

CORRESPONDENCE

RE: The Association Between Dietary Quality and Overall and Cancer-Specific Mortality Among Cancer Survivors, NHANES III

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As diet represents a modifiable lifestyle factor that could potentially be used for cancer prevention and improvement of health outcomes, the role of healthy diet has long been an area of great interest in cancer research. After reviewing the article by Deshmukh et al. (1), we would like to bring to the readers' attention several critical methodological concerns that undermine the validity of the findings.

First, the authors did not adjust for stage of disease or treatment. It is well known that survival is strongly influenced by these factors. For example, breast cancer 5-year disease-free survival varies from 99% for stages IA/IB to 26% for stage IV (2). Similar patterns are observed for other cancers (5-year survival: 90% for stage I and 14% for stage IV colon cancer and >99% for local and 29% for distant prostate cancer, etc.) (2). Diet may also vary by disease stage or treatment (3). Thus, failing to adjust for stage and/or treatment may have led to biased results.

Second, the study relied on a single 24-hour dietary recall that characterizes recent, short-term intake (4). As day-to-day within-person variation in nutrient and food intake is substantial, a single dietary record does not provide robust information on typical diet and has been shown to introduce considerable misclassification (4). Long-term (habitual) diet is more relevant when investigating chronic diseases and long-term health outcomes (4). For this reason, studies evaluating effects of diet on health outcomes should include multiple dietary recalls or employ food frequency questionnaires that collect information on usual food consumption, typically over the previous year (4). Basing dietary status on a single 24-hour recall in the study by Deshmukh et al. (1) would have introduced substantial error in the characterization of usual diet and potential bias in the results. Further, the study relied on comorbidity information from the survey and did not take into consideration the time-varying nature of these important factors and resulting dietary changes. Additionally, diet reported by individuals recently diagnosed with cancer and still undergoing

cancer treatment may not have been representative of diet over subsequent follow-up (3,5).

Finally, the study was unable to separate melanoma from the far more common nonmelanoma skin cancers because of the survey questions' format. Due to very specific nature of nonmelanoma skin cancers with respect to risk factors (mainly proxies for chronic sun exposure), their highly curable nature, and low death rates (6), individuals with nonmelanoma skin cancers are typically considered cancer-free individuals in epidemiologic studies of factors that contribute to other cancers' risk and/or survival.

That the study results were influenced by these important limitations is suggested by the contradictory finding that greater saturated fat intake is associated with better survival, which is inconsistent with extensive prior evidence demonstrating a negative influence of saturated fat on health outcomes, including cancer-specific mortality (7). Future studies on this important question should employ diet assessment methods that capture usual diet and account for key determinants of survival, such as disease stage and treatment, in order to obtain useful, unbiased association estimates.

Notes

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References

1. Deshmukh AA, Shirvani SM, Likhacheva A, et al. The association between dietary quality and overall and cancer-specific mortality among cancer survivors, NHANES III. *JNCI Cancer Spectr.* 2018;2(2):pky022.

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2. American Cancer Society. *Cancer Facts & Figures 2017*. Atlanta, GA: American Cancer Society; 2017.
3. Doyle C, Kushi LH, Byers T, et al. Nutrition and physical activity during and after cancer treatment: an American Cancer Society guide for informed choices. *CA Cancer J Clin*. 2006;56(6):323–353.
4. Naska A, Lagiou A, Lagiou P. Dietary assessment methods in epidemiological research: current state of the art and future prospects. *F1000Res*. 2017;6:926.
5. Coa KI, Epstein JB, Ettinger D, et al. The impact of cancer treatment on the diets and food preferences of patients receiving outpatient treatment. *Nutr Cancer*. 2015;67(2):339–353.
6. Fahradyan A, Howell A, Wolfswinkel E, et al. Updates on the management of non-melanoma skin cancer (NMSC). *Healthcare*. 2017;5(4):82.
7. Wang DD, Li Y, Chiuve SE, et al. Specific dietary fats in relation to total and cause-specific mortality. *JAMA Intern Med*. 2016;176(8):1134–1145.