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Night-Time Exposure to Blue Light Associated With Increased Risk of Colorectal Cancer

New study uses satellite images of outdoor lighting in Barcelona and Madrid

Barcelona, 29 July 2020.- Blue light has become an increasingly common component of urban outdoor lighting. But how does it impact our health? A team led by the Barcelona Institute for Global Health ([ISGlobal](#)), a centre supported by the "la Caixa" Foundation, has conducted the first study of the **association between night-time exposure to outdoor artificial light and colorectal cancer**. The findings, published in *Epidemiology*, show that exposure to the blue light spectrum may increase the risk of this type of cancer.

Previous studies have found associations between night-time exposure to artificial light—especially blue light—and various adverse health effects, including **sleep disorders, obesity and increased risk of various types of cancer**, especially in **night-shift workers**. Blue light is a range of the visible light spectrum emitted by most white LEDs and many tablet and phone screens. [An earlier study by ISGlobal](#) found a link between exposure to blue light at night and **increased risk of breast and prostate cancer**.

"Using the same methodology as the previous study, we decided to **analyse the relationship between exposure to artificial light and colorectal cancer**, the third most common type of cancer worldwide after lung and breast cancer," explained **Manolis Kogevinas**, Scientific Director of the Severo Ochoa Distinction at ISGlobal and coordinator of the new study. The World Health Organisation's International Agency for Research on Cancer (IARC) classifies **night-shift work as probably carcinogenic to humans; breast, prostate and colorectal cancer are associated with the highest risk**.

The authors analysed data obtained through the [MCC-Spain project](#) on approximately **2,000 adults in Barcelona and Madrid, of whom 660 had colorectal cancer and the rest were randomly selected from the local population**. Individuals with a history of working night shifts were excluded. Night-time levels of outdoor artificial light were determined using images from the International Space Station (ISS).

Results from both cities showed that **participants with the highest exposures to blue light had a 60% higher risk of developing colorectal cancer** than the less exposed population. No association was found with full-spectrum light.

"Night-time exposure to light, especially blue-spectrum light, can **decrease the production and secretion of melatonin**, depending on the intensity and wavelength of the light," explains Kogevinas.

Because exposure to light was estimated using satellite images, this calculation **did not take into account individual behaviours** such as the use of rolling shutters, which is common in Spain and other Mediterranean countries. The estimate of exposure can therefore be interpreted as the amount of light people are exposed to when they are outside their homes—a common pattern in Spain—and inside their homes before closing the shutters and going to bed.

"There is growing concern about the effects of light on ecosystems and human health," commented Kogevinas. **"Research on the potential effects of light exposure is still in its infancy**, so more work is needed to provide sound, evidence-based recommendations to prevent adverse outcomes."

Graphic Material



International Space Station night image of **Barcelona**, courtesy of the Earth Science and Remote Sensing Unit, NASA. 18 April 2013. Time: 22:10:46 GMT (local time 00:10:46) (ISS035-E-23385).
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International Space Station night image of **Madrid**, courtesy of the Earth Science and Remote Sensing Unit, NASA. 12 February 2012. Time: 02:22:46 GMT (local time 03:22:46) (ISS030-E-82052).
[Download here.](#)

Reference

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About ISGlobal

The Barcelona Institute for Global Health, ISGlobal, is the fruit of an innovative alliance between the "la Caixa" Foundation and academic and government institutions to contribute to the efforts undertaken by the international community to address the challenges in global health. ISGlobal is a consolidated hub of excellence in research that has grown out of work first started in the world of health care by the Hospital Clínic and the Parc de Salut MAR and in the academic sphere by the University of Barcelona and Pompeu Fabra University. The pivotal mechanism of its work model is the transfer of knowledge generated by scientific research to practice, a task undertaken by the institute's Education and Policy and Global Development departments. ISGlobal has been named a Severo Ochoa Centre of Excellence and is a member of the CERCA programme of the Generalitat de Catalunya.

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