

metrics of night work (e.g. duration, lifetime mean no. nights per month and cumulative no. nights) and risk of breast cancer, and whether the association was dependent on age or change in body weight.

Methods Overall, 55,350 female nurses completed extensive questions on shift work and were followed for incident breast cancer. Cox regression yielded multivariable-adjusted breast cancer incidence hazard ratios (HRs) and 95% confidence intervals (CIs) for night work groups vs never night work, and Wald tests were used to assess potential interaction with age and change in body weight.

Results During 5.5 years of follow-up, 687 cases of incident invasive breast cancer were registered. The age adjusted HRs were 1.26 (95% CI 1.01–1.57) for ever vs never night work, and 1.32 (95% CI 1.01–1.74) for the tertile with the greatest cumulative no. nights (≥ 991 nights) vs never night work. No trends were observed with increasing levels of different exposure metrics. There was a statistically significant interaction between night work and weight gain on risk of breast cancer; among women with 12–18 kg weight gain since age 18, the HR for ever vs never night work was 2.45 (95% CI 1.28 to 4.68).

Conclusion Higher duration, mean no. nights per month and cumulative no. nights were associated with a moderately increased risk of invasive breast cancer. Particularly for night shift workers with weight gain of 12–18 kg, the risk was increased. Our results point towards a potential interaction between change in body weight and night shift work on breast cancer risk.

Specific Occupations

0-57

ALUMINUM DUST EXPOSURE AND RISK OF NEURODEGENERATIVE DISEASES IN A COHORT OF MALE MINERS IN ONTARIO, CANADA

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Introduction McIntyre Powder (MP), a fine-sized aluminum and aluminum compound powder, was administered to Ontario miners from 1943 to 1979 as purported prophylaxis against silicosis. Aluminum has long been suspected of having a role in the development of neurological diseases. However, very few studies have examined the risk of neurological disease among miners with exposure to aluminum dust, and previous findings were inconclusive.

Objectives We estimated associations between respirable aluminum exposure through MP and neurological disease in a retrospective cohort of mining workers from Ontario, Canada. Outcomes included Alzheimer's disease, Alzheimer's with other dementias, Parkinson's disease, parkinsonism, and motor neuron disease.

Methods The cohort was created by linking a database of mining workers' work history to health care records. This analysis included 36,826 male miners potentially exposed to MP between 1943 and 1979, followed up for disease diagnosis between 1992 and 2018. Exposure was assessed using two approaches, self-reported and historical records. Neurological diseases were ascertained using physician billing and hospital discharge records. Poisson regression models were used to

estimate associations between MP exposure and neurological outcomes using incidence rate ratios and 95% confidence intervals (RR, 95% CI).

Results Exposure to self-reported MP was associated with an elevated incidence rate of Parkinson's disease (RR 1.34, 95% CI: 1.14, 1.57). The rate of Parkinson's disease appeared to increase with the duration of exposure assessed by historical records. Ever-exposure to MP was positively associated with an elevated rate of Alzheimer's with other dementias (RR 1.12, 95% CI 1.06, 1.19), but not Alzheimer's disease alone.

Conclusion This study found that miners who were exposed to respirable aluminum, as McIntyre Powder, had elevated rates of Parkinson's disease. The rate of Parkinson's disease appeared to increase with the duration of exposure assessed by historical records.

0-105

MATERNAL OCCUPATION AS A NAIL TECHNICIAN OR HAIRDRESSER DURING PREGNANCY AND BIRTH DEFECTS, NATIONAL BIRTH DEFECTS PREVENTION STUDY, 1997–2011

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Introduction Nail technicians and hairdressers may be exposed to products containing chemicals with potential reproductive effects. While studies have examined birth defects in children of cosmetologists and hairdressers, nail technician work has not been individually evaluated as a risk factor for birth defects.

Objectives We investigated associations between maternal occupation as a nail technician or hairdresser during pregnancy (versus non-cosmetologist) and selected birth defects.

Methods We analyzed population-based case-control data from the multisite National Birth Defects Prevention Study, 1997–2011. Cases were fetuses or infants with major structural birth defects; controls were liveborn infants without major birth defects. For 31,652 case and 11,613 control mothers, expert raters classified self-reported maternal jobs into discrete categories as nail technician, hairdresser, combination nail technician-hairdresser, other cosmetologist, or non-cosmetologist. We used logistic regression to calculate odds ratios (ORs) and 95% confidence intervals (CIs) for associations between occupation during the first trimester of pregnancy and birth defect type, controlling for age, smoking, education, and race/ethnicity.

Results Sixty-one mothers worked as nail technicians, 196 as hairdressers, 39 as combination nail technician-hairdressers, and 42,810 as non-cosmetologists during pregnancy. Strongest associations among nail technicians included multiple congenital heart defect (CHD) groups: any CHD (OR=2.7; CI: 1.3–5.9); conotruncal (OR=3.0; CI: 1.0–8.8) (Tetralogy of Fallot [OR=3.5; CI: 1.0–12.9]); right ventricular outflow tract obstruction (OR=3.2; CI: 1.0–10.4); and septal (OR=3.1; CI: 1.2–8.1). Cleft lip with cleft palate was associated with occupation as a hairdresser (OR=2.0; CI: 1.1–3.7). All oral cleft groups were associated with combination nail technician-hairdresser work (ORs ranging from 4.2 to 5.3).

Conclusion Despite small samples, results suggest associations between maternal nail technician work during pregnancy and