

0265 **DIMENSIONAL STRUCTURE OF THE JOB CONTENT QUESTIONNAIRE-JCQ AMONG HEALTH WORKERS OF BAHIA, BRAZIL**

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**Objectives** The aim of this study was to evaluate the dimensions of the JCQ among healthcare workers

**Method** A validation study with 3055 health workers was conducted. Factor analysis was employed through the principal components method. For extraction of factors, parallel analysis was performed using the Monte-Carlo simulation. For the technique of factor analysis, the verification of the sampling adequacy of the studies was performed by measuring the Kaiser-Meyer-Olkin (KMO). The PROMAX oblique rotation was applied for a better understanding of the values, assuming mutual correlation between the factors.

**Results** There was adequacy of the data for factor analysis according to the criteria of the KMO test (0.93). Four dimensions, which together explained 100% of the total variance, were extracted. The first dimension was composed of physical and emotional demands by means of the social support from coworkers. The second dimension represented items of control over work; the third dimension consisted of items of social support of the headship; the fourth dimension presented items regarding the use of skills.

**Conclusions** The number and dimensions of the frame captured by an instrument depend on the set of subjective symptoms to be investigated. In spite of the technical/methodological advances of analysis, there are still limitations in the use of instruments to measure subjective constructs in the occupational sphere.

0267 **PHYSIOLOGICAL ASPECTS OF LOAD CARRIAGE ACTIVITY DONE BY FOOD GRAIN HANDLING WORKERS IN INDIA**

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**Objectives** There are many rice mills and food grain depots where a large number of workers are engaged for processing paddy and rice, storage and distribution. Lifting, carrying and depositing sacs of food grain are the major jobs carried out by these workers. The present study was undertaken to evaluate the workers with respect to the workload, energy expenditure and musculoskeletal pain or discomfort resulting out of work practice.

**Method** Present study was conducted at Rudrapur city in Uttarakhand state of India. Representative samples of 40 rice mill workers engaged under Food Corporation of India were taken for study. Descriptive cum experimental research design were chosen to find work profile, for identification of risks factors at work places and to assess the physiological workload of the rice mill workers.

**Results** Average peak heart rate of the rice mill workers suggested the workload as moderate to very heavy. Their average energy expenditure values also indicated the workload as moderate to heavy. Musculoskeletal pain or discomfort was maximally reported in knee by 64.5% depot workers whereas low back and knee was reported by 35.5% rice mill workers. Besides the

weight of the sac, awkward postures like bending and twisting of trunk adopted frequently causes the problem.

**Conclusions** A significant problem associated with manual handling activities involving loading and unloading tasks is the fact that they are the primary cause of overexertion injuries. Further studies and rationalisation of work method may improve the health and safety of the workers.

0268 **IS PERCEIVED STRESS RELATED TO AN INCREASE IN SALIVARY CORTISOL**

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**Objectives** Perceived Stress is a suspected cause of many psychological and physical illnesses. However it remains to be discovered what physiological measures are involved. While it is widely known that acute stress leads to an increase in cortisol levels, the findings in prolonged stress research have not been consistent. This study explores the association between Perceived Stress and salivary cortisol levels using the largest population ever used in this field.

**Method** 4467 public employees in the PRISME cohort in 2007. 3217 of those did a similar follow up study in 2009.

A 4-item Danish version of the PSS-scale was used to measure perceived stress and operationalized as the average score. Salivary cortisol samples were taken at 30 min post awakening and at 8 pm. A mean value of cortisol was calculated. In our analysis we applied logarithmic transformation to the concentrations.

**Results** Linear regression analysis done for the association between PSS-score and salivary cortisol levels showed no significant association between the two. For cortisol mean the regression resulted in  $\beta = -0.005$  (CI: -0.036–0.026) in 2007 and -0.010 (CI: -0.047–0.028) in 2009. Cortisol morning analysis resulted in  $\beta = -0.013$  (CI: -0.050–0.023) in 2007 and  $\beta = -0.003$  (CI: -0.048–0.042) in 2009. Cortisol evening analysis resulted in  $\beta = -0.000$  (CI: -0.042–0.042) in 2007 and  $\beta = -0.007$  (CI: -0.047–0.061) in 2009.

**Conclusions** Overall this study does not provide any evidence that perceived stress is associated with salivary cortisol.

0269 **AN INTERNATIONAL HISTORICAL COHORT STUDY OF WORKERS IN THE HARD-METAL INDUSTRY: MID-STUDY EPIDEMIOLOGY UPDATE**

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**Objectives** A multinational occupational epidemiological study of workers exposed to tungsten carbide with a cobalt binder (WCCo) is underway in the US and Europe. The epidemiological component will investigate total and cause-specific mortality risks and exposure-response relationships with focus on lung

cancer. We designed the study to overcome certain limitations of earlier epidemiology studies.

