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Dark-Chocolate Study: The Problems

After Thursday's [message](#), you've got to be wondering what could be worse with the dark-chocolate study than its misleading conclusions. I'm going to examine the process the author explained in his faux study to show how that applies to many research studies from legitimate health research.

Not enough of the right expertise

There was no input from a nutrition expert that I could find. The author used a physician to do the study and collect the data. Even though the purpose of the study was to prove that eventually something will be statistically significant because so many variables were collected, they still should have had input from an expert in weight loss.

That happens in health studies conducted by legitimate researchers all the time, and it's even worse on studies on dietary supplements. How can you perform a study without an expert in the field to bounce questions off? Physicians know medicine, but they're not experts in nutrition, supplements, or weight loss just because they're physicians. A study with a nutritional aspect that doesn't have an expert nutritionist involved is doomed to making mistakes.

Overuse of statistics

The biggest problem is actually related to what the author tried to prove: collect enough variables with so few subjects and something will be significant. He stated the obvious as he made fun of his profession. What is worse and done all the time is that researchers will load data into a statistical program and keep chunking the data until something is significant. You may be wondering—what's the difference?



Every statistical test a researcher runs costs something called a degree of freedom that's generally calculated as one minus the number of subjects in the study. That means that in a study with 15 subjects, you're supposed to run no more than 14 statistical tests. This is the real problem with published research today. Fast computers can run hundreds of different analyses in seconds; they all count against those degrees of freedom. The problems that can occur with too many variables and too few subjects can happen with too many statistical tests as well.

The author pointed out that many studies are done with the collection of lots of data from a few subjects in the hope that something will pop out. If you wanted to legitimately prove dark chocolate improves weight loss, that would be your hypothesis, you'd have more subjects, you'd collect data related to that hypothesis, and you wouldn't end it by running a huge number of statistical tests; you'd test for the study's findings that prove or disprove your hypothesis. That's how real science is done.

The Bottom Line

This overuse of research statistics has been on my mind for months, and this seemed like the dark-chocolate icing on the cake. I won't get that type of set up again from a journalist who's trying to be more clever than he really is. It gives you an insight into the way I think when I read and write about research. I put my PhD to work

and look at studies from the perspective of a scientist, not a health reporter; I dig into the statistics and how the tests are done so you don't have to.

My goal isn't to convince you of my opinion, it's to vet the studies—to give you an even-handed explanation of the study and how it affects your real life. I hope you'll keep reading and listening, and I hope you'll pass the messages along to other people you think might be interested in an impartial look at the latest health news.

Piece of dark chocolate, anyone?

What are you prepared to do today?

Dr. Chet

Reference: <http://io9.com/i-fooled-millions-into-thinking-chocolate-helps-weight-1707251800>.

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