



Healthful and unhealthful plant-based diets and risk of breast cancer in U.S. women: results from the Nurses' Health Studies



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Background and Aims

Plant-based diets have been associated with lower risk of various diseases, including type 2 diabetes, cardiovascular disease and other cardiometabolic risk factors. However, the association between plant-based diet quality and breast cancer (BC) remains unclear. Thus, we aimed to **examine the associations of plant-based diet indices (PDI) with risk of total and subtypes of BC.**

Methods

Prospective cohort study of initially healthy women from the **Nurses' Health Study (NHS)** (1984-2016) and the **Nurses' Health Study II (NHS II)** (1991-2017).

Exposures

Exposures	Overall PDI	Healthful PDI	Unhealthful PDI
Healthy plant foods 	Positively scored	Positively scored	Negatively scored
Unhealthy plant foods 	Positively scored	Negatively scored	Positively scored
Animal foods 	Negatively scored	Negatively scored	Negatively scored

Dietary data collected using repeated semi-quantitative FFQs. Food groups were ranked into quintiles and given positive or reverse scores.

Outcome

Incident invasive BC cases confirmed with medical records and subtypes determined by tissue microarray data and pathology reports.

Results

Data from the NHS and NHSII were pooled. During 4,841,083 person-years of follow-up, **12,482 participants developed invasive BC.**

Figure 1. Multivariable-adjusted HR (95%CI) for **total BC** according to quintiles of cumulatively updated **PDI indices** in NHS and NHS II

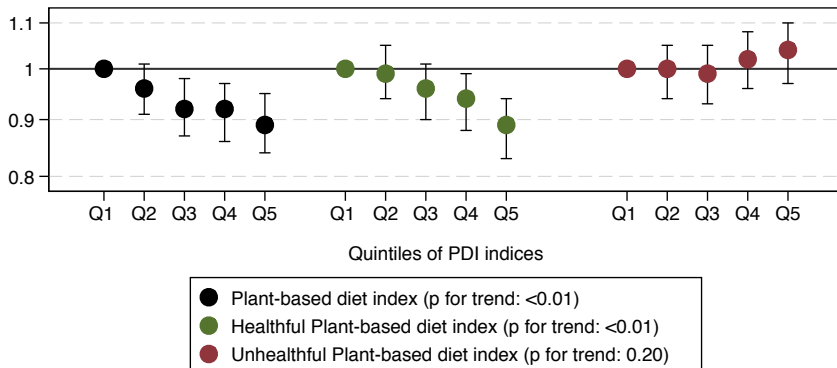


Figure 2. Multivariable-adjusted HR (95% CIs) for the association between quintiles of cumulatively updated **hPDI and uPDI** and **ER-negative BC.**

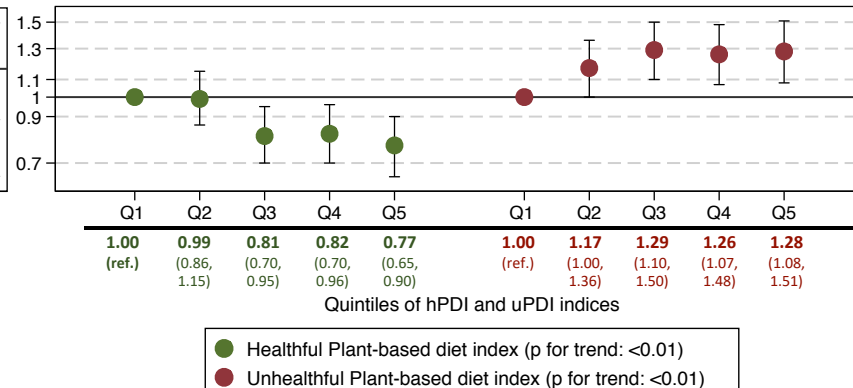
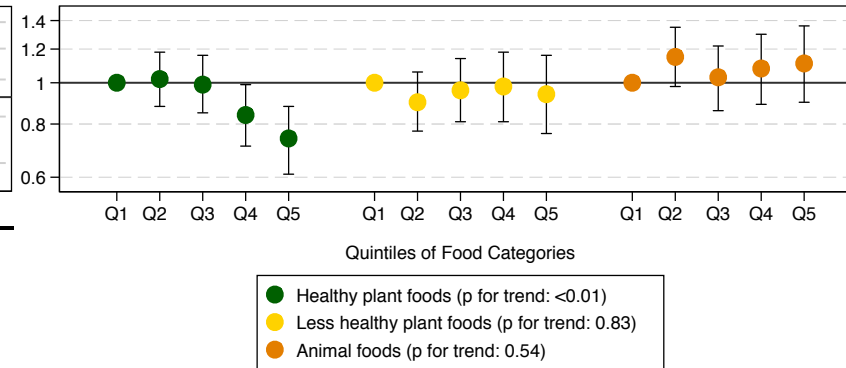


Figure 3. Multivariable-adjusted HR (95%CI) for **ER-negative BC** according to quintiles of **Food Categories**



Models stratified by cohort, age in months and calendar year, adjusted for race, age at menarche, age at menopause, PMH, OC use history, parity and age at first birth, breastfeeding history, family history of breast cancer, history of benign breast disease, height, cumulatively updated alcohol intake, cumulatively updated total caloric intake, physical activity, BMI at age 18 years and SES. In Figure 3, the 3 food categories (healthy and less healthy plant foods, and animal foods) were simultaneously included in the same model.

Conclusions

This study provides evidence that adherence to a **plant-based dietary pattern** and, specifically, its **healthful version**, may reduce the **risk of BC**, especially those that are more likely to be **aggressive tumors**. In contrast, a low-quality plant-based diet may be associated with an increased risk of **ER-negative BC**.