Calcium Plus Vitamin D May Cut Older Women's Weight Gain

OAKLAND, Calif., May 15 -- Supplementation with calcium and vitamin D may help some postmenopausal women avoid weight gain, researchers here reported.

The benefit that emerged from a randomized trial was greater among those who fell short at baseline of the daily recommended amount of calcium, found Bette Caan, Dr.P.H., of Kaiser Permanente Northern California, and colleagues.

Nevertheless, the overall benefit was small, they reported in the May 14 issue of *Archives of Internal Medicine.*

The role of calcium in maintaining a healthy body weight remains controversial, the investigators noted. However, some evidence exists that calcium and vitamin D and foods rich in these nutrients may have a role in effective weight management.

The biological rationale, they suggested, comes from the observation that calcium and 1,25-hydroxyvitamin D work in concert to regulate lipid metabolism in adipose cells, particularly by stimulating fatty acid oxidation and suppressing lipogenesis, the researchers said.

The double-blind, placebo-controlled trial included 36,282 postmenopausal women, ages 50 to 79. They were already enrolled in the dietary modification and/or hormone therapy arms of the Women's Health Initiative clinical trial from 1993 to 1998.

The women were randomized at their first or second annual visit to a dose of 1,000 mg of elemental calcium plus 400 IU of cholecalciferol (vitamin D) or placebo daily. Change in body weight was determined annually for an average of seven years.

Of the women, the 18,176 randomized to calcium plus cholecalciferol supplements versus 18,106 women receiving placebo treatment had a minimal but consistent favorable difference in weight change (mean difference, −0.13 kg; 95% confidence interval, −0.21 to −0.05; P=0.001), the researchers reported.

At three years, women with daily calcium intakes less than 1,200 mg at baseline who were randomized

to supplements were 11% less likely to gain small amounts of weight (1 kg to 3 kg), and 11% less likely to gain more moderate amounts (more than 3 kg); (*P* for interaction for baseline calcium intake=0.008).

They also had a higher likelihood of remaining stable (+ 1 kg) or losing weight (> 1 kg).

The results were similar for the risk of weight gain for the entire seven-year trial (OR 0.96; 95% CI 0.93-0.99; *P*=0.005 for > 1-kg gain versus weight stable or weight loss).

However, women whose initial calcium intakes were at or greater than the recommended daily intake of more than 1,200 mg were unaffected by treatment, the researchers found.

These findings support the findings of some, but not all, of the previous studies, the researchers said.

For example, the Coronary Artery Risk Development in Young Adults study reported that baseline dairy intake was inversely associated with BMI and that throughout the 10-year follow-up of this cohort, each daily serving of a dairy food was associated with a 21% reduced risk of the developing insulin-resistance syndrome, a serious consequence of obesity.

In contrast, a Norwegian cross-sectional study found a positive association of calcium with BMI for men and no association of calcium with BMI among women.

The limited experimental data in this area are inconclusive, the researchers said, and many studies are limited by small sizes or short duration.

The small magnitude of the effect in this study has several possible explanations, the researchers said. One possibility is that the benefit of calcium in weight management may in fact be small and detected in this trial only because of the large sample size.

Others have proposed that the benefit of calcium in the absence of an energy deficit is likely to be small.

Another possibility, the researchers suggested, is that the source of calcium supplementation in their study was derived from nondairy products. Several studies that showed larger beneficial effects from calcium derived from dairy products compared with supplements.

This study had some notable limitations, the researchers wrote. These included the inability to identify whether weight changes were due to changes in fat mass or other critical components of body composition.

Second, they said, they were unable to adequately examine whether the effect of the intervention varied by baseline status of vitamin D, since they did not routinely measure serum concentrations of 25-hydroxyvitamin D, the preferred measure of vitamin D status.

On the other hand, they said, the long duration of this study allowed them to collect multiple weight measurements using a standardized protocol that permitted precise measures of weight change during the follow-up period.

Because the study was in postmenopausal women, it is possible to generalize to a group for whom slow but steady weight gain can be a common health concern, they said.

Preventing weight gain is an important public health goal, and caloric restriction and daily physical activity should still be considered the basic tenets of weight management, the researchers said.

These findings do not alter current dietary recommendations, Dr. Caan wrote. Postmenopausal women should continue to be advised to consume 1,200 mg a day of calcium as recommended by the Food and Nutrition Board of the National Academy of Sciences.

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