Pre-diagnosis Diet and Physical Activity and Risk of Cardiovascular Disease Mortality Among Female Cancer Survivors

Daphne Weikart,[1] Laila Al-Shaar,[2] Radha Dhingra,[2] Dan Lin,[2] and Kathleen Sturgeon[2]

[1]The Pennsylvania State University and [2]Penn State College of Medicine

Objectives: Better diet quality and higher physical activity (PA) levels have been associated with lower risk of cardiovascular disease (CVD) mortality, but the relationship between pre- cancer diagnosis diet quality and PA level on CVD mortality risk in cancer survivors is unclear. We examined the association between pre-cancer diagnosis diet quality and leisure time PA, and their interaction, on CVD mortality in cancer survivors.

Methods: Female cancer survivors who were diagnosed during follow-up and had no history of cancer, stroke, or heart attack at baseline were identified. Analyses excluded: (1) participants who lived outside California at baseline, (3) missing food frequency questionnaire (FFQ) or recreational PA data, (4) total energy intake less than 600 kilocalories/day or above 3,500 kilocalories/day or (5) survivors whose cancer was diagnosed within 1 year of the baseline questionnaire. Diet quality was characterized by the Alternative Mediterranean Diet Index (aMED). Leisure time PA was converted to metabolic equivalent of task hours per week (MET-h/wk). Hazard ratios (HRs) and 95% confidence intervals (CIs) were estimated using multivariable Cox proportional hazards regression models.

Results: During a median of 6.3 years of follow-up of 18,533 female cancer survivors, we identified 915 CVD deaths. aMED did not show a significant association with CVD mortality. Pre-cancer diagnosis PA was independently associated with lower CVD mortality (HRQ1-Q4 = 0.74; 95% CI: 0.61–0.88; Ptrend < 0.0014). No significant interaction was observed between pre-cancer diagnosis aMED score and PA with CVD mortality but compared to participants with the lowest pre-diagnosis aMED score and physical activity levels, participants with higher aMED scores and higher MET-hrs/wk were at 33% lower risk of CVD mortality (HR = 0.67; 95% CI: 0.52–0.87).

Conclusions: Overall, this study shows PA level to be a strong predictor of CVD mortality in female cancer survivors. Our observations support the importance of PA throughout the lifecycle in decreasing risk of CVD mortality. Primary care physicians (PCPs) should continue to relay the significance of PA level in their healthy patients prior to a potential diagnosis of cancer.