

ORIGINAL RESEARCH COMMUNICATION

Calcium intake and hip fracture risk in men and women: a meta-analysis of prospective cohort studies and randomized controlled trials^{1,2,3}

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Background: The role of total calcium intake in the prevention of hip fracture risk has not been well established.

Objective: The objective of the study was to assess the relation of calcium intake to the risk of hip fracture on the basis of meta-analyses of cohort studies and clinical trials.

Results: In women (7 prospective cohort studies, 170 991 women, 2954 hip fractures), there was no association between total calcium intake and hip fracture risk [pooled risk ratio (RR) per 300 mg total Ca/d = 1.01; 95% CI: 0.97, 1.05]. In men (5 prospective cohort studies, 68 606 men, 214 hip fractures), the pooled RR per 300 mg total Ca/d was 0.92 (95% CI: 0.82, 1.03). On the basis of 5 clinical trials (n = 5666 women, primarily postmenopausal, plus 1074 men) with 814 nonvertebral fractures, the pooled RR for nonvertebral fractures between calcium supplementation (800–1600 mg/d) and placebo was 0.92 (95% CI: 0.81, 1.05). On the basis of 4 clinical trials with separate results for hip fracture (6504 subjects with 139 hip fractures), the pooled RR between calcium and placebo was 1.64 (95% CI: 1.02, 2.64). Sensitivity analyses including 2 additional small trials with <100 participants or per-protocol results did not substantially alter results.

Conclusions: Pooled results from prospective cohort studies suggest that calcium intake is not significantly associated with hip fracture risk in women or men. Pooled results from randomized controlled trials show no reduction in hip fracture risk with calcium supplementation, and an increased risk is possible. For any nonvertebral fractures, there was a neutral effect in the randomized trials.

Key Words: Meta-analysis • hip fracture • nonvertebral fracture • calcium intake • calcium supplementation • cohort studies • randomized controlled trials