

to obtain mortality and cancer registration data for the cohort. The intention is to produce SMRs and SIRs and, where sufficient number of events allow, subanalyses including by cumulative exposure will be undertaken.

**Results & Conclusion** The international study will be statistically the most powerful study to have examined the carcinogenicity of styrene to date. As well as cohorts from the UK, the updated study will include cohorts from Denmark, Finland, Italy, Norway, Sweden and the USA.

## Shift work

### 0-205 NIGHT SHIFT WORK AND SLEEP DEPRIVATION IN RELATION TO VACCINE INDUCED SARS-COV-2 ANTIBODY RESPONSES IN A GENERAL POPULATION COHORT (COVICAT STUDY)

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**Introduction** Night shift work and sleep deprivation have been associated with lower antibody responses induced by vaccination against seasonal influenza, meningitis-C and hepatitis A. We examined the association of exposure to night shift work and sleep deprivation with antibody levels induced by COVID-19 vaccines.

**Materials and Methods** This study was nested in an ongoing population-based cohort in Catalonia, Spain. Blood samples were collected in 2021 from a random subsample of 1,090 participants. We measured 3 immunoglobulins (IgM, IgG, and IgA antibodies against 5 SARS-CoV-2 antigens, including RBD (receptor-binding domain), S (spike-protein), and S2 (subunit 2 from spike-protein). We collected data on night shift work (current night work, frequency, duration) and sleep metrics (sleep duration, sleep problems, changes in sleep duration since the beginning of the pandemic). We adjusted linear regression estimates (% change) for individual- and area-level covariates, time since vaccination, vaccine doses and type. Analyses were restricted to participants without previous COVID-19 infection (N=639). Infection status was defined using questionnaires, SARS-CoV-2 test registry and serology information (seropositivity to N-antigen).

**Results** Participants' mean age was 57.6 years, 57% were female, 73% received 2 vaccine doses (42% Pfizer, 44% Astra-Zeneca), 5.8% were current night workers and 36.5% of the sample reported sleep problems. No overall association pattern was observed between current night work and vaccine-induced antibody responses. IgG levels tended to be lower (differences in the range of 3.6–53.7%) among night workers, compared to day workers but differences were not statistically significant. Participants with short sleep (<=6 hours) had significantly lower IgM antibody levels compared to those that reported 7 hours of sleep. No clear pattern was observed with sleep quality.

**Conclusions** Further research in larger studies is needed to evaluate the influence of night shift work and impaired sleep on vaccine induced immune responses and risk of breakthrough infections.

## Musculoskeletal disorders

### 0-21 ASSOCIATION BETWEEN WORK ABILITY INDEX AND LOW BACK PAIN AMONG PRINTING WORKERS

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**Introduction and Objectives** Low back pain is one of the most common musculoskeletal disorders and important causes of early retirement due to disability in employees in industrialized and developing countries. The present study aimed to determine the work ability index and its relationship with low back pain among employees of Tehran offset printing industry.

**Methods** A cross-sectional study was performed within six months in 2020. Data from 220 employers working in offset printing industry were collected through survey questionnaire including Nordic Musculoskeletal Questionnaires (NMQ) and Work Ability Index (WAI). Data analysis was performed using SPSS software version 24 with a significance level of P-Value <0.05.

**Results** In generally, more than half of the participants (62.5%) indicated high symptoms of Low Back Pain. Also, the results of Pearson correlation test showed that there is a positive and significant correlation between level of work ability and severity of low back pain (p<0.001).

**Conclusion** Job analysis and identification and correction of work procedures that put the body position during work in hard and unconventional conditions and impose a lot of workloads on the back area can be effective in preventing low back pain in work environments.

## Exposure assessment

### 0-212 APPLYING SENSORS FOR ASSESSMENT OF OCCUPATIONAL EXPOSURES IN EPIDEMIOLOGICAL STUDIES: EVALUATION OF SENSORS AND PRELIMINARY FINDINGS

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**Introduction** Low cost sensors have potential for occupational exposure assessment by providing information on exposure profiles rather than time weighted averages (TWA). High resolution exposure data may advance our knowledge on how exposure patterns may affect (acute) health. We aimed to