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.

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, handling, and dispatching of food grain. These workers are exposed to a variety of physical and mental stresses. The aim of this study was to evaluate the physiological aspects of load carriage activity.

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.

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-33,503). 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.

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

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10.1136/oemed-2014-102362.304

**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 - 2-day shifts–evening shifts 2-night 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 work before on the end of day shift (paired t test, p-value: 0.0363). The concentrations of 8-OHdG between at work and work before on the end of nigh 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.