

#ISEE2021

# 33<sup>rd</sup> Annual Conference of the International Society for Environmental Epidemiology

Promoting Environmental  
Health and Equity in  
a Shifting Climate



August 23-26, 2021

Abstracts'  
E-Book



Local Academic Host:  
Columbia University  
Mailman School of Public  
Health, New York, US





## ABSTRACT E-BOOK

P-047

Built environment » Light pollution

### Artificial light at night and breast cancer risk: A systematic review and dose-response meta-analysis

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**BACKGROUND AND AIM:** Artificial lightning has been suggested to be one of the environmental risk factor of breast cancer onset and progression, based on epidemiologic evidence and biological plausibility. Possible mechanisms include DNA damage, impairment of melatonin and estrogens secretion, inflammation, and metabolic function.

**METHODS:** We performed a systematic review of the epidemiological studies examining the association between light-at-night (LAN) exposure and breast cancer risk and we modeled the shape of the relation using a dose-response meta-analysis. After performing an online literature search up to March 21, 2021, we retrieved 16 eligible publications, including eight cohort and eight case-control studies.

**RESULTS:** In analyses comparing highest versus lowest LAN exposure, there was a positive association between LAN exposure and disease risk (risk ratio (RR)=1.10, 95% confidence interval (CI): 1.06-1.14), with relatively consistent associations observed in case-control studies (RR=1.14, 95% CI: 0.98-1.34) and cohort studies (RR=1.10, 95% CI: 1.06-1.14). In stratified analyses, RRs were similar for outdoor and indoor LAN exposure, while a stronger RR was observed among premenopausal women, women in the BMI category 20-25 kg/m<sup>2</sup>, and for estrogen-receptor positive breast cancer. The dose-response meta-analysis, implemented in studies investigating outdoor LAN only (for comparable exposure assessment), indicated a linear association with increasing risk up to 40 nW/cm<sup>2</sup>/sr after which a plateau was reached, especially among premenopausal women.

**CONCLUSIONS:** Overall, this first review assessing the dose-response relation between LAN and breast cancer generally supports a positive association.

**Keywords:** Light pollution, Cancer and cancer precursors, Environmental epidemiology, Non-chemical stressors