

## ORIGINAL RESEARCH COMMUNICATION

# Dairy, calcium, and vitamin D intakes and prostate cancer risk in the National Health and Nutrition Examination Epidemiologic Follow-up Study cohort<sup>1,2,3</sup>

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**Background:** Dairy intake may increase prostate cancer risk, but whether this is due to calcium's suppression of circulating vitamin D remains unclear. Findings on calcium and vitamin D intake and prostate cancer are inconsistent.

**Objective:** We examined the association of dairy, calcium, and vitamin D intake with prostate cancer.

**Design:** In a prospective study of 3612 men followed from 1982–1984 to 1992 for the first National Health and Nutrition Examination Epidemiologic Follow-up Study, 131 prostate cancer cases were identified. Dietary intake was estimated from questionnaires completed in 1982–1984. Relative risk (RR) and 95% CIs were estimated by using Cox proportional hazards models adjusted for age, race, and other covariates.

**Results:** Compared with men in the lowest tertile for dairy food intake, men in the highest tertile had a relative risk (RR) of 2.2 (95% CI: 1.2, 3.9; trend  $P = 0.05$ ). Low-fat milk was associated with increased risk (RR = 1.5; 95% CI: 1.1, 2.2; third compared with first tertile; trend  $P = 0.02$ ), but whole milk was not (RR = 0.8; 95% CI: 0.5, 1.3; third compared with first tertile; trend  $P = 0.35$ ). Dietary calcium was also strongly associated with increased risk (RR = 2.2; 95% CI: 1.4, 3.5; third compared with first tertile; trend  $P = 0.001$ ). After adjustment for calcium intake, neither vitamin D nor phosphorus was clearly associated with risk.

**Conclusions:** Dairy consumption may increase prostate cancer risk through a calcium-related pathway. Calcium and low-fat milk have been promoted to reduce risk of osteoporosis and colon cancer. Therefore, the mechanisms by which dairy and calcium might increase prostate cancer risk should be clarified and confirmed.

**Key Words:** Dairy • diet • calcium • vitamin D • prostatic neoplasms