

# Abstract

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## **Multivitamin use and breast cancer outcomes in women with early-stage breast cancer: the Life After Cancer Epidemiology study.**

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**OBJECTIVE:** Little is known about the relation of multivitamin use to breast cancer outcomes. 2,236 women diagnosed from 1997 to 2000 with early-stage breast cancer (Stage I  $\geq$  1 cm, II, or IIIA) were enrolled about 2 years post-diagnosis, primarily from the Kaiser Permanente Northern California Cancer Registry (83%).

**METHODS:** Multivitamin use pre-diagnosis and post-diagnosis was assessed via mailed questionnaire. Outcomes were ascertained yearly by self-report and verified by medical record review. Delayed-entry Cox proportional hazards models were used to estimate hazard ratios (HR) and 95% confidence intervals (CI), adjusting for sociodemographic, tumor, and lifestyle factors.

**RESULTS:** Overall, 54 and 72% of the cohort reported using multivitamins pre- and post-diagnosis, respectively. A total of 380 recurrences, 212 breast cancer deaths, and 396 total deaths were confirmed. Compared to never use, multivitamin use after diagnosis was not associated with any outcome (recurrence HR = 0.92; 95% CI: 0.71, 1.20; total mortality HR = 0.92; 95% CI: 0.71, 1.19). Compared to never use, persistent use of multivitamins from pre- to post-diagnosis was associated with a non-significant decreased risk of recurrence (HR = 0.76; 95% CI: 0.54, 1.06) and total mortality (HR = 0.79; 95% CI: 0.56, 1.12). The protective associations were limited to women who had been treated by radiation only (P for trend = 0.048 and 0.083 for recurrence and total mortality, respectively) and both radiation and chemotherapy (P for trend = 0.015 and 0.095 for recurrence and total mortality, respectively). In stratified analyses, women who consistently used multivitamins before and after diagnosis and ate more fruits/vegetables (P for trend = 0.008) and were more physically active (P for trend = 0.034) had better overall survival.

**CONCLUSION:** Multivitamin use along with practice of other health-promoting behaviors may be beneficial in improving breast cancer outcomes in select groups of survivors.

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