

The Women's Health Research Program

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Can calcium supplements cause heart disease?



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THE CONVERSATION

People taking calcium supplements to mitigate their risk of developing bone disease (osteoporosis) may be doing more harm to their health than good. That's because a growing body of research shows the supplements confer little benefit and increase the risk of developing heart disease.

Calcium supplements have also traditionally been thought to reduce the risk of heart attacks because they produce small beneficial changes in both blood pressure and blood cholesterol levels. We set out to test this idea in a trial we had originally designed to check the effect of calcium supplements on fractures and bone density.

To our surprise, what we discovered was that heart attacks were actually more common in the (randomly selected) women who received calcium supplements than those who had randomly been given inactive tablets.

When we published this study in the *Medical Journal* in 2008, it caused widespread surprise among doctors

working in the area, as well as the general public. So to test whether this was the true effect of calcium supplements, we decided to do a meta-analysis of studies about taking them.

First, we contacted all the researchers who had carried out large trials of calcium supplements in the past to see whether they'd kept records of the medical problems that occurred in the course of the trials.

Data were available from 93 per cent of trial subjects (almost 12,000 people) and these confirmed our finding that women who received calcium tablets in the studies had a 20 per cent to 30 per cent increase in heart attack risk.

We subsequently added to this database the results from other trials in which the intervention was calcium and vitamin D, rather than calcium alone. This showed the same effect – a 25 per cent increase in the



risk of heart attacks and a 15 per cent increase in the risk of stroke.

These results were based on almost 29,000 people participating in research and so were much more reliable than the results we had published previously.

From these analyses, we were able to determine that the number of heart attacks and strokes apparently caused by calcium supplements was greater than the number of fractures



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that they appeared to prevent. Naturally, we concluded that the use of calcium tablets was likely to be doing more harm than good and should be discontinued.

It's very important to note that none of our analyses included the effect of calcium-rich foods, and there's really no evidence suggesting that a calcium-rich diet causes heart problems.

The reason for the difference between tablet supplements and food remains uncertain, but it may be related to the increase in blood calcium level that's seen for several hours following the large dose of calcium in tablet form. In contrast, calcium in food is absorbed more slowly and has very little impact on blood calcium levels.

Elevations of blood calcium levels have previously been shown to increase the risk of heart disease, possibly through producing calcium deposits in the walls of blood vessels and accelerated arterial disease.

A number of other researchers have now looked into these questions. This month, researchers from Germany reported that individuals taking calcium supplements appear to almost double the risk of heart attacks compared with people not taking supplements. And again, those who have high dietary calcium intakes tend toward lower risk of heart disease.

The German study didn't randomly assign participants into groups taking calcium or placebo tablets, but simply reported events in individuals who had made the decision to take supplements independently. This is a less reliable way of determining the effects of an intervention than a randomised trial. Nonetheless, this observational study provides supportive evidence for the results of our trial analyses.

Last year, researchers in Sydney studied the effects of calcium supplements in a very elderly group of individuals living in hostels. One-third of the 600 people in the group died during follow up. Death rates increased by 47 per cent in those randomised to calcium and death from heart disease was increased by 76 per cent.

So the weight of evidence that calcium supplements are bad for the heart has steadily increased. What, then, should people do in the face of these findings?

Calcium supplements are mainly used to reduce the risk of fractures from osteoporosis (a bone disease that leads to increased likelihood of fracture). But there are other important measures that will also contribute to osteoporosis prevention, such as regular exercise, not smoking, maintaining a healthy body weight, regular sunlight exposure to maintain vitamin D levels, and removal of falls hazards in the home (such as loose rugs, power cords, and slippery floors).

A steady supply of calcium is important for bone health, but research clearly shows this should be derived from a balanced diet that includes several servings of dairy products, or other calcium sources, such as dark green vegetables or tofu.

Women in their 60s and men in their 70s should have their risk of osteoporotic fractures formally assessed. This usually involves bone density measurement.

People found to be at high risk of fractures should consider using one of the medicines proven to safely reduce fracture risk. This is likely to be more effective than relying on the weak anti-osteoporotic effects of calcium supplements, which come at an unacceptably high price – the increased risk of heart disease.

Get involved in research

Worried about your waistline?

Would you like to join a study looking at the effects of metformin, a drug used to treat diabetes, on women who have put on weight but still have normal blood sugar levels? This research will help determine whether metformin might be used for prevention of diabetes, weight loss and improving cholesterol levels in women.

We would like to invite you to take part in this study if you are an overweight woman aged between 35–65 years with a body mass index (BMI) between 30–40, a waist circumference greater than 88 cm and a normal fasting blood sugar (not diabetic).

Your participation will involve four visits to the Women's Health Research Program at the Alfred Centre (Melbourne) and one visit to a pathology collection centre. You will be randomly allocated to be treated with either metformin or a placebo and will be monitored for 26 weeks.

If you would like more information, (including further inclusion criteria) regarding this and other studies please contact the Women's Health Research Program on 03 9903 0820 or by email on womens.health@monash.edu or visit our website: womenshealth.med.monash.edu

Disclosure Statement:

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