

[Send to printer](#) [Close window](#)

Calcium

BROBSON LUTZ, M.D.



JANE SANDERS ILLUSTRATION

Along with roses, a bottle of calcium supplements is this year's choice for a caring and thoughtful Mother's Day gift. Over 20 years ago, the National Health and Nutrition Examination Survey first showed an inverse association between calcium intake and body weight, suggesting that dietary calcium may play a role in the body's weight regulation.

Three years ago the Journal of the American Dietetic Association published a study looking at weight and nutritional supplements. They mailed nutritional questionnaires to 53- to 57-year-olds in a 13-county area of Washington state. To tease out dietary routines they asked about food intake based on 120 foods or food groups, supplemental vitamins and minerals and health habits. The analysis included those with returned questionnaires who allowed access to their medical records including all recorded weights for the past 10 years.

Using the magic of computers and statistics, the researchers matched for other possible bias factors including education, smoking history, food intake and recreational physical activity. When looking at calcium intake, an interesting trend emerged for women. Those who never used a calcium supplement gained an average of 15.3 pounds as they moved in age from their mid-40s to their mid-50s, while women with high intakes gained an average of 10.9 pounds.

The decreased weight gain was most significant for those women who took over-the-counter calcium supplements even with diets low in calcium-rich foods. And the effect was dose-related, meaning those women who reported taking higher doses of calcium supplements put on fewer pounds over the 10-year period. There was a similar but not statistically significant trend for men, but their differences in weight gain were not as pronounced as they moved from their mid-40s to their mid-50s.

This 2006 study wasn't the first to look at calcium and weight. Over the years results have been mixed for randomized clinical studies looking at calcium intake from both foods and supplements. As for dietary intake, earlier studies suggested that diets high in calcium might retard weight gain, but the Washington study showed no real difference for persons not taking calcium supplements regardless of their intake of calcium-rich foods.

As for prior calcium supplementation studies, some showed weight loss with extra calcium and others showed no effect. But these earlier studies enrolled only 20 to 200 subjects with follow-up periods from three months to four years. The Washington state study dwarfed all prior published surveys – 11,000 persons with a look back of 10 years.

Why the male/female differences? Why do women have the edge on less weight gain with long-term calcium supplementation? Is it hormones? Estrogens increase intestinal absorption and bioavailability of calcium, but something else is at play here. The postmenopausal women taking calcium but not estrogen supplements were the women less likely to gain weight.

This type of retrospective observational study is subject to biases as all supplement and dietary information was self-reported. Persons taking the time to complete a long questionnaire are usually more health-conscious. Those responding had more education and were less likely to be smokers compared to the general population.

The gold standard in clinical research is the prospective double-blind placebo-controlled trial. And results are just out in time for Mother's Day from one of these, a small but well-designed study out of Québec published in the *British Journal of Nutrition*. The guinea pigs were 63 overweight Canadian women mostly in their 40s. All the women promised to follow a modest diet to decrease total caloric intake. In addition, all women took an identically appearing capsule twice a day.

It was a truly double-blind and randomized study. All women took one capsule twice a day. The supplement contained 600 milligrams of calcium in addition to a small amount of Vitamin D in each capsule. The placebo capsules looked just like those containing the calcium. Neither the women nor the researchers knew who were taking extra calcium or placebo.

On first analysis it appeared that the study was a failure. There was no statistically different weight loss between the women taking the calcium supplement and those taking placebo. But as researchers teased apart the analysis, an interesting connection became apparent when looking at the women with lower than normal dietary calcium intake. The women in the calcium supplementation group lost an average of 13 pounds compared to only 2 pounds for the women taking the placebo capsules.

Milk, yogurt and cheese are our time-honored sources of calcium (see box). Infants and smaller children should consume 200 to 800 milligrams of calcium daily. Beginning around age 9, the need for daily calcium increases to 1,300 milligrams until around age 18 to cover growth spurts and bigger bones. Adults, unless pregnant or nursing, only need about 1,000 milligrams daily until age 50. The recommended intake increases to 1,200 milligrams over age 50 to account for increased bone breakdown and osteoporosis.

Vitamin D, an important co-pilot in the calcium equation, is absent from most natural foods. It is body-made from living skin exposed to sunlight. Without sufficient Vitamin D, calcium from ingested foods and supplements is not absorbed and normal bone metabolism suffers. Thus many calcium supplements also contain varying amounts of Vitamin D resulting in a vertigo-inducing array of calcium supplements on the drugstore shelves. Rickets is the rare but well-known result of Vitamin D deficiency in children. Much more common subtle forms of Vitamin D and calcium deficiencies play havoc in adults over age 50 causing various degrees of osteopenia and osteoporosis.

To checkout the availability of calcium and Vitamin D supplements, I visited the Walgreens on Elysian Fields at St. Claude Avenue. This somewhat small Walgreens stocked over a dozen different brands and combinations of calcium and Vitamin D on their shelves. It is a cheap supplement. Caltrate 600 Plus D duplicates the dose in the Québec study by taking one twice daily. Sixty of these cost about \$7 a month compared to about \$2 a month using the generic Walgreens brand.

My favorite calcium supplement is Os-Cal with Vitamin D because of its oyster shell connection. The company claims to grind old oyster shells into powdered calcium carbonate as the base for all their Os-Cal products.

So what's the calcium and weight loss link? The scientist behind the Quebec study believes that the brain picks up on low calcium reserves and signals the stomach that it needs more food. Regardless of the reason, calcium supplements may help some folks keep off some extra pounds. He says calcium seems to stifle the desire to eat more. In previous studies he reported that women who consumed diets low in calcium were more overweight with bigger waistlines and higher cholesterol values.

There is even an evolutionary niche here. Prehistoric humans had high calcium diets from chewing and swallowing the small bones of birds and scooping out the marrow from larger bones. At one time urologists linked high calcium diets to excess kidney stones, which are crystallized deposits of minerals usually including calcium. Now we know that high calcium diets are associated with a decreased incidence of kidney stones and that other factors including reduced fluid consumption and diets high in certain chemicals called oxalates are more at fault.

Conclusion: the next time you eat from Popeyes, chewing on those chicken bones for extra calcium can't hurt, but swap out the biscuit for a couple of Os-Cal with Vitamin D.