

THE QUESTIONABLE LINK BETWEEN SATURATED FAT AND HEART DISEASE

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"Saturated fat does not cause heart disease"—or so concluded a big study published in March in the journal *Annals of Internal Medicine*. How could this be? The very cornerstone of dietary advice for generations has been that the saturated fats in butter, cheese and red meat should be avoided because they clog our arteries. For many diet-conscious Americans, it is simply second nature to opt for chicken over sirloin, canola oil over butter.

The new study's conclusion shouldn't surprise anyone familiar with modern nutritional science, however. The fact is, there has never been solid evidence for the idea that these fats cause disease. We only believe this to be the case because nutrition policy has been derailed over the past half-century by a mixture of personal ambition, bad science, politics and bias.

Our distrust of saturated fat can be traced back to the 1950s, to a man named Ancel Benjamin Keys, a scientist at the University of Minnesota. Dr. Keys was formidably persuasive and, through sheer force of will, rose to the top of the nutrition world—even gracing the cover of *Time* magazine—for relentlessly championing the idea that saturated fats raise cholesterol and, as a result, cause heart attacks.

This idea fell on receptive ears because, at the time, Americans faced a fast-growing epidemic. Heart disease, a rarity only three decades earlier, had quickly become the nation's No. 1 killer. Even President Dwight D. Eisenhower suffered a heart attack in 1955. Researchers were desperate for answers.

As the director of the largest nutrition study to date, Dr. Keys was in an excellent position to promote his idea. The "Seven Countries" study that he conducted on nearly 13,000 men in the U.S., Japan and Europe ostensibly demonstrated that heart disease wasn't the inevitable result of aging but could be linked to poor nutrition.

Critics have pointed out that Dr. Keys violated several basic scientific norms in his study. For one, he didn't choose countries randomly but instead selected only those likely to prove his beliefs, including Yugoslavia, Finland and Italy. Excluded were France, land of the famously healthy omelet eater, as well as other countries where people consumed a lot of fat yet didn't suffer from high rates of heart disease, such as Switzerland, Sweden and West Germany. The study's star subjects—upon whom much of our current understanding of the Mediterranean diet is based—were peasants from Crete, islanders who tilled their fields well into old age and who appeared to eat very little meat or cheese.

As it turns out, Dr. Keys visited Crete during an unrepresentative period of extreme hardship after World War II. Furthermore, he made the mistake of measuring the islanders' diet partly during Lent, when they were forgoing meat and cheese. Dr. Keys therefore undercounted their consumption of saturated fat. Also, due to problems with the surveys, he ended up relying on data from just a few dozen men—far from the representative sample of 655 that he had initially selected. These flaws weren't revealed until much later, in a 2002 paper by scientists investigating the work on Crete—but by then, the misimpression left by his erroneous data had become international dogma.

In 1961, Dr. Keys sealed saturated fat's fate by landing a position on the nutrition committee of the American Heart Association, whose dietary guidelines are considered the gold standard. Although the committee had originally been skeptical of his hypothesis, it issued, in that year,

the country's first-ever guidelines targeting saturated fats. The U.S. Department of Agriculture followed in 1980.

Other studies ensued. A half-dozen large, important trials pitted a diet high in vegetable oil—usually corn or soybean, but not olive oil—against one with more animal fats. But these trials, mainly from the 1970s, also had serious methodological problems. Some didn't control for smoking, for instance, or allowed men to wander in and out of the research group over the course of the experiment. The results were unreliable at best.

But there was no turning back: Too much institutional energy and research money had already been spent trying to prove Dr. Keys's hypothesis. A bias in its favor had grown so strong that the idea just started to seem like common sense. As Harvard nutrition professor Mark Hegsted said in 1977, after successfully persuading the U.S. Senate to recommend Dr. Keys's diet for the entire nation, the question wasn't whether Americans should change their diets, but *why not?* Important benefits could be expected, he argued. And the risks? "None can be identified," he said.

In fact, even back then, other scientists were warning about the diet's potential unintended consequences. Today, we are dealing with the reality that these have come to pass.

One consequence is that in cutting back on fats, we are now eating a lot more carbohydrates—at least 25% more since the early 1970s. Consumption of saturated fat, meanwhile, has dropped by 11%, according to the best available government data. Translation: Instead of meat, eggs and cheese, we're eating more pasta, grains, fruit and starchy vegetables such as potatoes. Even seemingly healthy low-fat foods, such as yogurt, are stealth carb-delivery systems, since removing the fat often requires the addition of fillers to make up for lost texture—and these are usually carbohydrate-based.

The problem is that carbohydrates break down into glucose, which causes the body to release insulin—a hormone that is fantastically efficient at storing fat. Meanwhile, fructose, the main sugar in fruit, causes the liver to generate triglycerides and other lipids in the blood that are altogether bad news. Excessive carbohydrates lead not only to obesity but also, over time, to Type 2 diabetes and, very likely, heart disease.

