Dietary Indices and Risk of Lung Cancer Incidence and Mortality Among Adults in US: Evidence from a Prospective Study

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A higher **overall diet quality** reduced the risk of ***lung cancer incidence and mortality*** while diet with a higher inflammatory potential, as measured by ***dietary inflammatory index*** **(DII), was** associated with a greater risk of lung cancer outcomes.

BACKGROUND

- Lung cancer is leading cause of mortality and the second most commonly diagnosed cases of cancer globally.
- While smoking is a strong risk factor for lung cancer, studies that examine the link between dietary quality indices indicated by healthy eating index (HEI-2015), dietary antioxidant index (DAI) and dietary inflammatory index (DII) and lung cancer outcomes are limited [1,2].
- This study aimed to investigate the association between dietary indices and the incidence of, and mortality from, lung cancer.

METHODS

- Adults aged 55 years and above from the Prostate, Lung, Colorectal and Ovarian Cancer Trial in the USA were included for analysis.
- A food frequency questionnaire were used to estimate dietary intake.
- Energy adjusted DII score was estimated from 33 food parameters using regionally representative data sets[3].
- Factor analysis was used to construct the DAI from carotenoids, flavonoids, Vit E, Vit C, Vit D, Se, Zn, and Mg.
- HEI-2015 was determined from 13 components (max score 100).
- Cox regression models were used to estimate the associations between these dietary indices and lung cancer outcomes by controlling for confounders including smoking status.

RESULTS

- From 96,607 participants with a median follow-up of 2 timepoints at 9.4 and 16.9 years, 1596 cases and 2,127 deaths occurred, respectively.
- Highest quartiles of HEI and DII were associated with lung cancer outcomes except for DAI and lung cancer mortality (Table) .
- A linear dose-response existed between HEI, DAI, DII and lung cancer incidence (14% and 8% lower risk and 18% higher risk, respectively (Fig).
- HEI (13 % lower risk) and DII (14%higher risk) were associated with lung cancer mortality but not with DAI.
- With subgroup and sensitivity analyses, the observed associations were unchanged.

Table : Association between dietary indices and lung cancer.

Indices	Incidence, HR(95% CI)	Mortality, HR(95% CI)
DII (Quartile 4 vs 1)	1.43 (1.20, 1.69)	1.18(1.05, 1.33)
HEI (Quartile 4 vs 1)	0.73 (0.62, 0.85)	0.78(0.68, 0.89)
DAI (Quartile 4 vs 1)	0.73 (0.58, 0.92)	0.93 (0.82, 1.05)

RESULTS CONTINUED

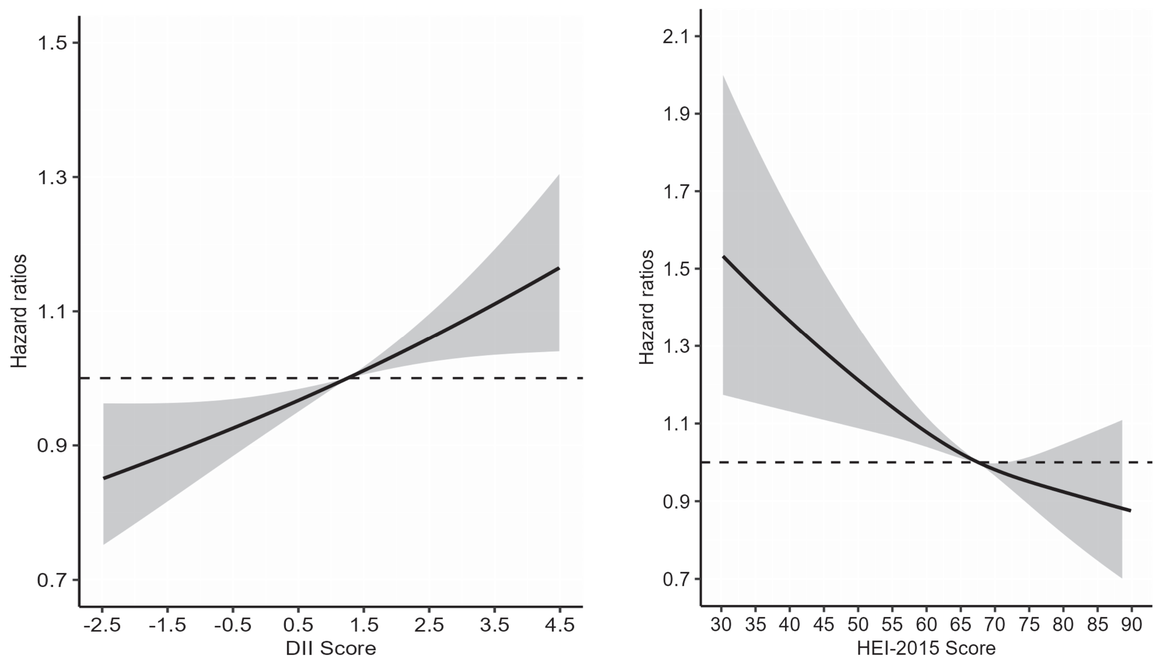

Figure 1: Dose-response associations between DII (left side), HEI (right side) and lung cancer mortality.

CONCLUSIONS

- The findings highlight a higher overall diet quality measured HEI, and diet with a lower inflammatory potential (measured by DII) reduces the risk of fatal and non-fatal outcomes of lung cancer.
- Dietary antioxidant index was associated with lung cancer incidence only.
- An inverse association between HEI and lung cancer outcomes were apparent among younger adults and former smokers.
- This study adds to the growing body of evidence that diet may have a role reducing lung cancer incidence and mortality.
- Methods to improve diet in clinical and public health settings to prevent the global burden of lung cancer should be examined.
- However, further prospective studies with an adequate number of histological subtypes of lung cancer, inflammatory and oxidative stress markers measurements and repeated dietary exposure in multiethnic population are warranted.

Reference

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ADDITIONAL KEY INFORMATION

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