



CORRESPONDENCE

Comment on 'Domestic light at night and breast cancer risk: a prospective analysis of 105 000 UK women in the Generations Study'

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This comment is regarding the article by Johns et al. entitled “Domestic light at night and breast cancer risk: a prospective analysis of 105 000 UK women in the Generations Study” published in the *British Journal of Cancer*¹. Johns et al. have investigated the relationship between exposure to light at night (LAN) and breast cancer risk. Using questionnaires, these authors have collected data on the bedroom light levels and sleeping patterns of 105 866 participants who had no prior history of breast cancer. Their follow-up showed 1775 cases of breast cancer. In this prospective cohort analysis, Johns et al. concluded that there was no evidence of an association between LAN exposure and increased risk of breast cancer in their large UK-based cohort study. Despite its strengths, the paper authored by Johns et al. has at least two major shortcomings. Over the past decade, my colleagues and I have studied the adverse health effects of exposure to radiofrequency electromagnetic fields (RF-EMFs). Moreover, we have studied the biological effects of exposure to blue light emitted from digital screens^{2, 3}. The first shortcoming of the paper authored by Johns et al. concerns the authors ignoring the key factor of melatonin suppression, caused by exposure to artificial short-wavelength blue light emitted from the very widely used digital screens (displays of smartphones, tablets, and laptops)⁴. It is worth noting that the study performed by the Pew research centre shows that about 95% of Americans own a cellphone⁵. It has recently been shown that blue light emitted from smartphones’ screens can be linked to decreased melatonin secretion (the mechanism behind the negative impact of smartphone use at night on sleep)⁶. We have previously shown that in people who use their smartphones at night, not only the RF-EMFs generated by smartphones but also the blue light emitted from the screens of these wireless devices can be associated with disrupted circadian rhythm³. Moreover, a recent study showed that the viewing distance of smartphones was negatively associated with subjective sleep status⁶. Therefore, it has been hypothesised that if women with hereditary breast cancer predispositions, such as women who carry mutated BRCA1 or BRCA2 or women with a family history of breast cancer, use their smartphones, tablets, and laptops at night, the disrupted circadian rhythms can amplify the risk of breast cancer⁷.

Another shortcoming of this study comes from its poor design. The authors asked women “to report their level of exposure to LAN over the year prior to recruitment and at age 20 years, in the room in which they slept, in the categories; ‘light enough to read’; ‘light enough to see across the room, but not read’; ‘light enough to see your hand in front of you, but not to see across the room’; and ‘too dark to see your hand, or you wear a mask’”. This study design shows that the authors have only focused on the intensity of light,

while substantial data indicate that the spectral characteristics of light (wavelength) also significantly affect the melatonin level, sleep pattern, and circadian rhythms^{8–13}. In summary, ignoring some key factors in the study conducted by Johns et al. has possibly affected the validity of their findings.

ADDITIONAL INFORMATION

Competing interests: The author declares no competing interests.

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