

351 CHANGE IN EMPLOYABILITY FOLLOWING BARIATRIC SURGERY FOR MORBID OBESITY

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Objectives This is a pilot report of the first 75 respondents undertaken as part of a larger study to assess if there is improvement in employability after bariatric surgery.

Methods An assessment of 75 patients who had undergone bariatric surgery between January 2005 and Dec 2008. Case note data extraction and a patient questionnaire was used to collect demographic data, pre-op and post-op morbidity, employment status and benefits being received.

Results 59 (79%) of the respondents were female. The average age at the time of the bariatric surgery was 44 years. The average pre-operative BMI was 49 and post-operatively 38 ($p < 0.05$); mean duration since operation of 5.6 years. Pre-operatively there was 151 obesity related co-morbidities and 63 (42%) post-operatively ($p < 0.05$). Total number employed pre and post operative was 53 (71%) and 47 (63%) respectively (non-significant). In the group employed pre-operatively, 39 (74%) remained employed post-operatively, 6 (11%) became unemployed sick/disabled, 4 (8%) became economically inactive due to looking after family/care/voluntary work, 2 (4%) retired, 1 (2%) became a student and 1 (2%) was unemployed but seeking work. In the pre-operative group who were un-employed sick/disabled, 8 (73%) remained sick/disabled, 2 (20%) were now employed and 1 (9%) was unemployed but seeking work. A total of 59 state benefits were being received at the pre-operative stage and this only decreased a small amount to 56 ($p = 0.38$).

Conclusions The study suggests that despite improvements in BMI and co-morbidity there were non-significant changes in post-operative employment, the majority of the unemployed-sick disabled pre-operatively remaining unemployed sick/disabled post-operatively and there was a negligible decrease in benefits being received. An intervention study on the impact of vocational rehabilitation on return to work post bariatric surgery is needed to identify the rate of employment which can be improved by such action.

Session: 25. Shift work and health

352 NIGHT WORK AND RISK OF HORMONE RECEPTOR-DEFINED BREAST CANCER

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Objectives In 2007, the International Agency for Research on Cancer categorised shift-work that involves circadian disruption as probably carcinogenic to humans. oestrogen and progesterone are believed to play a central role in the development of breast cancer. Although several plausible biologic mechanisms of a relationship between night work and breast cancer have been postulated, the particular breast cancer subgroups have not been adequately examined. The objective of this study was to investigate whether night work is related to breast cancer receptor status.

Methods The effect of night work on the risk of oestrogen receptor- (ER) and progesterone receptor- (PR) defined breast

cancers was evaluated in 513 nurses, diagnosed between 1996 and 2007, and 757 frequency-matched controls, all selected from a cohort of Norwegian nurses, using polytomous logistic regression. Odds ratios for the exposure “duration of work with minimum 6 consecutive night shifts” were compared for tumour subgroups with respect to the common control group.

Results Statistically significant associations were observed between the highest exposure to night work (≥ 5 years with ≥ 6 consecutive night shifts) and breast cancer, the largest increase observed for PR+ tumours (odds ratio: 2.4, 95% confidence interval: 1.3, 4.3, P -trend = 0.01). No significant odds ratio heterogeneity was found for the night work variable between the different receptor-defined tumour subgroups when using 4 exposure categories. When dichotomising the exposure variable (ever/never worked ≥ 6 consecutive night shifts), a borderline statistically significant heterogeneity was seen between PR+ and PR- tumours in postmenopausal women.

Conclusions The association observed between long duration with many consecutive night shifts and PR+ cancers, suggests that progesterone may play an important role in the detrimental effects of night work.

353 NIGHT-SHIFT WORK AND RISK OF BREAST CANCER: A META-ANALYSIS

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In 2007, the International Agency for Research on Cancer classified shift work that involved circadian disruption as probably being carcinogenic to human breast cancer (Group 2A), which bases on limited epidemiological evidence. Five relevant epidemiological studies have been published since 2007. However, a systematic and quantitative assessment of published studies is not available.

Three cohort and seven case-control studies were identified from the MEDLINE database from 1970 to August 2012 without restrictions and by reviewing reference lists from retrieved articles. Studies that reported relative risk estimates with 95% confidence intervals (CIs) for the associations of interest were included. Except the duration of night-shift, available data of night-shift frequency and cumulative night-shift were also extracted from these studies. Summary estimates of association were obtained using the fix or random-effects models.

The pooled relative risk (RR) per 5-year of night-shift was 1.05 [95% confidence interval (CI): 0.87–1.28] for night-shift work duration. Cumulative night-shift was positively associated with breast cancer risk (RR = 1.13 per 500 night-shift; 95% CI = 1.07–1.21; four studies), night-shift frequency was not associated with breast cancer risk (RR = 1.01 3-shift/month, 95% CI = 0.99–1.03; three studies).

