

Risk of Cancer in Regular and Low Meat-Eaters, Fish-Eaters, and Vegetarians: A Prospective Analysis of UK Biobank Participants

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Objectives: Vegetarians may have a lower risk of cancer overall; however, for specific cancer sites, the evidence is limited. We aimed to assess the associations of vegetarian and non-vegetarian diets with risks of all cancer, colorectal cancer, postmenopausal breast cancer, and prostate cancer, and to explore the role of potential mediators.

Methods: We conducted a prospective analysis of 472,377 UK Biobank participants who were free from cancer at recruitment. Participants were categorised into regular meat-eaters ($n = 247,571$), low meat-eaters ($n = 205,385$), fish-eaters ($n = 10,696$), and vegetarians ($n = 8,685$) based on dietary questions completed at recruitment. Multivariable-adjusted Cox regressions were used to estimate hazard ratios (HR) and 95% confidence intervals (CI) for all cancer incidence and separate cancer sites across diet groups.

Results: After an average follow-up of 11.4 years, 54,961 incident cancers were identified from health records, including 5,882 colorectal,

7,537 postmenopausal breast, and 9,501 prostate cancers. Compared with regular meat-eaters, being a low meat-eater, fish-eater, or vegetarian were all associated with a lower risk of all cancer (HR:0.98, 95% CI:0.96–1.00; 0.90, 0.84–0.96; 0.86, 0.80–0.93, respectively). Being a low meat-eater was associated with a lower risk of colorectal cancer in comparison to regular meat-eaters (0.91, 0.86–0.96). Vegetarian postmenopausal women had a lower risk of breast cancer (0.82, 0.68–0.99), which was attenuated and non-significant after adjusting for BMI (0.87, 0.72–1.05); in mediation analyses, BMI was found to possibly mediate the observed association. In men, being a fish-eater or a vegetarian was associated with a lower risk of prostate cancer (0.80, 0.65–0.99 and 0.69, 0.54–0.89, respectively).

Conclusions: The lower risk of colorectal cancer in low meat-eaters is consistent with previous evidence suggesting an adverse impact of higher meat intake. The lower risk of postmenopausal breast cancer in vegetarian women may be explained by their lower BMI. It is unclear if the other differences observed for all cancers and for prostate cancer reflect causal relationships or are due to residual confounding or differences in cancer detection.

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