



Letter to the Editor

Influence of Healthy Diet and Lifestyle on the Risk of Cancer



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Dear Editor,

The role of dietary intake and antioxidants on the prevention and management of chronic diseases merits special interest, based on data in current medical literature.^{1–8} Elevated dietary intake and plasma levels of alpha-tocopherol, carotenoids, and vitamin C can contribute to decreased risk of cardiovascular disease, cancer, and all mortality rates.¹ Some authors agree with recommendations to increase fruit and vegetable intake, but not with use of antioxidant supplements for the prevention of chronic disease.¹ The effect of egg consumption on adult blood pressure levels is still not clear,² and there are reports of inverse association between dairy intake and hypertension.³ A high prevalence of malnutrition in people with esophageal cancer has recently been detected,⁴ and the health benefits of walnut intake and its satiating action are not totally known.⁵ Additional research, mainly longitudinal studies, is necessary to establish whether some kinds of dietary intervention could significantly improve the occurrence of daytime sleepiness.⁶ There are data suggesting that girls with a pro-inflammatory diet have increased levels of stress and greater odds of having at least a moderate level of stress symptomatology.⁷ Finally, further prospective evaluations are indicated to confirm the contrasting effects of a high total antioxidant intake on the risk of malignant colon and rectal tumors.⁸

Malignancies are increasing in incidence, and the importance of a diet including healthy foods and a healthy lifestyle has been emphasized as important tools for prevention and control of some cancers by intervention on metabolic and/or inflammatory mechanisms.^{9–18} Preventive effects of vitamins (B12, D, C, and folic acid), selenium, and carotenoids have been described, as have the adverse effects of some fatty acids, alcohol, tobacco, and obesity.^{9–18} In this scenario, the authors had the opportunity to read the interesting article by Khanashyam *et al.*¹² on this topic, which was recently published in this journal. It focused on lower cancer rates associated with ingestion of fruits, whole grains, legumes, and vegetables. Such diets have anti-inflammatory activity because they reduce free radical activity in cancer cells, but the indiscriminate

use of some supplements might predispose to adverse outcomes.¹² They concluded that one should be aware of the confirmed results of conventional treatment and the minimal impact of diet or supplements on cancer management. Obesity, excess consumption of trans-unsaturated and saturated fatty acids, red, or processed meat, and beverages rich in sugar, may also enhance the risk of developing some malignancies.¹² Therefore, we briefly comment on findings from some new references about this issue.

Armenta-Guirado *et al.*⁹ reviewed and analyzed the lifestyle quality indices of female breast cancer risk, utilizing data from 60 studies and comparing the highest with the lowest category of the healthy lifestyle index (HLI). They found a 20% risk reduction of breast cancer in prospective studies and concluded that healthy lifestyles reduce the cancer risk, regardless of their subtypes, and deserve priority in public health preventive actions.⁹ Byrne *et al.*¹⁰ prospectively studied the lifestyles and genetic risk of people 3,773 years of age with 13 cancer types. They found a higher lifestyle index was associated with a lower risk of colorectal cancer, post-menopausal breast cancer, lung cancer, kidney cancer, uterine cancer, pancreatic cancer, bladder cancer, and head and neck cancer, and an opposite association was observed between the HLI and prostate cancer.¹⁰ Cannioto *et al.*¹¹ analyzed data on the role of a healthy lifestyle before, during, and after treatment of high-risk breast cancer in 1,340 women with mean age of 51.3 ± 9.9 years and 65.3% with hormone-receptor positive disease. Patients with the highest lifestyle index scores had the lowest recurrence (37.0%) and mortality (58.0%) rates. Therefore, they recommended more effective adherence to educational programs for breast cancer prevention, focusing on healthy lifestyle recommendations throughout cancer care.¹¹ Liu *et al.*¹³ prospectively evaluated the relationships of a healthy diet, polygenic risk score, and risk of upper gastrointestinal cancer and found high adherence to the diet reduced the risk (24%) of this kind of cancer. In addition, the 5-year incidence risk of upper gastrointestinal cancer was decreased (0.16–0.10%) in people of high genetic risk and a healthy diet. The authors stressed the importance of dietary factors in esophageal and gastric cancers, which account for 1.7 million new cancer cases and 1.3 million deaths yearly worldwide.¹³ Martins *et al.*¹⁴ reviewed studies published between 2016 to 2020 on the lifestyle risk factors for cancer in nursing professionals. They found inadequate nutrition, physical inactivity, insufficient rest, impaired sleep, anxiety, stress, alcoholism, smoking, and prolonged exposure to radiation, viruses, and bacteria were related to the origin of malignant neoplasms. They focused on educational campaigns to raise awareness and adopt a healthy lifestyle.¹⁴ Meer *et al.*¹⁵ evaluated the HLI score, ranging

Abbreviations: HLI, healthy lifestyle index.

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from 0 to 20, related to the risk of renal cell cancer in a subgroup of 485 patients within a cohort of 3,767. Compared with the unhealthiest HLI group, those in the healthiest group had a lower renal cell cancer risk, but the authors concluded that a healthy lifestyle and a lower risk were weakly related.¹⁵ Mokhtari *et al.*¹⁶ studied the relationship between diet insulinemic potential and lifestyle with breast cancer risk in 134 women 30 years of age and older newly diagnosed with breast cancer (cases), and 267 healthy women of similar age (controls). The mean age and body mass index of the groups were 47.9 ± 10.3 years and 29.4 ± 5.5 kg/m². There was a relation between the empirical dietary index for hyperinsulinemia and increased breast cancer risk. A high empirical dietary index for hyperinsulinemia and empirical lifestyle index for hyperinsulinemia scores were strongly related to a high risk of postmenopausal breast cancer, and a family history of breast cancer.¹⁶ Nakaganda *et al.*¹⁷ reviewed the lifestyle risk factors for cancer during a 20 year period and found that unhealthy diet (88%), alcohol abuse (14.3–26%), tobacco smoking (0.8–10.1%) in addition to overweight (9–24%), and physical inactivity (3.7–4.9%) were all involved. Zhang *et al.*¹⁸ reported high protein and saturated fat level diets, and high selenium, iron, copper, and magnesium increase prostate cancer risk, while vitamin B6 was beneficial, and suggested restriction of organ meats together with supplementary microminerals.

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Conflict of interest

The authors declare that there are no conflicts to disclaim.

Author contributions

Study concept and design (VMS, LCM, JCM), acquisition of data (VMS, LCM, JCM), analysis and interpretation of data (VMS, LCM, JCM), drafting of the manuscript (VMS, LCM, JCM), critical revision of the manuscript for important intellectual content (VMS), administrative, technical, or material support (VMS), and study supervision (VMS). All authors have made a significant contribution to this study and have approved the final manuscript.

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