

## Association of Night Shift Work and Breast Cancer Incidence

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### Editorial

The potential association between night shift work and breast cancer incidence has been of great interest to investigators [1, 2]. However, current multiple evidences exist limitations. For instance, some results mainly based on case-control studies or cross-sectional studies, but the retrospective data might lead to severe selection bias, accompany with influence on the size or significance of the actual association. A study by our group in 2015 performed a meta-analysis of six prospective cohort studies suggested a positive dose-response relationship between exposure duration of night shift work and morbidity rate of breast cancer [3]. Besides, in the study by Travis et al [4], the authors aim to identify the association between night shift work and breast cancer incidence by a meta-analysis based on three prospective cohort studies and seven pervious published prospective studies. However, we deliberated that the paper included a nested case-cohort study into their meta-analysis of prospective cohort study [5]. We performed a sensitivity analysis by excluding the study of Li et al 2015 [5], but keeping the rest of nine studies. Dramatically, results of sensitivity analyses indicated that night shift work increases the risk of breast cancer morbidity by 10.6% for  $\geq 20$  years, and 15.8% for  $\geq 30$  years.

More well-designed and long-term studies are urgently needed to further confirm whether night shift work associate with increased breast cancer incidence. First, several studies may be hampered by heterogeneity, which may reduce the strength of their conclusion. Although all researches provide precise definition of study population and night shift work, there still lack of unique definition of night shift work. For instance, some studies defined that any work hours from midnight to 6:00. According this definition, a worker with working hours of 15:00 to 22:00 would not be involved into night shift work. Here, either "starting work after 18:00 at least three times a month for over 1 year", or "participants with a night job for 12 hours per week or more over 2 years" should be defined as night shift work. Second, some studies just examined whether even minimal exposure to night shift work during the active years of a woman's life could potentially increase her risk of breast cancer. These results definitely affect the pooled effect of night

shift work on breast cancer incidence. It is strongly recommended that stratified analyses of individual study by exposure duration of night shift work. Third, night shift work contains fixed-night work and rotating night shift work. There exists a significant difference of effect on incident breast cancer between them. However, most studies did not distinguish fixed-night work from rotating night shift work. In addition, future studies are needed to prospectively, objectively, and comprehensively assess indices of night shift work exposure and morbidity of breast cancer, including estrogen receptor (ER) status, human epidermal growth factor receptor 2 (HER2) status and other multiple potential adjusted factors. Taken together, the topic on the association between night shift work and incident breast cancer remains a point for discussion.

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I declare no competing interests.

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