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# Dietary Antioxidant Quality and Cognitive Function Among Cancer Survivors: NHANES 2011–2014

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**Background**: Cancer survivors are at increased risk of cognitive impairment that may persist after treatment and adversely affect quality of life. Oxidative stress is a proposed mechanism underlying cancer-related cognitive dysfunction. Dietary antioxidant quality has been linked to cognitive performance in the general population, but evidence among cancer survivors remains limited. This study aimed to examine the association between dietary antioxidant quality and cognitive function among cancer survivors and to evaluate whether sleep influences this relationship.
**Methods**: We conducted a cross-sectional analysis of adult cancer survivors using data from the U.S. National Health and Nutrition Examination Survey from 2011 to 2014. Dietary antioxidant quality was assessed using the Dietary Antioxidant Quality Score (DAQS). Cognitive function was measured using the Digit Symbol Substitution Test (DSST) and the Animal Fluency Test (AFT). Survey-weighted linear regression models accounting for the complex sampling design were adjusted for demographic, socioeconomic, and clinical factors, with sleep included as a covariate based on prior evidence.
**Results**: For DSST, DAQS estimates were positive but not statistically significant in models adjusted for age, sex, and race ($\beta$ = 1.05, 95% CI −0.47 to 2.57) and were attenuated after further adjustment for socioeconomic and clinical factors, including sleep ($\beta$ = 0.39, 95% CI −0.95 to 1.73). For AFT, DAQS estimates were small and non-significant across all models, including the fully adjusted model with sleep ($\beta$ = 0.07, 95% CI −0.02 to 0.17). Inclusion of sleep did not materially change the magnitude or direction of DAQS estimates for either cognitive outcome.
**Conclusions**: Across sequentially adjusted models, dietary antioxidant quality showed consistently positive but non-significant estimates for cognitive function among cancer survivors. The use of DSST and AFT allowed broader cognitive domain coverage and maximized sample size. Sleep did not explain or influence the association between dietary antioxidant quality and cognitive function.

## Keywords

Cancer survivors, Dietary Antioxidant Quality Score, Cognitive Function, Sleep

## Conflict of Interest & Ethical Approval

yes

## Abstract submitters declaration

yes

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