.5% and in the left side 14.9% higher among sitting workers. Stiffness was also higher among sitting workers respectively 22.6% and 25.5%. Trapezius muscle frequency and stiffness were also statistically higher in sitting workers (t-test $p \leq 0.001$) and in both body sites. There were no differences in decrement.
Conclusions The result showed that sitting work induces higher tone and stiffness in upper trapezius muscle than standing work. Considering that the ergonomic workplace reorganisation should be done.

92 PREVALENCE OF MUSCULOSKELETAL DISORDERS AMONG US EMPLOYEES OF A LARGE COMPANY

Q Le, Kreckmann, Starks, J-Morel. *E. I. du Pont de Nemours and Company, Newark, United States of America*

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Objectives Musculoskeletal disorders (MSDs) are a leading cause of work absenteeism. Risk for MSD is multi-dimensional, and individuals with MSDs have a diverse array of co-morbid mental and physical illnesses that impact productivity in the work place. We examined the prevalence of MSDs, including low back pain (LBP), among US-based workers for a large manufacturing company.
Methods Health insurance claims data for 25,419 employees from 2006 through 2011 were used to determine eligibility and outcome status. 92% of the workforce is enrolled in a company-sponsored health insurance plan. Employees were categorised as ever having any MSD according to the presence of at least one insurance claim for a list of conditions based on ICD-9 codes. Prevalence of and trends in MSD rates were evaluated for demographic and occupational characteristics.
Results Eligible workers were predominantly white (73%) and male (75%). Median age was 50 years old. The annual average proportion of employees who had at least one MSD insurance claim was 36%. More than 33% of the MSD claims were for LBP. Female employees were more likely to have an MSD-related insurance claim than males ($p < 0.01$). The annual prevalence rate was consistent during the eligibility period, and a strong linear trend between age and any MSD-related claim was observed ($p < 0.01$).
Conclusions The findings of this analysis highlight the magnitude of MSD prevalence for an ageing workforce. The prevalence of MSDs based on insurance claims was consistent with rates reported by the US Bureau of Labour Statistics for MSDs involving work absences from 1992 to 2007 (29 to 34%). The claims-based prevalence for this workforce was lower than the self-reported proportion of MSD for the U. S. adult population (48%). These results will inform identification and management of occupational conditions that address the impact of MSDs on work productivity.

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93 REVIEW OF THE MALE REPRODUCTIVE HEALTH EFFECTS OF HORMONALLY ACTIVE CONVENTIONAL AGRICULTURAL PESTICIDES USED IN SOUTH AFRICA

[1]M A Dalvie, [2]R English. *[1]University of Cape Town, Cape Town, South Africa; [2]Health Sytems Trust, Cape Town, South Africa*

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Objectives The objective of this literature review was to examine and present evidence on male reproductive health effects of hormonally active conventional agricultural pesticides used in South Africa in order evaluate the need for research in this area especially in the Western Cape, a major agricultural area in the country.
Methods The literature review included electronic and paper sources of information using PubMED/MEDLINE, EBSCO, Google Scholar and The Cochrane Library as well as theses through the University of Cape Town Medical Library. Key words for the searches included pesticides, male reproduction, endocrine disruption, farm workers, farm residents and rural residents. Data from both animal studies and epidemiological studies including all study designs and countries were considered.
Results The review indentified a number (n = 11) of contemporary-use agricultural pesticides that have been shown to induce *in vitro* endocrine activity and/or have been shown to affect gonadotrophin and steroid hormone release as well as male reproductive development in animals or humans. These pesticides include chlorpyrifos, cypermethrin, endosulfan, deltamethrin, dichlorvos, DNOC, fenvelerate, glyphosate, iprodione, parathion and procloraz. Rural residents in the Western Cape especially those living on farms including children are highly exposed occupationally and non-occupationally to pesticides through a number of routes. There are, however, few epidemiological studies that have investigated male reproductive health effects in humans consequent to environmental exposure to conventional agricultural pesticides and only two in South Africa. There are no longitudinal studies.
Conclusions More epidemiological studies, especially longitudinal investigations of specific pesticides in highly exposed workers and residents especially boys in settings such as the Western Cape in South Africa are required.

94 MALE HORMONAL PROFILE TO WORKERS EXPOSED TO TOLUENE IN A PACKAGING PLANT INDUSTRIAL IN MEXICO CITY

[1]G M F Miranda, [2]M P P R Paz-Roman, [3]G A M Aguilar-Madrid, [3]C A J P Juarez-Perez, [3]L B A Basurto-Acevedo, [3]L H G Haro-Garcia. *[1]PEMEX, Venustiano Carranza, DF, Mexico; [2]UNAM, Mexico, DF, Mexico; [3]IMSS, Mexico, DF, Mexico*

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