Findings from this meta-analysis indicate that cumulative night-shift is positively associated with breast cancer risk, although the night-shift work duration didn't associate with breast cancer risk. Night-shift frequency is not associated with breast cancer risk. Further studies are needed to confirm these findings.

354 CORRELATIONS BETWEEN NIGHT SHIFT WORK AND THE DEVELOPMENT OF BREAST CANCER: SYSTEMATIC REVIEW

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Objective Night work and shift work are among the most prevalent occupational exposures. It is postulated that night work can result in a higher risk of breast cancer. There is uncertainty in evidence from previous research to implicate night work in causing breast cancer. We did a systematic review to assess the strength of association between exposure to night shift work and breast cancer incidence.

Methods Multiple databases and non-electronic sources were systematically searched to identify case control and cohort studies involving females in night shift work. The comparison was non-shift or day work and the outcome was incident breast cancer. We assessed studies for risk of bias using a content specific piloted checklist on 10 domains of interest. We performed random effects meta-analysis and meta-regressions of study-specific incremental relative risks to determine the risk of cancer associated with a 5 year and 300 night shift increases in exposure. Sensitivity analyses were performed to test model assumptions.

Results We included 16 studies (12 case control and four cohorts). Ten studies were conducted in Western Europe, four in USA and two in China. Almost half of the studies were on nurses. None of the studies were at a low risk of bias however five were at a moderate risk of bias. Studies with appropriate exposure assessment were lacking, with only one measuring exposure in an objective way prospectively. Twelve studies (nine case controls and three cohorts) provided data for the random effects meta-regression of dose response using generalised least square estimates.

Conclusions Several new studies have become available since the last review in 2008. However, exposure assessment in existing studies is still far from optimal. Results of the meta-analysis will be presented at the conference.

355 NIGHT SHIFT WORK AND PROSTATE CANCER RISK IN A POPULATION-BASED CASE-CONTROL STUDY IN SPAIN

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Objectives Recent epidemiologic and animal data indicate that night work may increase the risk of cancer and specifically breast cancer. There is limited evidence on other hormone related cancers. We evaluated prostate cancer risk and night shift work in a population based case-control study in Spain, the MCC-Spain.

Methods Incident prostate cancer cases (n = 1117) and randomly selected population controls (n = 1165) were enrolled in 7 regions of Spain. Lifetime occupational history including details on shift work, and information on lifestyle factors were assessed by face-to-face interviews. We estimated the risk of different shift profiles using unconditional logistic regression models adjusting for a wide range of potential confounders.

Results Among the 2282 subjects, 12% reported having ever worked in permanent night shift and 17% in rotating night shift

for ≥ 1 year. Having ever worked in night work (including permanent and rotating) was associated with a small and non-significant increased risk for prostate cancer (Odds Ratio (OR) 1.15, 95%CI 0.94–1.39) compared to day workers, after adjusting for age, centre, educational level and family history. This small increase was due to an increase in the ORs for rotating night shift workers (OR = 1.26, 95%CI 0.99–1.63). ORs were slightly increased for workers with more than 30 years permanent night work (OR = 1.22) and those in rotating shift (OR = 1.34). Results will be presented for different shift profiles and lifetime cumulative exposure.

Conclusions In this large population based study we did not find an overall clear increase in prostate cancer risk associated with permanent or rotating night work. The analysis is ongoing and, at the conference, results will be presented for more detailed exposure classifications of night shift.

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Session: 26. Exposure assessment methods II

356 NATIONAL ESTIMATES OF THE PREVALENCE OF OCCUPATIONAL CARCINOGEN EXPOSURE

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Objectives To estimate the burden of occupationally-related cancer, the prevalence of occupational exposure to carcinogens is necessary, and this information is not available in most countries.

Methods We surveyed 5023 Australian workers aged 18 to 65 to determine the prevalence of exposure to 38 occupational carcinogens. We developed job specific modules (JSMs) for 57 jobs and industries with questions on the determinants of exposure to the 38 agents and the use of control measures. The answers to the questions were linked by algorithms to assessments of probability and level of exposure within a web-based application (OccIDEAS). Interviewers called randomly-selected phone numbers and asked consenting participants about their current job. If that job had any likelihood of exposure to any of the 38 agents, the interviewer administered the most relevant JSM for that job. The algorithms were then run and the automatic assessments were reviewed by the project co-ordinator, with more complex assessments being referred to occupational hygienists for review.

Results About half of the subjects (n = 2498) were in a job with potential exposure. The most common jobs were construction workers, drivers and health workers. 40% of subjects were exposed to at least one carcinogen, with the most common exposures being solar UV, diesel exhaust and environmental tobacco smoke. We will also present profiles of exposure by industry. For example, almost all carpenters are exposed to wood dust at a high level, while about 80% of painters are exposed to wood dust, half of them at a high level and half at a low level.

Conclusions The prevalence of exposure to carcinogens at work is quite high and a survey such as ours is useful in pinpointing areas where control of exposure is not adequate. Our findings can be used in calculating the burden of disease from occupational exposures.