

0204 **MESOAMERICAN NEPHROPATHY IN COSTA RICA: GEOGRAPHICAL DISTRIBUTION AND TIME TRENDS OF CHRONIC KIDNEY DISEASE MORTALITY BETWEEN 1970 AND 2012**

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Objectives To characterise geographical distribution and time trends of chronic kidney disease (CKD) mortality in the context of the epidemic of Mesoamerican nephropathy (MeN), likely related to occupational heat stress and other, unknown, factors.

Method Vital statistics (1970–2012) provided deaths from CKD and unspecified renal failure. Data of four censuses were extrapolated to derive person-years by sex and 10-year age groups for the seven provinces and 81 counties. SMRs were compared for three time periods between provinces and between counties, with national rates as reference. To assess time trends, age-specific and age-standardised mortality rates were computed for 5-year periods.

Results During 1970–2012, 3843 men and 2452 women died from CKD. In the Guanacaste province, the SMR for 1997–2012 was four-fold in men and two-fold in women. In Guanacaste, CKD mortality increased from the mid-1970s in men, and mid-1980s in women. Age-standardised rates per 100.000 in men aged ≥ 30 increased from 5.8 in the early seventies to 75.0 in 2007–2012, compared to 5.9 to 16.2 in the rest of Costa Rica. For women, rates increased from 4.5 to 20.7 in Guanacaste versus 4.2 to 9.7 in the rest of the country. Within Guanacaste, there was marked spatial variation in mortality between counties, with patterns being consistent between time periods but different for men and women.

Conclusions Guanacaste is a heterogeneous CKD “hot spot,” affecting mostly men, but to lesser extent also women. CKD seemed high already four decades ago in the province. These findings are pertinent for etiologic research.

0205 **LUNG CANCER RISK AMONG BRICKLAYERS IN A POOLED ANALYSIS OF CASE-CONTROL STUDIES**

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Objectives Bricklayers may be exposed to several lung carcinogens, including crystalline silica and asbestos. Previous studies reported an excess of lung cancer among these workers. We examined lung cancer risk among bricklayers within SYNERGY, a large international pooled analysis of case-control studies on lung cancer and the joint effects of occupational carcinogens (<http://SYNERGY.iarc.fr>).

Method The pooled dataset included 15 608 cases and 18 531 controls from 22 centres in Europe, Canada, Hong Kong, and New Zealand. For men ever employed as bricklayers we

estimated odds ratios (ORs) and 95% confidence intervals (CIs) adjusted for study centre, age, lifetime cigarette smoking history, and employment in occupations with exposures to known or suspected lung carcinogens.

Results We found 1322 cases and 1004 controls who had ever worked as bricklayers (OR: 1.35; 95% CI: 1.22–1.49). There was a clear positive trend with length of employment ($P < 0.0001$). The relative risk was higher for squamous (OR: 1.44, 95% CI: 1.28–1.63, 578 cases) and small cell carcinomas (OR: 1.60, 95% CI: 1.36–1.87, 248 cases), than for adenocarcinoma (OR: 1.14, 95% CI: 0.98–1.32, 289 cases) (P -value for homogeneity: 0.0007). ORs were still elevated after additional adjustment for education and in analyses using blue collar workers as referents.

Conclusions This study provided additional evidence of increased lung cancer risk in bricklayers. Although non-causal explanations cannot be completely ruled out, the association is plausible in view of the potential for exposure to several carcinogens, notably crystalline silica and to a lesser extent asbestos.

0207 **PRE-EXISTING HEALTH CONDITIONS AND JOB CHOICE AMONG YOUNG ADULTS IN THE ALSPAC COHORT**

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Objectives “Traditional” occupational health research has focused on hazard identification in the work environment and the effects on health. Young adults represent 13% of the UK working population, yet little is known about whether pre-existing conditions are associated with their job choice.

Method The study was based on data from the Avon Longitudinal Study of Parents and Children (ALSPAC). At 16 and 18 years, participants were asked to report their current employment. Information on pre-existing asthma was obtained from previous questionnaires. Multivariate analysis was applied to determine the relationship between previous illness and current occupations.

Results A total of 5087 and 3347 participants responded to the 16 and 18 years questionnaires, respectively. At 16, 4.3% left full time education for employment and 26.0% at 18. Perceived overall health was slightly better among those still in education at 16 years, although such difference was no longer observed at 18. Those with a previous diagnosis of asthma were less likely to be employed in jobs associated with high risk of adult onset asthma (OR = 0.78; 95% CI 0.59–1.02). On the other hand, those who reported to have asthma at 16 but not at 18 were more likely to be engaged in high risk jobs (OR = 2.20; 1.35–3.58).

Conclusions Results of this prospective study suggest a possible “healthy hire effect” among young people with asthma, although such avoidance might be modulated by the time of diagnosis.

0211 **SOLAR ULTRAVIOLET RADIATION (UVR) EXPOSURE LEVELS AND SUN PROTECTION BEHAVIOURS IN OUTDOOR WORKERS IN BRITISH COLUMBIA, CANADA**

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Objectives The goal of this study was to measure outdoor workers' exposure to solar UVR in a Canadian setting, and to examine their sun protection behaviours at work and leisure.

