Discussion There is a higher prevalence of poor sleep quality in SWNs compared to NSWNs. OH should be aware of any form of shiftwork as an important risk factor for poor sleep, as well as Trust managers acknowledging this workplace hazard. OH can provide staff with support for good sleep practice which aims to lead to healthier nurses.

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STRATEGIES OF TIME MANAGEMENT IN THE DAILY ROUTINE OF MEDICAL RESIDENTS OF INTERNAL MEDICINE IN A PUBLIC UNIVERSITY HOSPITAL

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Introduction Becoming a doctor is a complex process that usually consolidates during medical residency. This phase includes full immersion in professional activities with long working and studying hours. Junior doctors take care of patients in complex and difficult-to-manage care situations, both for their severity and institutional shortcomings. Although medical residency is recognised as an efficient form of professional training, there are several criticisms about work overload and long working hours.

Objective To identify strategies of time management in the daily routine of medical residents of Internal Medicine in a university hospital in São Paulo, Brazil.

Method In-depth interviews were conducted with eight randomly selected residents about their daily lives during the first year of residence.

Results The mean age was 25 y, being 4 men. Average hours of residence are 60 h/week. This excludes night shifts and work performed during days off. Over 8 months there is a 12 hour weekly night shift; and during 2 months there are 2 to 3 shifts per week. The reported highlights were: little time to accomplish domestic activities and commuting time to and from the hospital/home. Reduced time for leisure, sleep and study activities. Six out of eight participants reported activities during night shifts for supplementation of income. Some strategies for managing time were: moving to places close to the hospital, hiring cleaning ladies, eating out at the hospital restaurant, keeping a social circle restricted to other residents. The need for income supplementation was reported as a time management constraint.

Discussion Time management strategies during residence include measures to save time such as hiring third persons to perform domestic activities, and living close to the hospital. Some of the reported consequences are: the reduction of time to study, the restriction in the social relations and working odd-hours/days to supplement their income.

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URINARY 8-HYDROXYDEOXYGUANOSINE LEVELS OF EMERGENCY MEDICAL SHIFT WORKERS ARE HIGHER THAN THOSE OF FACTORY WORKERS

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Introduction Shiftwork is known as a risk factor of breast cancer and prostate cancer. In fact, the International Agency for Research on Cancer (IARC) classified shiftwork as Class 2A. One mechanism is that shiftwork increases cellular oxidative stress and results in DNA damage. Urinary 8-hydroxydeoxyguanosine (8-OHdG) is frequently analysed as an oxidative stress marker. However, there have been few studies investigating the association of shiftwork with urinary 8-OHdG levels. In this study, we investigated the association between shiftwork with oxidative stress and urinary 8-OHdG levels.

Methods Urine samples from eight medical shift workers were collected before and after the night shift. The 8-OHdG levels were measured with a high-performance liquid chromatography (HPLC) system equipped with an electrochemical detector.

Results The mean level of urinary 8-OHdG ($\mu\text{g}/\text{ng}$ creatinine) in this study was 5.40 ± 1.70 , and was higher than that of factory workers in a past study. There were no significant differences in the urinary 8-OHdG levels before and after the night shift work.

Conclusion These results suggest that shiftwork, strain, and chronic fatigue lead to oxidative stress and DNA damage. The urinary 8-OHdG level may be a useful biomarker, as an evaluating factor for chronic fatigue in regard to shiftwork.

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ASSOCIATION OF SHIFT-WORK, DAYTIME NAPPING, AND NIGHTTIME SLEEP WITH CANCER INCIDENCE AND CANCER-CAUSED MORTALITY IN DONGFENG-TONGJI COHORT STUDY

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Introduction More than 30% of cancer deaths could be prevented by modifying or avoiding risk factors, such as unhealthy living habits, including night-shift work, daytime napping, and nighttime sleep. We aimed to investigate the independent and combined effects of these three sleep habits on cancer incidence and cancer-caused mortality among middle-aged and older Chinese in the Dongfeng-Tongji Cohort Study (27 009 retired workers were recruited from Dong-Feng Motor Corporation (DMC) in 2008, and 25 978 participants were successfully followed-up during the first follow-up period from June, 2013 to October, 2013). During 1 14 162 person-years of follow up, we identified a total of 1251 cancer cases and 379 cancer-caused deaths.

Methods Information on sleep habits, cancer incidences and mortalities were collected at baseline 2008. Self-reported cancer incidences and cancer-caused deaths were confirmed from DMC's health-care service system, which consists of five DMC-owned hospitals that covers all retired employees. Cox proportional hazards models were used to calculate the adjusted hazard ratios and 95% confidence intervals (HRs, 95% CIs).

Results Males experienced ≥ 20 years of night-shift work, or no daytime napping had increased cancer incidence, when compared to males who did not have night-shift work or had daytime napping for 1~30 min [HR(95% CI)=1.27(1.01–

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 ($P_{\text{interaction}}=0.027$).

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.

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

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Introduction Approximately one in five workers globally work 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.

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A COMPARATIVE STUDY OF HEALTH STATUS OF SHIFT WORKERS AND NON-SHIFT WORKERS IN AN AUTOMOBILE INDUSTRY

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Introduction In today's industrialised world, focus of mass producing organisations is to achieve maximum output and optimum utilisation of human resource by deploying workers in shift duties. This helps industries in achieving production targets but it adversely affects health of workers which is a well-established fact. Shift duties cause changes in circadian rhythm of human body which leads to adverse effects on physical and psychological health. This study was conducted at a large automobile organisation for comparing health status of shift workers with non-shift workers, establish cause and make improvement in health of shift workers.

Methods A cross sectional study was done through a questionnaire based survey and medical examination of workers. Two groups of 200 workers each was selected, one group was involved in shift work for 8 years and other group was working in day shift only for same number of years. A detailed questionnaire containing personal, occupational and medical history was presented to both groups. All data related to findings of medical examinations and survey was analysed to reach a conclusion.

Results There were significant differences in health status of both group of workers. 76% shift workers were suffering from G.I disorders- Indigestion, constipation, hyperacidity etc. compared to 18% of non-shift workers, 22% shift worker had Diabetes compared to 9% in non-shift workers, 36% shift workers had hypertension compared to 14% in non-shift, 44% shift workers had sleep disorder compared to 19% and 42% shift workers were obese compared to 26% of non-shift workers.

Discussion Results of study show that there are less health issues in non-shift workers compared to shift workers. This provides us evidence that if shift work can't be avoided then organisations should have scientific plans to minimise health hazards of shift work and more focus should be given to health of shift workers.

Small Scale Enterprises and Informal Sector

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SMALL + SAFE + WELL: UNDERSTANDING THE RELATIONSHIP BETWEEN PROGRAMS, ORGANISATIONAL CLIMATE, AND OUTCOMES FOR HEALTH, SAFETY AND WELLBEING AMONG SMALL BUSINESS

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Introduction The majority of workers are employed by small enterprises; however, small enterprises face many barriers to building and maintaining cultures of health and safety. This presentation will describe preliminary data from the evaluation