1.59), 2.03 (1.007–4.13), respectively]. Males who slept ≥10 hours/night had a 40% increase in cancer incidence and 59% increase in cancer-caused mortality than males who slept 7–8 hours/night [HR (95% CI) = 1.40(1.04–1.88) and 1.59 (1.01–2.49), respectively]. There was an interaction effect between night-shift work of ≥20 years and sleep of ≥10 hours/night on cancer incidence (P_interaction = 0.027).

Conclusion For male subjects, both long night-shift work (≥20 years) and nighttime sleep duration (≥10 hours) were independently and jointly associated with higher cancer incidence.

**949 SHIFTWORK AND BREAST CANCER: EPIDEMIOLOGY, BURDEN, AND IMPLICATIONS FOR PREVENTION**

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Introduction Approximately one in five workers globally works night, evening, or rotating shifts. Shiftwork involving circadian disruption is a probable carcinogen for breast cancer. Our objective was to synthesise the current state of the epidemiological literature, report on shiftwork-associated breast cancer burden in Canada, and discuss implications for prevention.

Methods A search was conducted for meta-analyses accompanied by a systematic review, published from 2010–2017, that included at least one meta-risk estimate (mRE) for breast cancer associated with any permanent/rotating night work exposure metric. For each included meta-analysis, heterogeneity values were extracted and an eight-point checklist was used to evaluate quality. An attributable fraction (AF) range for breast cancer, based on mREs from high quality meta-analyses and Canadian shiftwork survey data, was calculated using Levin’s equation.

Results Seven meta-analyses collectively included 30 cohort and case-control studies spanning 1996–2016. Most reported statistically significant heterogeneity. In 5 meta-analyses that scored ≥ 6 points on the quality assessment checklist, mREs for ever/never night shiftwork exposure ranged from 1.15 (95% confidence interval [CI]: 1.05 to 1.25, n=9 studies) to 1.40 (95% CI: 1.13 to 1.73, n=9 studies). Using these mREs as lower and upper values in Levin’s equation, the AF for breast cancer among the 1.5 million Canadian women who ever worked night/rotating shifts during 1961–2001 ranged from 2.04%–5.23%. This corresponds to an estimated 460–1180 annual incident breast cancers probably due to shiftwork; nearly half (200–510) are diagnosed among women in health care and social assistance.

Discussion Summaries of 20 years of epidemiological evidence support shiftwork as a probable breast carcinogen, but considerable heterogeneity between studies poses a challenge for precisely evaluating breast cancer risk and burden. Given the potentially substantial burden of breast cancer due to shiftwork, applied research on workplace-based prevention of circadian disruption is acutely needed to identify effective solutions for sectors where shiftwork prevalence is high.