

were done using STATA 13.1.

**Results** 669 variables were analysed, one of them is a compulsory field (occupation) and its completeness was very high ( $\geq 97\%$ ) for all cities. Araraquara had 71.63% variables with excellent completeness, but the occupational dermatosis file had 34.29% variables classified as very poor. Piracicaba showed 56.24% variables classified as excellent, and the occupational dermatosis and cancer files had 41.46% and 55.07% filled very poorly, respectively. Campinas had 40.80% variables filled as excellent, and more than 30% of variables were classified as poor or very poor in all files.

**Conclusion** There are differences in the completeness among the cities. Routine quality data assessments are crucial to ensure information quality used by health surveillance agents.

## Oral Presentation

### Burden of Disease

0282

#### QUANTIFYING THE IMPACT OF SHIFT WORK ON BREAST CANCER: RESULTS FROM THE BURDEN OF OCCUPATIONAL CANCER IN CANADA STUDY

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**Objectives** To estimate the proportion and number of annual incident female breast cancer cases in Canada attributed to shift work, a probable carcinogen.

**Methods** Levin's equation, which contains exposure and relative risk (RR) parameters, was used to calculate an attributable fraction (AF) range. The proportion of Canadian women who ever worked night or rotating shifts between 1961 and 2001 was retrospectively assessed based on data from the 1996 Survey of Labour and Income Dynamics. Low and high RR values, selected from a comprehensive review and quality assessment of recently published meta-analyses, were used to represent the probable association between shift work and breast cancer risk. The AF range calculated from these data were applied to 2011 Canadian breast cancer incidence statistics to obtain the number of attributable cases.

**Results** Approximately 11%, or 1.5 million, Canadian women ever worked night or rotating shifts during 1961–2001. Combined with low and high RR values of 1.15 and 1.40 from a high-quality meta-analysis published in 2013, the AF for breast cancer ranged from 2.04% to 5.23%. This corresponds to an estimated 460–1180 newly diagnosed breast cancers each year in Canada probably due to shift work. A large number, approximately 200–510, of these cancers occur among women in the health care and social assistance sector.

**Conclusions** The burden of occupational breast cancer in Canada could be substantial, reflecting the high prevalence of shift work and incidence of breast cancer. Although more research is needed on unravelling this probable association, preventive approaches should be widely considered.

## Oral Presentation

### Exposure Assessment

0283

#### EXAMINING EXPOSURE ASSESSMENT IN SHIFT WORK RESEARCH: A STUDY ON DEPRESSION AMONG NURSES

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**Objectives** Exposure misclassification is a common challenge in shift-work epidemiology. This study used a large national survey of Canadian nurses to examine shift-work's effects on depression; multiple exposure definitions with varying levels of specificity were applied to illustrate the impacts of exposure assessment.

**Methods** The analytic sample (n=11,450) was obtained from the 2005 National Survey of the Work and Health of Nurses. Logistic regression was used to assess relationships between shift-work and depression for high, moderate, and low specificity definitions of shift-work exposure. The low and moderate specificity definitions described shift timing (day/shift and day/evening/night/rotating, respectively); the high specificity definition described both shift timing (day/evening/night/rotating) and frequency of rotation (slow/medium/rapid/undefined). All model estimates were bootstrapped and adjusted for the potential confounding effects of sociodemographic, health, and work variables.

**Results** The high specificity shift-work definition model showed the strongest relationships, with increased odds of depression in the rapid rotating shift group (OR=1.51, 95% CI=0.91–2.51) and in the undefined rotating group (OR=1.67, CI=0.92–3.02), relative to the regular day group. Odds of depression were decreased in the slow rotating group (OR=0.79, 95% CI=0.57–1.08). For the low and moderate specificity exposure definition models, weak relationships were observed for all shift categories (OR range 0.95 to 0.99).

**Conclusions** This study's findings support associations between shift-work and depression, and the need for specific and hypothesis-driven exposure assessment in future studies to correctly identify exposure-response relationships and to appropriately target health interventions.

## Oral Presentation

### Exposure Assessment

0284

#### CAREX: AN OCCUPATIONAL EXPOSURE SURVEILLANCE SYSTEM OVERVIEW

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The CAREX system for occupational carcinogen exposure surveillance was developed by the Finnish Institute of Occupational Health in collaboration with IARC and European exposure experts in the early 1990s, and was shortly thereafter adapted for use in approximately 15 other countries in the European