**Method** The epidemiological and exposure assessment components of the study are coordinated by the University of Pittsburgh and the University of Illinois at Chicago, respectively. Our cohort comprises 12 manufacturing sites in the US and nine sites in Europe, and represents three companies, five countries (US, Austria, Germany, Sweden and UK) and multiple manufacturing processes and exposures. Statistical analyses will adjust external and internal mortality rate comparisons for potential co-exposures, including smoking histories obtained via a nested case-control study. The study will include separate and pooled analyses.

**Results** Our data collection effort identified two additional US study sites and additional subjects in the German and Swedish sites. Accordingly, our originally projected cohort size of 21 000 subjects has increased to 35 508 (US-7005; Europe-33 508). Vital status tracing, cause of death determination and identification of subjects for the nested case-control study are ongoing.

**Conclusions** Our study will enable country-specific and pooled analyses of mortality rates and exposure-response relationships among workers from 21 study sites and the opportunity to compare and contrast findings across countries, sites, companies and/or manufacturing processes and exposures involved in this global industry. We will detail progress to date on the US and combined epidemiological component of the study.

#### 0270 MENTAL DISTRESS IN RELATION TO PSYCHOSOCIAL FACTORS AT WORK AMONG FAMILY PHYSICIANS

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**Objectives** The study investigated the associations between mental health and job demands, control and social support at work and controlled for physical inactivity, sense of coherence and psychosocial factors in everyday life in a representative sample of Lithuanian family physicians.

**Method** With a response rate 89.2%, a total of 323 family physicians filled in anonymous questionnaire on mental distress (GHQ-12) and psychosocial stressors at work and in everyday life, personal health resources (sense of coherence) and demographic variables. The statistical software SPSS 14.0 for Windows was used in the analysis. Associations were tested by way of multivariate logistic regression analysis.

**Results** The prevalence of mental distress was 40.2% among family physicians and was positively associated with high job demands ( $p < 0.001$ ), low job control ( $p = 0.009$ ) and low social support at work ( $p = 0.009$ ). In a fully adjusted model controlling for age, gender, physical inactivity, sense of coherence, self-rated health, social relations and work-family interface, the adjusted OR for high job demands remained statistically significant with the OR=2.40; 1.40–4.12, but for low job control it was 1.27; 95% CI 0.74–2.19, and for low social support at work - insignificant.

**Conclusions** Nearly half of the family physicians were mentally distressed. Psychosocial job characteristics, especially high job demands play an important role in poor mental health, as well as social relations, self-rated health and low sense of coherence. Health promotion strategies should be applied for this important occupation to diminish mental distress.

#### 0271 THE CHANGE OF OXIDATIVE DNA DAMAGE IN NURSES WITH SHIFT WORK

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**Objectives** To investigate the change of concentration of 8-hydroxy-2'-deoxyguanosine (8-OHdG) at different work time among shift work nurses.

**Method** A total of 51 nurses with regulated rotation shift in medical centre or district hospital. Urinary concentrations of 8-OHdG, a biomarker of oxidative DNA damage, were measured. According the rotation schedule, like 1–2 days off - 2day shifts-2evening shifts- 2night shifts, the urine was collected at 4 time points. The 2 workdays on the last day shift and last night shift of a shift course were selected and urine was collected at work before and finished work after on assigned workday, separately.

**Results** The urinary concentrations of 8-OHdG at work after was significantly higher than at work before on the end of day shift (paired t test,  $p$ -value: 0.0363). The concentrations of 8-OHdG between at work after and work before on the end of night shift were not significantly different (paired t test,  $p$ -value: 0.1673). Besides, there was no difference on the concentrations of 8-OHdG at work after between a day shift and a night shift. We also found that the change of concentrations of 8-OHdG at a day shift was significantly different on work institution ( $p$ -value: 0.0009).

**Conclusions** We found the more change of concentration of 8-OHdG was at a day shift work then a night shift work, even night shift was as a risk factor of health.

Therefore, the change of concentration of 8-OHdG was as a biomarker to respond the workload exposure.

#### 0272 RISK OF LYMPHOMA AND OCCUPATIONAL EXPOSURE TO ORGANIC DUST

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**Objectives** A medical history of allergy, and particularly asthma, has been associated with an inverse risk of non-Hodgkin's lymphoma (NHL). As occupational exposure to specific organic dusts is a risk factor for asthma, we explored risk of lymphoma and its major subtypes in relation to organic dusts.

**Method** In 1999–2004, 324 incident lymphoma cases and 464 population controls, frequency matched to cases by age and gender, were recruited among adult residents in Sardinia, Italy. Expert industrial hygienists assessed exposure to organic dust overall, and specific organic dusts. The odds ratio (OR) for lymphoma (all types) and its major subtypes, and its 95% confidence interval, was calculated using unconditional logistic regression.

**Results** Exposure to organic dust in general was inversely associated with risk of lymphoma (all types) (OR = 0.7, 95% CI 0.4–1.2), with a declining trend by duration and level of exposure. The inverse association was apparently more pronounced for