

Saturated fat and heart disease: studies old and new

A study appeared this week sure to drive members of the low-fat and vegan tribes sprinting for their Protexid.

Ron Krauss and his group published a paper in the Articles in Press section of the *American Journal of Clinical Nutrition (AJCN)* stating there is no evidence that saturated fat intake increases the risk for heart disease. The paper, titled [Meta-analysis of prospective cohort studies evaluating the association of saturated fat with cardiovascular disease](#), is not a study per se, but is a meta-analysis, a compilation of numerous studies looking at the relationship between saturated fat intake and the risk for developing heart disease.

As I've discussed before on these pages, meta-analyses are not my favorite types of studies. I've attacked them when they've been used to 'prove' the low-fat diets are better, so I can't very well embrace meta-analyses when they present a conclusion I agree with. And I really can't embrace meta-analyses when they are compilations of [observational studies](#), which are themselves next to worthless.

For those who don't know, meta-analyses are compilation studies in which researchers comb the medical literature for papers on a particular subject and then combine all the data from the individual studies together into one large study. This combining is often done to bring together a collection of studies, none of which contain data that has reached statistical significance, to see if the aggregate of all the data in the studies reaches statistical significance. I think these types of meta-analyses are highly suspect, because they can lead to conclusions not warranted by the actual data.

To give you an example of what I mean, let's assume that we have a study looking at a flipped coin. If a researcher flips a coin 10 times and comes up with 6 heads and 4 tails, runs this through a program checking for statistical significance, he/she will discover that the 6-4 ratio isn't a statistically-significant difference because of the low number of overall flips (10). Now, let's say that 50 researchers did the same kinds of study and some found that their coins came up heads 6 times out of 10 or 4 times out of 10, etc. If a researcher then wants to 'prove' that heads comes up more times than tails on a coin flip, he/she can gather all the studies showing heads come up more times than tails, add them together in a meta-analysis and come up with 25 studies, each with 10 flips, showing that heads came up 63 percent of the time. Now we're talking 250 flips and we would probably reach statistical significance. We know that over the long run a flipped coin is going to come up heads about 50 percent of the time and that the more the times it is flipped the more likely the number of heads will close in on the 50 percent figure. But, the meta-analysis that selected the studies showing the 63 percent heads is statistically significant because the studies were cherry picked.

Researchers using meta-analyses set up selection criteria to pick which studies will be included in their final product, which leaves the door open for all kinds of mischief. For example, let's say a researcher wants to make the case that low-fat diets reduce cancer. He/she would create a set of criteria, do a literature search for all the studies that meet those criteria, then do a statistical analysis of all the data. If the data demonstrate that low-fat diets are linked to lower rates of cancer to a statistically significant degree, the researchers submit their paper for publication. But let's say that when the data is crunched, it doesn't show any such relationship? It's easy to go through all the studies and find which ones strongly show the opposite of what the researchers want to show and then figure out how to change the study-selection criteria in such a way as to keep those studies from being selected, run the whole process again, and repeat until enough studies are found to make the meta-analysis show the link between low-fat diets and lower rates of cancer.

Sad to say, this is often how it is done. Which is why I don't give a lot of credence to meta-analyses.

But having said all this, I'm still happy to see a researcher with the academic credentials of Ron Krauss coming out with a meta-analysis showing no correlation between saturated fat intake and cardiovascular disease risk. And getting it published in the *AJCN*, probably the world's most prestigious nutritional journal, no less. It's called putting your money where your mouth is. Many academics whom I've spoken with admit that there is no correlation, but wouldn't risk their academic reputations doing a meta-analysis to 'prove' it.

I've had many people tell me that it's really nice to finally see some studies coming out vindicating saturated fats. Or at least not attacking them.

I have to tell them that pro-saturated fat studies have been around for years. Not just observational studies or meta-analyses, but real controlled studies looking at death rates from heart disease as a function of fat intake.

Let's look at a couple.

Over 40 years ago, way back in 1965, there were two studies published showing that heart patients – the kind of people who today assiduously avoid saturated fat – who ate saturated fat were more likely to survive than those who didn't.

