

Nutritional supplements and diets not always protective, research suggests

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WVU researcher Safi Khan, an assistant professor in the School of Medicine, performed an umbrella review of meta-analyses and randomized controlled trials. He found that many nutritional supplements and diets don't protect against cardiovascular problems and death. Credit: Jennifer Shephard/WVU

Do the nutritional supplements people take or the diets they adhere to actually protect them against cardiovascular problems and death?

Maybe not, suggests a new umbrella review of meta-analyses and randomized controlled trials by Safi Khan, an assistant professor in the West Virginia University School of Medicine. His findings appear in the *Annals of Internal Medicine*.

He and his colleagues analyzed 277 randomized controlled trials—in which nearly 1 million adults participated—to find out how various nutritional supplements and diets influenced [mortality rates](#) and cardiovascular outcomes.

Of the 16 [nutritional supplements](#) considered, only two seemed beneficial: folic acid and [omega-3, long-chain fatty acids](#). The findings suggest that taking folic acid may protect against stroke and

that taking omega-3s may reduce the risk of heart attack and coronary heart disease.

"The reason we conducted this study was that millions of people in the United States and across the world consume supplements or follow certain [dietary patterns](#), but there was no good-quality evidence to suggest that these interventions have any effect on cardiovascular protection," Khan said.

The researchers considered whether the supplements and diets changed the rates of all-cause mortality, cardiovascular mortality, heart attack, stroke and coronary heart disease. They also evaluated the quality of the evidence that underpinned the trials' findings.

They found that taking both calcium and vitamin may actually be harmful. The meta-analysis indicated—with moderate certainty—that taking a combination of calcium and vitamin D may increase the risk of stroke.

But taking calcium or vitamin D alone seemed to have no effect on mortality or cardiovascular outcomes whatsoever. Neither did any of the other supplements that the meta-analysis addressed, such as multivitamins, iron, folic acid, beta-carotene and antioxidants.

When the researchers turned their attention to diets, they discovered that eating less salt improved all-cause mortality rates in people with normal blood pressure. It also made cardiovascular-related deaths rarer among hypertensive people. But reducing sodium was the only diet that demonstrated any benefit. The other seven—which included eating less or different types of fat, adopting a Mediterranean diet and increasing fish-oil intake—had no effect.

"Reduced salt intake was associated with improving overall survival and cardiovascular mortality. This is something that can be backed up with logic

because there is a sufficient amount of data, in [various studies](#), that shows low salt intake basically improves hypertension, which directly influences cardiovascular outcome," Khan said.

Evidence supporting the benefits of folic acid and omega-3s—and the detriment of combining calcium and vitamin D supplements—was less robust. For instance, the inclusion of one study from China—where diets are not usually rich in naturally occurring folic acid—may have had a disproportionate effect on the [folic-acid](#) results. And most studies relied on food diaries, which aren't always reliable.

"The randomized controlled trials lacked precision. They had issues in terms of methodology, in terms of the target population and in terms of when and where these studies were conducted," Khan said. "So you have to take these findings with a pinch of salt."

More information: Effects of nutritional supplements and diets on cardiovascular outcomes: An umbrella review and evidence map, *Annals of Internal Medicine* (2019). annals.org/aim/article/doi/10.7326/M19-0341

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