The misleading vegan diet twin study

written by Dr. Ronald Hoffman | December 14, 2023

Once again, it's science and medical reporting via press release:

"Rare study on identical twins confirms vegan diet's broad health boost"—*New Atlas*

"Identical Twins Study Reveals Something We All Secretly Knew About Vegan Diets—When it comes to cardiovascular health, there was a clear winner in vegan versus omnivore"— *IFLScience*

"Identical twins tried plant-based and omnivore diets – the vegans were biologically younger and healthier in just 8 weeks" *YahooLife!*

The chief investigator of the clinical trial, Stanford University professor of medicine Christopher Gardner Ph.D, crowed, *"Not only did this study provide a groundbreaking way to assert that a vegan diet is healthier than the conventional omnivore diet, but the twins were also a riot to work with!"*

Let's break down the study.

Most research on the relationship between diet and health conditions like heart disease—indeed the risk of dying—is *observational.* The studies are plagued by methodological problems, so their conclusions are unreliable.

First, they're often based on recall, which is notoriously untrustworthy. Participants are given questionnaires or logs, indicating how much of various foods they consume, sometimes reaching back decades. Their reports are prone to omission, exaggeration, and virtue-signaling.

Second, there's what has been referred to as a *"healthy-user bias"*. This refers to the fact that those who adhere to *any* specific practice, whether it be diet, supplements, exercise, daily stress reduction measures—even those who dutifully take medications, get checkups, and undertake preventive screening procedures—are more likely to engage in healthier lifestyle measures. Therefore, the variable under study becomes, not the cause of a health outcome, but rather a marker of an overall more prudent approach to life.

There is often an attempt to “control” for variables like smoking, alcohol abuse, obesity, sedentary habits—but not all variables can be accounted for.

Finally, there’s the effect of *genetics*. It may be that some people are naturally more or less prone to disease or death. A study that claims an overall benefit of an intervention may indicate it works in most people, but for a considerable minority it’s a wash, or even deleterious; that’s genetic individuality at work. Studies may thus be a lousy basis for *personalized* medicine.

The new Stanford study attempts to address these deficiencies. It utilizes a *prospective* design, which means that the diets were studied going forward, not via faulty recall.

Additionally, it harnesses the power of twin studies, in which genetically identical individuals are subjected to different interventions—in this case, pitting a strict vegan diet vs. an omnivorous diet—for eight weeks.

So as not to stack the deck too much, both diets were bereft of added sugar and ultra-processed junk foods. The vegans consumed no eggs, dairy products, or any animal protein whatsoever. The omnivores were allowed all of the aforementioned proteins, but no red meat. Both groups received plenty of fruits and vegetables.

It was kind of a smorgasbord—participants were allowed to eat as much as they wanted and weren’t instructed to restrict calories or food intake (more on that later).

The results were striking: After just eight weeks, the vegan twins experienced a 15-point drop in LDL cholesterol and a 20% reduction in fasting insulin—indicating improved blood sugar metabolism. They also lost an average of 4.2 more pounds than the omnivores. Twins on the vegan diet tested younger on measures of biological versus chronological age, data which will be presented in a future study, Gardner said—hence the “rejuvenating” claim.

But there are some problems. The vegans experienced a 65% decline in their B12 levels—a vitamin essential for mood and nerve function, and that may even stave off dementia. Indeed, many studies demonstrate that long-term adherence to strict vegan diets is associated with higher rates of depression. It’s unclear from this short eight-week intervention what the long-term effects of deficits of other key nutrients—like iron and omega-3 fatty acids—might be in the vegan twins. Inadequate protein, too, has been found to be a risk factor for frailty and osteoporosis among seniors.

In pregnancy, childhood, and adolescence, recovery from surgery or severe illness, deficiencies of such critical nutrients could prove catastrophic.

The author of a recent study recently commented, *“If we continue to move towards diets with less meat and dairy products, reducing intakes of micronutrients essential for a child’s development, vitamin deficiencies will continue to grow unless women start taking more supplements or are supported with specific advice about nutrient-rich foods.”*

Additionally, the Stanford Twin study didn't control for caloric intake. Some experimental setups administer *isocaloric* diets; this one allowed for food intake *at will*. What's yummier—plain steamed broccoli, or broccoli drizzled in butter or melted cheese? It's likely that the vegan fare was less palatable and led to caloric restriction—with its inevitable impact on weight reduction and metabolic optimization. A more persuasive research design might have evaluated the effects of *isocaloric* diets, with or without saturated fat, on weight and metabolic endpoints.

Other clinical trials contradict the Stanford twin study. One, entitled "Comparison of the Atkins, Zone, Ornish, and LEARN diets for change in weight and related risk factors among overweight premenopausal women", found that all the diets, similarly calorically restricted, produced virtually identical weight loss—except for the high-animal protein, high-fat Atkins diet, which outperformed the others in pounds shed. And, in direct conflict with the Stanford, it revealed that, at 12 months, *the Atkins diet yielded more favorable metabolic effects.*

Little mention is made of the *sustainability* of a restrictive vegan diet. How many of the twins would voluntarily opt to adhere to it beyond the eight-week study period?

And what of the LDL-lowering benefits of the vegan diet? While it's commonly acknowledged that LDL is a culprit in individuals with heart disease, studies have demonstrated that lower is not necessarily better in terms of the ultimate endpoint—*mortality.*

Both low LDL as well as high LDL were predictive of earlier death in a recent study. To the argument that low LDL is sometimes merely an accompaniment of a risky health condition, the authors of the study reassure: *"The observed association persisted after adjusting for potential confounders . . . such as age, sex, race, marital status, education level, smoking status, BMI, hypertension, diabetes, cardiovascular disease, cancer."* The ideal death-defying LDL was found to be a whopping 130 mg/dL, well above current guidelines for optimizing cardiovascular risk.

A second study confirmed, *"In the general population, low and high levels of LDL-C were associated with an increased risk of all cause mortality, and the lowest risk of all cause mortality was found at an LDL-C concentration of 140 mg/dL."* Clearly, the "Goldilocks Principle" applies to LDL.

Finally, there's the issue of bias. Dr. Gardner, while an accomplished nutrition researcher, has an agenda. He's put out YouTube videos that caution

against the keto diet and suggest protein is overrated. He's a former vegan and adheres to a plant-based diet.

Gardner is also Director of the Stanford Plant-based Diet Initiative. Their website discloses:

"The Stanford Plant-Based Diet Initiative (PBDI) was made possible by a generous gift from Beyond Meat and looks to reap the positive benefits a more plant-based, less animal-based diet has on both individuals and the environment."

Isn't that an inherent conflict of interest?

In his Stanford profile, Gardner writes:

"In the past few years the interests of my research group have shifted to include three additional areas of inquiry. One of these is Stealth Nutrition. The central hypothesis driving this is that in order for more effective and impactful dietary improvements to be realized, health professionals need to consider adding non-health related approaches to their toolbox of strategies. Examples would be connections between food and 1) global warming and climate change, 2) animal rights and welfare, and 3) human labor abuses (e.g., slaughterhouses)."

This, I believe, is a cardinal sin in nutrition research—prioritizing advocacy over objective science. In hitching his wagon to climate, environmental, animal rights, or social agendas, Gardner tacitly admits that, even if the science is shaky, and the health benefits controversial, it's better for the planet to adopt a plant-based diet anyway.

What it boils down to is that *any* diet that dramatically restricts your food choices, delivers less delectable foods, and prompts dramatic weight loss, will reduce your cardiovascular risk. Will it make you healthier or extend your life? This study proves neither, notwithstanding breezy headlines.