

Abstract

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High vitamin C intake is associated with lower 4-year bone loss in elderly men.

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OBJECTIVE AND METHODS: Vitamin C is essential for collagen formation and normal bone development. We evaluated associations of total, supplemental, and dietary vitamin C intake with bone mineral density (BMD) at the hip [femoral neck, trochanter], spine, and radial shaft and 4-y BMD change in elderly participants from the Framingham Osteoporosis Study. Energy-adjusted vitamin C intakes were estimated from the Willett FFQ in 1988-89. Mean BMD and 4-y BMD change was estimated, for men and women, by tertile/category of vitamin C intake, adjusting for covariates. We tested for interaction with smoking, calcium, and vitamin E intake.

RESULTS: Among 334 men and 540 women, the mean age was 75 y and mean vitamin D intake was 8.25 mug/d (women) and 8.05 mug/d (men). We observed negative associations between total and supplemental vitamin C intake and trochanter-BMD among current male smokers (P-trend = 0.01). Among male nonsmokers, total vitamin C intake was positively associated with femoral neck BMD (P-trend = 0.04). Higher total vitamin C intake was associated with less femoral neck and trochanter-BMD loss in men with low calcium (all P-trend \leq 0.03) or vitamin E intakes (all P-trend = 0.03). Higher dietary vitamin C intake tended to be associated with lower femoral neck-BMD loss (P-trend = 0.09).

CONCLUSION: These associations were attenuated but retained borderline significance (P-trend $<$ 0.1) after adjusting for potassium intake (a marker of fruit and vegetable intake), suggesting that vitamin C effects may not be separated from other protective factors in fruit and vegetables. Null associations were observed among women. These results suggest a possible protective role of vitamin C for bone health in older men.

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