One paper titled [Low-Fat Diet in Myocardial Infarction](#), published in *The Lancet*, looked at the survival of subjects who had suffered heart attacks who went on either low-fat diets or their regular high-saturated-fat diets.

Here's what they did:

264 men under the age of sixty-five, who had recently recovered from a first myocardial infarction and who had been in the Central Middlesex, Edgware General, or West

Middlesex hospitals took part in the trial. On leaving hospital they were allocated at random to one of two groups at each hospital. One group was placed on a low-fat diet, which the other group continued with their normal diet.

The trial, which ran from 1957 to 1963, was managed by four research medical registrars working at the three different hospitals.

What was the low-fat diet?

Patients in the diet group were allowed to take 40 g fat daily [under 20 % fat]. The daily allowance included 14 g (1/2 oz) butter, 84 g (3 oz) of meat, 1 egg, 56 g (2 oz) cottage cheese, and skimmed milk. The nature of the fat consumed was not altered, nor were any additional unsaturated fats given. *The diet was often unpleasant*, [my italics] and where possible, it was modified to suit individual tastes.

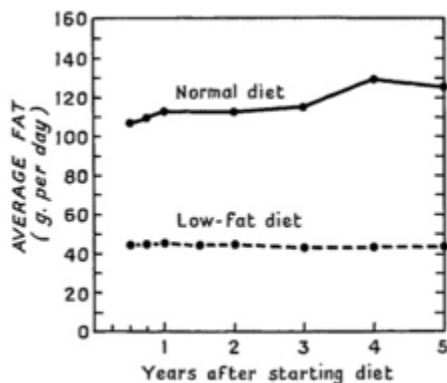


Fig. 2—Average daily fat-intake.

The body of the article states that the control subjects on their regular diet consumed about 2.5 times the fat eaten by those on the low-fat diet. (106-125 g for the former; 44-45 g for the latter.) I ran the saturated fat calculations on the low-fat study diet and found that it contained about 30 g saturated fat, which is about 13.5 percent of total calories. Most 'experts' today recommend keeping saturated fat under 10 percent of total calories. Given how the data was presented in this paper, there was no way to tell how much saturated fat the control group got, but we can estimate their total

fat intake to be about 46 percent, which was the average fat content of the typical American diet when I first got into this biz way back in the early 1980s just as the low-fat jihad was kicking off. I would guess that the control diet contained 60-70 g of sat fat or about 25 percent of calories. You can see the difference in fat intake in the graph above on the left.

The patients on the low-fat diet had pretty close counseling during the course of the multi-year study, and, consequently, they hewed fairly closely to their diet. The researchers knew this because the study group consumed about 400 fewer calories per day as compared to those subjects on their regular diet and lost weight. The researchers also used serum cholesterol levels as a measure of compliance to the diet. In 1965 it was well known that reducing fat in the diet, especially saturated fat, made cholesterol levels go down. As you can see from the chart on the right, cholesterol levels went down on the low-fat diet and stayed there.

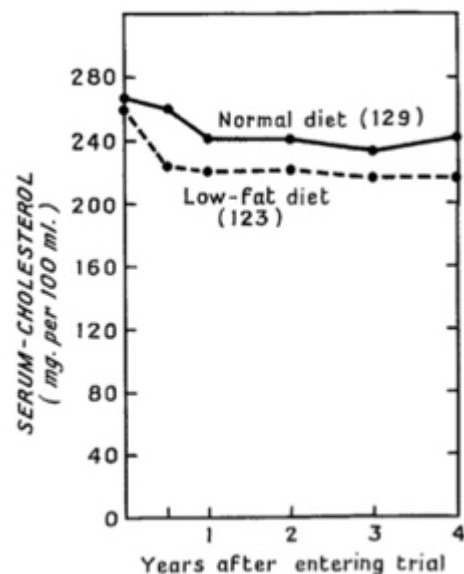


Fig. 1—Serum-cholesterol.

What did the researchers find after observing these subjects for years? They found that putting people on unpleasant low-fat diets didn't help them live any longer nor avoid another heart attack. Over the course of the study, the same number of subjects died in both groups.

What were the recommendations of the authors of the study?

