

Artificial Light at Night: Higher Risk of Prostate Cancer

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A new study at the University of Haifa discovered: Worldwide, countries with the highest levels of artificial light at night also have the highest rates of prostate cancer.

This discovery joins the findings of a previous study by the same researchers that found a connection between exposure to artificial light at night and the incidence of breast cancer.

Countries in which nighttime artificial lighting is used more intensively tend to have a higher risk of prostate cancer in men, concludes a new study that was carried out at the University of Haifa. This joins a previous finding that was published in *Chronobiology International* in 2008, that exposure to artificial lighting at night increases the incidence of breast cancer in women.

The study, carried out by Prof. Abraham Haim, Prof. Boris A. Portnov, and Itai Kloog of the University of Haifa together with Prof. Richard Stevens of the University of Connecticut, USA, was intended to examine the influence of various factors - including the amount of artificial light at night - on the incidence of three types of cancer: prostate, lung, and of the large intestine, in men around the world.

Data was collected from a database of the International Agency for Research on Cancer, on the incidence of these types of cancer in men in 164 countries. Data on the levels of lighting at night were gathered from DMSP (Defense Meteorological Satellite Program) satellite images. The

nighttime illumination data were adjusted by the geographic distribution of the population of the country, in order to reach an accurate measure of "the amount of artificial light per night per person." The researchers also examined additional factors, such as electricity consumption, percentage of urban population, socioeconomic status, and other variables.

At the very first stage of the study, it already became clear that there is a marked link between the incidence of prostate cancer and levels of nighttime artificial illumination and electricity consumption. Several different methods of statistical analysis were used to arrive at this conclusion.

Next the researchers isolated the "amount of artificial light at night per person" variable in order to examine its particular effect. The countries were divided into three groups for this stage of the study: those with little exposure to lighting at night; those with medium exposure; and those with high exposure. The results demonstrated that the incidence of prostate cancer in those countries with low exposure was 66.77 prostate cancer patients to 100,000 inhabitants. An increase of 30% was found in those countries with medium exposure: 87.11 patients per 100,000 inhabitants. The countries with the highest level of exposure to artificial light at night demonstrated a jump of 80%: 157 patients per 100,000 inhabitants.

According to the researchers, there are a number of theories that could explain the increased incidence of prostate cancer due to exposure to lighting at night, such as suppression of melatonin production, suppression of the immune system, and an effect on the body's biological clock because of confusion between night and day. Whatever the cause, there is a definite link between the two. "This does not mean that we have to go back to the Middle Ages and turn the lights out on the country. What it means is that this link should be taken into account in

planning the country's energy policies," the researchers pointed out.

The researchers added that an increased use of artificial lighting is considered by the World Health Organization as a source of environmental pollution. As such, the appeal made by Israel's Ministry of Environmental Protection to use energy-efficient lighting is problematic, as this type of lighting is also much brighter. The country ought to encourage energy saving in lighting as well as limiting the pollution level.

Source: University of Haifa

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