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Multivitamins, Part 3

In the *Prevention* magazine article titled “Should You Kick the Multivitamin Habit?” written by Sarah Mahoney (1), the author suggests that research has shown that multivitamins do no good and in some cases may be harmful. I examined two of the largest studies talked about in the article to see if the research backs up the comment.

To repeat, my position is simple: I think we should all take a high-quality multivitamin-multimineral every day because even if we eat a great diet, we just don’t know which nutrients are and are not in the foods we eat due to wide varieties in time of harvest, methods used to preserve food, variations in soil content, storage methods at the central distribution hub, how far the food travels to reach you, how long it sits before you buy it and eat it, and how you prepare it. There are many opportunities for foods to lose nutrition between the farm and your table, so a little nutritional insurance every day is a good backstop. That’s my starting position, so let’s see whether there’s merit or not to this portion of the *Prevention* article.

Claim: Multivitamins Do No Good

There were two sources for this statement. I reviewed the longest study in last week’s message. In the second study, the statement that multivitamins do no good was the result of a study published in the *Archives of Internal Medicine* on data collected from the Women’s Health Initiative (2). This study was started almost 20 years ago and has several parts. Three are intervention studies that look at hormone-replacement therapy, calcium supplementation, and diet modification; the other is an observational study. Combined the studies include over 161,000 women.

Researchers collected data on supplement use for all women. After eight years, they collected data on how many women were diagnosed with cancer and cardiovascular disease (CVD). They reported that there was no statistically significant reduction in the rate of any type of cancer or heart disease. Actually, what the researchers really said was much stronger: this study provided convincing evidence multivitamin use has little or no influence on the risk of common cancers, CVD, or total mortality in postmenopausal women.

That’s a pretty dramatic statement. Does the data support the statement? Let’s take a look. I’m going to focus on breast cancer and heart attacks because those had the highest number of cases. While there was no statistically significant difference in the rate of breast cancer in the women who took multivitamins versus those who didn’t, there were differences that might have been more profound with a longer follow-up time. Compared with no vitamin intake, those women who took only a multivitamin had a 5% increased risk, women who took a multivitamin-multimineral had a 3% lower risk, and those who took a stress multivitamin (high amounts of B vitamins) had a 6% lower risk of developing breast cancer over eight years.

When it came to heart attacks, there was a 6% increased risk with just a multivitamin, 4% reduced risk using a multivitamin-multimineral, and a 25% reduced risk using a stress multivitamin. Statistically significant or not, there’s some information there that shows that a multivitamin-multimineral or stress multivitamin may have some protective effect. It also shows that taking vitamins alone probably needs to be balanced with minerals.

I had several issues with the research report besides the interpretation of the analyses. The researchers went to great pains to collect the actual labels of the supplements that the women were using. Why didn’t they examine the nutrient combinations in each multi? If you collect the data, and it’s stored electronically, in the age of high-speed computers, it wouldn’t be hard to generate patterns of nutrients that might be better than others. Why collect it if you’re not going to use it?

They also used an odd way of determining who took multivitamins. If a woman took the supplement just once a week, they were included in the “Uses Multivitamin” category. It strikes me that if you’re going to such pains to collect this type of data, you could determine the actual number of times per week the women took the supplements and analyze data by days of use per week. Taking a supplement once a week is like eating a high-fat diet all week and eating fruit one day—what’s the point? That one day shouldn’t mean you’re included in any type of analysis for regularly eating fruit.

There’s one more point. If you look at the 10-year risk of women 50 to 69 getting diagnosed with breast cancer, it’s about 2.5% according to the National Cancer Institute. The rate in the study for eight years was about 0.44%. Why would the risk of this population of women be so low in relation to national statistics?

Claim: Multivitamins May Do Harm

The primary study used for this conclusion in the *Prevention* article was the Swedish Mammography Study (3). Women were tracked for 9.5 years and divided by those women who used multivitamins and those who did not. Over that time, 974 women developed breast cancer. In the group who did not take multivitamins, 681 women developed breast cancer for a risk of 0.27%. In group who did take multivitamins, 0.34% of the women developed breast cancer. The increase risk of taking the multivitamin was 19%. Another way of looking at the numbers is that over 9.5 years, six additional women out of 10,000 could be diagnosed with breast cancer if they took a multivitamin.

That’s not really the point. One could argue that every case of breast cancer or CVD or any type of disease is serious, and we certainly shouldn’t do anything to promote disease. Fine. But again in this study, why is the 10-year risk of getting breast cancer so low? Remember, the NCI says it’s 2.5% for women in this demographic, and there’s really no difference between Sweden and the U.S. or Canada in the rate of developing breast cancer. When the incidence of breast cancer in the study is so out of line with overall rate outside the study, I have to wonder why.

Lies, Darn Lies, and Statistics

Mark Twain attributed this saying to 19th Century British Prime Minister Benjamin Disraeli: “There are three kinds of lies: lies, damned lies, and statistics.” Many people distrust statistics, believing they’re used to manipulate public opinion. That no doubt happens occasionally, but in any case, statisticians seem to speak their own language.

For example, in everyday life significant means important; in statistics, significant means true. The term “statistically significant” is a threshold a study’s results must pass to be considered valid and not possibly due to chance or an unusual event. And even if a result meets the test of significance, it can still be unimportant in real life. Let’s say a study shows that husbands can get ready to go to a party faster than wives can. So what? Nobody’s leaving until they’re both ready.

In the case of these studies, by saying the results aren’t statistically significant the researchers are saying the differences in the two groups may be due to chance—good luck or bad luck. However, it still gets reported and published as if the studies proved something.

Statistical significance is a moving target; the bigger the subject group, the lower the number that must be reached to show significance. Because of the low number of subjects using the stress multi, even a 25% reduced risk of CVD didn’t meet the test to be statistically significant. For those of us who aren’t statisticians, it’s hard to imagine that large a reduction is just luck. If you look at the results of the study and decide that a stress multivitamin-multimineral is probably a good investment—well, I can’t argue with that logic.

The Bottom Line

Two points. First while CVD and breast cancer are important risks for women, regular supplementation has many, many beneficial effects that are also important. And when surveyed, women say their primary reason for taking a multivitamin is to feel better; reducing disease ranks third. No one should make a decision on taking supplements

without considering all the pros and cons. For more on this topic, see the Research Update in the **Basic Health Info** section of drchet.com called **Women and Multivitamins**.

Second, I don't think either study provides compelling evidence that the use of a multivitamin-multimineral will have no effect or a negative effect on cancer or heart disease. The Women's Health Initiative collected data they didn't use and defined regular supplement use in a very curious way. The Swedish Mammography Study didn't collect enough data about the multivitamins to know if there could be any pattern. These types of large studies could have at least answered how many days of the week a woman took her vitamin supplement and what made up the supplement. Because neither study did something so basic, the results are rendered suspicious if not plain meaningless.

I'll wrap up this topic next week, so be sure not to miss it.

What are you prepared to do today?™

Dr. Chet

References:
1. J Natl Cancer Inst. 2010 Apr 6 Online First.
2. Arch Int Med 2009;160(3):294-301.
3. Am J Clin Nutr 2010;91:1268-72.