It is concluded that in men under the age of sixty-five who have survived a first myocardial infarction, a low-fat diet does not improve their prognosis.

Summary

A controlled diet of a 40 g low-fat diet was carried out on 264 men who had survived a first infarction. Despite a lowering of the blood-cholesterol and a greater fall in body-weight in the treated group, the relapse rate was not significantly different in the two groups.

A low-fat diet has no place in the treatment of myocardial infarction.

Ah, how things have changed since 1965. And not for the better.

Here is another.

A paper published in the *British Medical Journal (BMJ)* in 1965 titled [Corn Oil in Treatment of Ischemic Heart Disease](#) looks at the differences in the rates of death or a second heart attack in patients following one of three diets: Their regular diet (control diet), a high-olive-oil diet, or a high-corn-oil diet. After determining the caloric intake of the control group, the researchers had subjects in the other two groups restrict their intake of fat from foods as much as possible and replace it with supplements of either olive or corn oil in amounts calculated to match the calories they reduced by getting rid of animal fat. The subjects getting one of the two oils ended up getting about 80 g per day.

The aims of the study were as follows:

Our purpose was to study the effects of prescribing a vegetable oil and a restricted fat diet to patients with ischaemic heart disease. The primary interest was in an unsaturated oil with a cholesterol-lowering effect. But large doses of any oil may have secondary effects on diet and nutrition, so that differences between an unsaturated-oil group and a control group might be due to these secondary effects rather than to unsaturated fatty acids as such. It could, for example, be relevant that mortality from heart disease is low in Italy and Greece, whose inhabitants consume much olive oil; this oil has no major effect on serum cholesterol level, its main fatty acid (oleic acid) being only mono-unsaturated. The trial was therefore designed to study the effects not only of a more highly unsaturated oil (corn oil) but also of olive oil. It seemed likely that if any differences emerged between the olive-oil and corn-oil groups these would reflect the specific effects of polyunsaturated fatty acids.

After starting the diets to which they were randomized, the subjects were followed closely for two years. As with the last paper, the researchers used serum cholesterol levels to monitor compliance with the diet. You can see the differences in serum cholesterol in the three groups in the chart below. Note that the cholesterol levels in the control group did not change a significant amount, which would be expected. The same held true for the olive oil group: no significant change. But those subjects in the corn-oil group dropped their cholesterol levels significantly.

TABLE IV.—Changes in Serum-cholesterol Levels at Different Periods of the Trial, With Their Standard Errors and Significance Levels

Period (Months)	Control		Olive Oil		Corn Oil	
	Mean and S.E. (mg./100 ml.)	P	Mean and S.E. (mg./100 ml.)	P	Mean and S.E. (mg./100 ml.)	P
0-6 ..	+4.4 (±7.2)	>0.5	+3.5 (±9.2)	>0.7	-25.0 (±8.8)	<0.01
6-12 ..	+0.3 (±9.2)	>0.8	+12.0 (±17.5)	>0.4	-30.8 (±10.5)	<0.01
12-18 ..	-7.9 (±9.4)	>0.4	+4.0 (±20.2)	>0.6	-30.3 (±9.9)	<0.01
18-24 ..	-2.8 (±12.1)	>0.8	-0.9 (±10.2)	>0.8	-19.9 (±13.5)	<0.2

Over the course of the study a number of patients died or had a second heart attack. The researchers knew which subjects were on the control diets but were blinded (as were the subjects) and so didn't know which were consuming the olive oil or the corn oil.

When the codes were broken and the data analyzed, it turned out that 75 percent of subjects following their standard high-fat, high-saturated-fat diets were remaining alive and free from a second heart attack whereas only 57 percent of subjects on the olive oil had done so. The group with the worst outcome was the corn-oil group. Only 52 percent of those subjects remained alive and heart-attack free.

The authors' summary:

Eighty patients with ischaemic heart disease were allocated randomly to three treatment groups. The first was a control group. The second received a supplement of olive oil with restriction of animal fat. The third received corn oil with restriction of animal fat. The serum-cholesterol levels fell in the corn-oil group, but by the end of two years the proportions of patients remaining alive and free of reinfarction (fatal or non-fatal) were 75%, 57%, and 52% in the three groups respectively.

