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Colas, but not other carbonated beverages, are associated with low bone mineral density in older women: The Framingham Osteoporosis Study.

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BACKGROUND:

Soft drink consumption may have adverse effects on bone mineral density (BMD), but studies have shown mixed results. In addition to displacing healthier beverages, colas contain caffeine and phosphoric acid (H₃PO₄), which may adversely affect bone.

OBJECTIVE:

We hypothesized that consumption of cola is associated with lower BMD.

DESIGN:

BMD was measured at the spine and 3 hip sites in 1413 women and 1125 men in the Framingham Osteoporosis Study by using dual-energy X-ray absorptiometry. Dietary intake was assessed by food-frequency questionnaire. We regressed each BMD measure on the frequency of soft drink consumption for men and women after adjustment for body mass index, height, age, energy intake, physical activity score, smoking, alcohol use, total calcium intake, total vitamin D intake, caffeine from noncola sources, season of measurement, and, for women, menopausal status and estrogen use.

RESULTS:

Cola intake was associated with significantly lower ($P < 0.001-0.05$) BMD at each hip site, but not the spine, in women but not in men. The mean BMD of those with daily cola intake was 3.7% lower at the femoral neck and 5.4% lower at Ward's area than of those who consumed <1 serving cola/mo. Similar results were seen for diet cola and, although weaker, for decaffeinated cola. No significant relations between noncola carbonated beverage consumption and BMD were observed. Total phosphorus intake was not significantly higher in daily cola consumers than in nonconsumers; however, the calcium-to-phosphorus ratios were lower.

CONCLUSIONS:

Intake of cola, but not of other carbonated soft drinks, is associated with low BMD in women. Additional research is needed to confirm these findings.