THE AUTHORS REPLY

We appreciate Dr. Grant’s letter (1) regarding our article (2), in which we reported increased risk of several types of cancer among men working at night. Dr. Grant suggests that a likely biological explanation for our findings is that night workers have reduced exposure to outdoor daylight and thus lower vitamin D levels. This would assume that night workers had lower overall direct exposure to sunlight than day workers. In fact, most day workers work indoors. The vast majority of people, irrespective of whether they work during the day or at night, have an opportunity for sunlight exposure outside of work hours. In an earlier publication (3) based on the same data set as the one used in our article (2), we reported on cancer risk related to the frequency of engaging in sports/outdoor activities during leisure time throughout adult life. As compared with men who had never or not often engaged in sports/outdoor recreational activities, men who often did had lower risks of smoking-related cancers, such as lung, esophageal, and bladder cancers, and higher risks of melanoma. Only marginal decreases in the risks of prostate, rectal, and pancreatic cancers were apparent among men who often engaged in sports/outdoor activities. Whether the inverse associations could be attributable to sunlight exposure and/or to other factors correlated with sports/outdoor activities, such as physical activity or diet, remains to be established.

Our study was conducted in Montreal, Quebec, Canada, which is situated at 45° North latitude. It has been observed that populations living at such northern latitudes experience no measurable cutaneous vitamin D synthesis between the months of October and April (4, 5). Accordingly, for more than half of each year of observation in our study population, local exposure to sunlight would not have been an important contributor to vitamin D levels. To better assess the potential role of vitamin D in cancer risk, other sources should be considered, including diet and supplements (6). Moreover, night workers may tend to sunbathe more frequently than day workers (7). Sunlight and vitamin D exposures are clearly multidimensional, and it may be premature to identify these factors as primary mechanistic explanations underlying our findings (2).

Dr. Grant also indicates in his letter that the evidence for an inverse association between sunlight exposure and the risk of prostate cancer is strong (1). In our opinion, the evidence remains limited, as much of it is based on ecological observations. Further, the relatively consistent findings of higher risks of prostate cancer among farmers (8) do not support the hypothesis of a protective effect of sunlight. Should a relationship between night work and prostate cancer be confirmed, it might well involve some other physiological mechanism. Other evidence along this line comes from a study of Japanese workers, where greater risks of developing prostate cancer were observed among rotating-shift workers than among workers permanently working a fixed night shift (9).

Fritschi et al. summarized that “while there is a theoretical rationale for a link between shiftwork and lower sun exposure, and an association between lower sun exposure and increased risks of some types of cancer, there is little evidence that this effect is mediated by serum vitamin D” (10, p. 434). Given the lack of data on this issue, this indeed presents an important avenue for future research.

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REFERENCES


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