It was concluded that under the circumstances of this trial, corn oil cannot be recommended in the treatment of ischaemic heart disease.

In this same issue of the *BMJ* appeared an editorial about this study. The author of this editorial points out that

the patients treated with corn oil had the worst experience, though initially their outlook was apparently similar to that of the other groups. There is a 1-in-10 to 1-in-20 chance that corn oil had a deleterious effect; the probability of its having any beneficial effect is remote.

This came at a time when corn oil was being touted on advertisements everywhere as the best oil to prevent heart disease because it is polyunsaturated.

The editorial goes on to grumble about the outcome and discusses a few other studies with conflicting outcomes. The writer finally declares that maybe the problem is that this and other studies have been done on subjects who already have heart disease. Maybe that's too late in the game to make a difference. (The outcome of this study wouldn't indicate that, but the writer didn't let that fact get in the way of his opining.)

Maybe it doesn't help to lower cholesterol or increase polyunsaturated fats in those already afflicted; maybe what really needs to be done is to increase polyunsaturated fats and lower cholesterol levels in healthy people with no sign of heart disease.

A different approach, and a formidable one, is the prevention of ischaemic heart disease by altering the diet of healthy people. A study of the organization of such a scheme in the U.S.A showed that it was practicable, and an anti-coronary club for men has been in existence in New York since 1957. Its 814 members take a "prudent diet" in which fat is moderately reduced and equal proportions of saturated, monounsaturated, and polyunsaturated fats are eaten. Already there is evidence that the development of "coronary events" is being prevented. Again, we await confirmatory evidence.

What the editorialist is waiting for is evidence to confirm his bias that reducing fat generally and saturated fat specifically (while increasing polyunsaturated fat) and the lowered cholesterol levels arising from such changes will prevent the development of heart disease. Unfortunately, for him, this confirmatory evidence was not forthcoming.

From Gary Taubes' [*Good Calories, Bad Calories*](#) (pg 36 hardcover):

Overweight Anti-Coronary Club members were prescribed a sixteen-hundred-calorie diet that consisted of less than 20 percent fat.

[It was reported] in February 1966 that the diet protected against heart disease. Anti-Coronary Club members who remained on the prudent diet had only one-third the heart disease of controls. The longer you stayed on the diet, the more you benefited, it was said. But in November 1966, just nine months later, the Anti-Coronary Club investigators published a second article, revealing that twenty-six members of the club had died during the trial, compared with only six of the men whose diet had not been prudent. Eight members of the club died from heart attacks, but none of the controls.

Like the maze shown at the top of this post, the people who have a bias against fat are trying to make things more complex than they are. The simple solution is to look at the

mortality, which no one wants to look at because it doesn't confirm their bias. They all want to look at more complex issues that have little bearing on the most important issue – whether one lives or dies.

Even the authors of the study showing the members of the Anti-Coronary Club members dying at enormously higher rates than non-members and dying with heart attacks want to look at other more complex information.

Gary Taubes continues

This [the deaths by heart attack of the club members] appeared “somewhat unusual,” Christake [the author of the paper] and his colleagues acknowledged. They discussed the improvements in heart-disease risk factors (cholesterol, weight, and blood pressure decreased) and the significant reduction in debilitating illness “from new coronary heart disease,” but omitted further discussion of mortality.

Classic behavior from someone whose mind is made up. Ignore the evidence denying your hypothesis and focus on that confirming it. Instead of focusing on which people actually die of heart disease, let's spend our time running through the maze looking at how our beloved low-fat diet reduces supposed risk factors. Which brings to mind a wonderful Winston Churchill quote:

However beautiful the strategy, you should occasionally look at the results.

How many people have died or been incapacitated with heart disease since 1965 when the evidence above was presented? How many fathers, mothers, aunts, uncles, grandfathers and grandmothers could have had more years of productive lives if only the people who do these studies had looked at just the two mentioned above and taken the tack that maybe they had been going down the wrong path? Had they done that instead of ignoring these results and continuing to try to prove an hypothesis that can't be proven, how many lives might have been saved? I'm glad it's not on my conscience.