

Milk intake during childhood and adolescence, adult bone density, and osteoporotic fractures in US women

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Background: Calcium supplements increase bone mass in children, but the effect does not persist once supplementation is discontinued.

Objective: The objective of this study was to determine whether milk intake during childhood and adolescence, when controlled for current calcium intake, is associated with adult bone mass (ie, bone mineral content), bone mineral density, and the incidence of osteoporotic fracture.

Design: We used data from the third National Health and Nutrition Examination Survey of 3251 non-Hispanic, white women age ≥ 20 y. Bone density was measured at the hip. History of fracture of the hip, spine, or forearm was classified as a lifetime fracture (occurring after age 13 y) or an osteoporotic fracture (occurring after age 50 y). Subjects reported frequency of milk consumption during childhood (aged 5–12 y) and during adolescence (aged 13–17 y). Regression models controlled for weight, height, age, menopause and use of estrogen, physical activity, smoking, and current calcium intake.

Results: Among women aged 20–49 y, bone mineral content was 5.6% lower in those who consumed <1 serving of milk/wk (low intake) than in those who consumed >1 serving/d (high intake) during childhood ($P < 0.01$). Low milk intake during adolescence was associated with a 3% reduction in hip bone mineral content and bone mineral density ($P < 0.02$). Among women aged ≥ 50 y, there was a nonlinear association between milk intake during childhood and adolescence and hip bone mineral content and bone mineral density ($P < 0.04$). Low milk intake during childhood was associated with a 2-fold greater risk of fracture ($P < 0.05$).

Conclusion: Women with low milk intake during childhood and adolescence have less bone mass in adulthood and greater risk of fracture. Am J Clin Nutr 2003;77:–65.

Key Words: Bone density • milk intake during childhood and adolescence • calcium intake • osteoporosis • peak bone mass • fracture • women