Method Participants were recruited via trade unions and companies with outdoor operations. Workers wore an electronic dosimeter that measured UVR intensity once/minute for 5 working days and completed a questionnaire on skin cancer risk factors, sun protection behaviours, and job characteristics. Dosimeter data was converted to UVIndex and Standard Erythral Dose (SED), an indicator for the potential for sunburn.

Results Seventy-eight outdoor workers were recruited. The workers were largely male (95%), with a mean age of 38 years. Workers that reported the most outdoor working hours had the highest measured UVR exposure (mean SED of 2.6, >8 times the level of those reporting ≥ 1 outdoor hour). Workers who reported the most outdoor hours at work also reported the most outdoor hours at leisure. Over 70% of workers reported using sleeved shirts, hats, and sunglasses at work 'often or always'. Sunscreen and shade-seeking were low, with 29% and 8% reporting these behaviours at work, respectively. Despite reasonable protective behaviours, 70% of workers reported ≥ 1 sunburn last summer; this climbed to 80% among those who worked outside all day.

Conclusions Outdoor workers in Canada are at risk of high solar UVR exposure during the summer. They participate selectively in sun protective behaviours, opting more often for clothing protection than sunscreen or shade protection. Most experience acute damage from exposure (i.e. sunburn) despite attempting to protect themselves.

0212 EPIDEMIOLOGICAL SURVEILLANCE OF WORK-RELATED INJURIES IN NORWAY: AN ENDURING CHALLENGE

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Objectives Data on work-related injury is critical in devising preventive strategies. In Norway, there are different systems that yield epidemiological data on work-related injuries, both fatal and non-fatal. In this study we attempt to profile the multitude of challenges for surveillance of work-related injuries.

Method We collated information from several Norwegian studies that evaluated the different systems that yield epidemiological data on work-related injuries. These studies identified many challenges with regards to injury data collected by different institutions like the Labour Inspection, Public Health Institute, Registry of Private Insurance Companies and Hospital Based Registry. Several public documents that concern national strategies and policies for improving work-related injury surveillance in Norway were also examined.

Results None of the injury surveillance systems provided an accurate representation of work-related injuries. However, it is fair to submit that surveillance of work-related fatal injuries has improved in the last few years. Unfortunately, the same cannot be said about non-fatal injuries attributed to work. Our findings indicate an unintentional, yet substantial breakdown of the work-related injury surveillance infrastructure. This breakdown could be attributed to among others, underreporting,

fragmentation of workers occupational safety and health responsibility, lack of coordination between the national agencies, and inapt use of available technologies.

Conclusions Significant gains have been made in the past few years with regards to fatal injury surveillance. However, the surveillance of non-fatal injuries remains noticeably tenuous. Lack of reliable surveillance data on work-related injuries remains an enduring challenge for our preventive efforts.

0215 ACROMIOCLAVICULAR JOINT DEGENERATION IN RELATION TO CUMULATIVE OCCUPATIONAL MECHANICAL EXPOSURES: A MAGNETIC RESONANCE IMAGING STUDY

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Objectives Little is known about the influence of occupational mechanical shoulder exposures on the development of acromioclavicular joint degeneration. We aimed to evaluate if arm elevation >90°, force requirements, and repetitive work are associated with acromioclavicular joint degeneration as assessed by magnetic resonance imaging (MRI).

Method The study population participated in a study in 2000–2001, where we performed MRI examinations of the right shoulder of 136 right-handed, 40–50 year old men from a historical cohort of machinists, car mechanics, and house painters. In 2011–2012, we re-examined these men. Two radiologists evaluated the images, blinded to exposures status and symptoms. Acromioclavicular joint degeneration was registered in case of subchondral irregularities, joint capsule swelling with adjacent bone marrow oedema and/or subacromial spurs. Cumulative exposures since baseline were obtained by combining self-reported work histories with a job exposure matrix based on expert judgement. We applied multivariable logistic regression adjusted for measured BMI, questionnaire information on smoking, and age.

Results Of the original population, 129 could be invited, and 90 (70%) participated. Their mean age was 55.1 years (SD 2.8, range 50–60). The prevalence of acromioclavicular joint degeneration was 64% against 43% at baseline. Prevalent MRI findings showed a relation to forceful work: OR 4.0 (95% CI 1.3–12.1). Incident MRI findings were also related to forceful work, without reaching significance. Arm elevation and repetitive work were not associated with the outcome.

Conclusions Forceful work seems to be a risk factor for acromioclavicular joint degeneration as assessed by MRI at 50–60 years of age.

0216 CONTROLLING HEALTHY WORKER SURVIVOR BIAS OF THE RADON-LUNG CANCER DOSE-RESPONSE IN A COHORT OF URANIUM MINERS

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Objectives Radon is a leading cause of lung cancer and is estimated to cause nearly 20 000 deaths per year in the United