The real surprise is that, according to the best science to date, people put themselves at higher risk for these conditions no matter what kind of carbohydrates they eat. Yes, even unrefined carbs. Too much whole-grain oatmeal for breakfast and whole-grain pasta for dinner, with fruit snacks in between, add up to a less healthy diet than one of eggs and bacon, followed by fish. The reality is that fat doesn't make you fat or diabetic. Scientific investigations going back to the 1950s suggest that actually, carbs do.

The second big unintended consequence of our shift away from animal fats is that we're now consuming more vegetable oils. Butter and lard had long been staples of the American pantry until Crisco, introduced in 1911, became the first vegetable-based fat to win wide acceptance in U.S. kitchens. Then came margarines made from vegetable oil and then just plain vegetable oil in bottles.

All of these got a boost from the American Heart Association—which Procter & Gamble, the maker of Crisco oil, coincidentally helped launch as a national organization. In 1948, P&G made the AHA the beneficiary of the popular "Walking Man" radio contest, which the company sponsored. The show raised \$1.7 million for the group and transformed it (according to the AHA's official history) from a small, underfunded professional society into the powerhouse that it remains today.

After the AHA advised the public to eat less saturated fat and switch to vegetable oils for a "healthy heart" in 1961, Americans changed their diets. Now these oils represent 7% to 8% of all calories in our diet, up from nearly zero in 1900, the biggest increase in consumption of any type of food over the past century.

This shift seemed like a good idea at the time, but it brought many potential health problems in its wake. In those early clinical trials, people on diets high in vegetable oil were found to suffer higher rates not only of cancer but also of gallstones. And, strikingly, they were more likely to die from violent accidents and suicides. Alarmed by these findings, the National Institutes of Health convened researchers several times in the early 1980s to try to explain these "side effects," but they couldn't. (Experts now speculate that certain psychological problems might be related to changes in brain chemistry caused by diet, such as fatty-acid imbalances or the depletion of cholesterol.)

We've also known since the 1940s that when heated, vegetable oils create oxidation products that, in experiments on animals, lead to cirrhosis of the liver and early death. For these reasons, some midcentury chemists warned against the consumption of these oils, but their concerns were allayed by a chemical fix: Oils could be rendered more stable through a process called hydrogenation, which used a catalyst to turn them from oils into solids.

From the 1950s on, these hardened oils became the backbone of the entire food industry, used in cakes, cookies, chips, breads, frostings, fillings, and frozen and fried food. Unfortunately, hydrogenation also produced trans fats, which since the 1970s have been suspected of interfering with basic cellular functioning and were recently condemned by the Food and Drug Administration for their ability to raise our levels of "bad" LDL cholesterol.

Yet paradoxically, the drive to get rid of trans fats has led some restaurants and food manufacturers to return to using regular liquid oils—with the same long-standing oxidation problems. These dangers are especially acute in restaurant fryers, where the oils are heated to high temperatures over long periods.

The past decade of research on these oxidation products has produced a sizable body of evidence showing their dramatic inflammatory and oxidative effects, which implicates them in heart disease and other illnesses such as Alzheimer's. Other newly discovered potential toxins in vegetable oils, called monochloropropane diols and glycidol esters, are now causing concern among health authorities in Europe.

In short, the track record of vegetable oils is highly worrisome—and not remotely what Americans bargained for when they gave up butter and lard.

Cutting back on saturated fat has had especially harmful consequences for women, who, due to hormonal differences, contract heart disease later in life and in a way that is distinct from men. If anything, high total cholesterol levels in women over 50 were found early on to be associated with *longer* life. This counterintuitive result was first discovered by the famous Framingham study on heart-disease risk factors in 1971 and has since been confirmed by other research.

Since women under 50 rarely get heart disease, the implication is that women of all ages have been worrying about their cholesterol levels needlessly. Yet the Framingham study's findings on women were omitted from the study's conclusions. And less than a decade later, government health officials pushed their advice about fat and cholesterol on all Americans over age 2—based exclusively on data from middle-aged men.

Sticking to these guidelines has meant ignoring growing evidence that women on diets low in saturated fat actually increase their risk of having a heart attack. The "good" HDL cholesterol drops precipitously for women on this diet (it drops for men too, but less so). The sad irony is

that women have been especially rigorous about ramping up on their fruits, vegetables and grains, but they now suffer from higher obesity rates than men, and their death rates from heart disease have reached parity.

Seeing the U.S. population grow sicker and fatter while adhering to official dietary guidelines has put nutrition authorities in an awkward position. Recently, the response of many researchers has been to blame "Big Food" for bombarding Americans with sugar-laden products. No doubt these are bad for us, but it is also fair to say that the food industry has simply been responding to the dietary guidelines issued by the AHA and USDA, which have encouraged high-carbohydrate diets and until quite recently said next to nothing about the need to limit sugar.

Indeed, up until 1999, the AHA was still advising Americans to reach for "soft drinks," and in 2001, the group was still recommending snacks of "gum-drops" and "hard candies made primarily with sugar" to avoid fatty foods.

Our half-century effort to cut back on the consumption of meat, eggs and whole-fat dairy has a tragic quality. More than a billion dollars have been spent trying to prove Ancel Keys's hypothesis, but evidence of its benefits has never been produced. It is time to put the saturated-fat hypothesis to bed and to move on to test other possible culprits for our nation's health woes.