

A Skeptical View of Cholesterol Phobia

Marshall E. Deutsch (med41@aol.com)
41 Concord Road, Sudbury, MA 01776-2328

Abstract

In both children and older people, mortality rate is inversely proportional to blood cholesterol level. Neither ingestion of cholesterol nor dietary fat has a detectable effect on atherosclerosis. Blood cholesterol level is only one of over a hundred so-called "risk factors" which have shown some correlation with heart disease and is far down the list with respect to degree of correlation. Consumers should require pharmaceutical companies to supply at least the same amount and quality of evidence to justify the literally billions of dollars paid for anti-cholesterol drugs as the JREF requires for its one-million-dollar prize.

In April 1991, a front-page headline in the Boston Globe announced "Cholesterol curb urged for children over 2." Turning to the follow-up on page 4, I looked for evidence to justify "protecting" children from this essential constituent of every cell in their bodies, particularly their rapidly growing brains which contain large amounts of cholesterol. What I found was no evidence that dietary cholesterol was disadvantageous to children, but a table showing a fairly good correlation between dietary cholesterol and saturated fat on the one hand and blood cholesterol levels in boys aged 7-9 years in six countries.

mortality rates per 1000 live births for children under age 5 (I saw no listing for boys 7-9) for these six countries. Table 2 shows what I found

As you can see, it's a *better* correlation than the other table and it's an *inverse* correlation. Here's how the data look when plotted:

Table 1: NCEP Data

	Dietary Cholesterol (% of total calories eaten)	Saturated Fat (mg/1000 (mg./deciliter))	Blood Cholesterol
Ghana	10.5	48	128
Philippines	9.3	97	147
Italy	10.4	159	159
United States	13.5	151	167
Netherlands	15.1	142	174
Finland	17.7	157	190

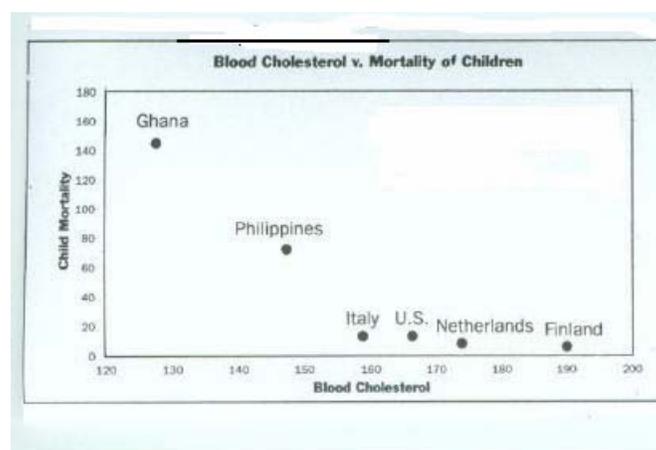


Figure 1: Plot of Table 2 data

However, no evidence was provided that there was something wrong with having a high blood cholesterol level, and the arbitrary choice of six countries among the hundreds available seemed suspicious.

Well, I didn't need a research grant to find out if there was any correlation between blood cholesterol and mortality or any sort of morbidity in children from these six countries. I just turned to the *Encyclopaedia Britannica*, where I found

Table 2: What I found

	Blood Cholesterol	Child Mortality
Ghana	128	145
Philippines	147	72
Italy	159	12
United States	167	9
Netherlands	174	7
Finland	190	7

To see if the correlation held for other countries, I searched the Medline database, where I found data for children under 20 in Mexico (146.5 and 149 mg. cholesterol/deciliter for boys and girls respectively) and children six to fifteen in Chile (146 and 154 respectively). The *Britannica* mortality figures for children, as above, were 68 for Mexico and 24 for Chile, making these data conform perfectly to the illustrated relationship!

For a number of reasons, I had always been suspicious of the bad rap given cholesterol. It's an essential body constituent which your body manufactures if you don't have enough in your diet. The correlation between high blood cholesterol and atherosclerosis is very shaky, in fact most heart attacks occur in people with normal cholesterol. You can't give an experimental animal atherosclerosis simply by feeding it cholesterol, although you can do it to a rabbit, whose diet is normally free of cholesterol, if you also feed it

an antithyroid drug⁸, but *only* if you also feed it an antithyroid drug. And there are well over a hundred risk factors which are correlated with an increased risk of atherosclerosis. High blood cholesterol is one of the lesser ones, in fact I had been thinking of doing an analysis of variance, a statistical study to see how much each risk factor contributed to the total risk. This would have been a very difficult task because of the different methods used to determine the different risk factors, but I was certain that blood cholesterol levels would turn out to be way down on the list.

Before I really buckled down to do this, I came across a letter in the *British Medical Journal*, in which the author, who signed himself “Uffe Ravnskov,” referred to a book he wrote subtitled “Exposing the fallacy that saturated fat and cholesterol cause heart disease.” I ordered the book (Ravnskov, U. (2002). *The Cholesterol Myths*. Washington DC: New Trends Publishing) from Amazon.com and was enthralled. Ravnskov is a Danish physician and Ph.D. who practiced in Sweden (he is now retired) where he lives with his wife, who is a professor of economics. Just as I had checked up on the claims of the NCEP, he checked the evidence presented in a vast variety of original research papers on which the current cholesterol hysteria is based. Here’s just a taste of his comprehensive dismantling of the cholesterol myths.

This curve

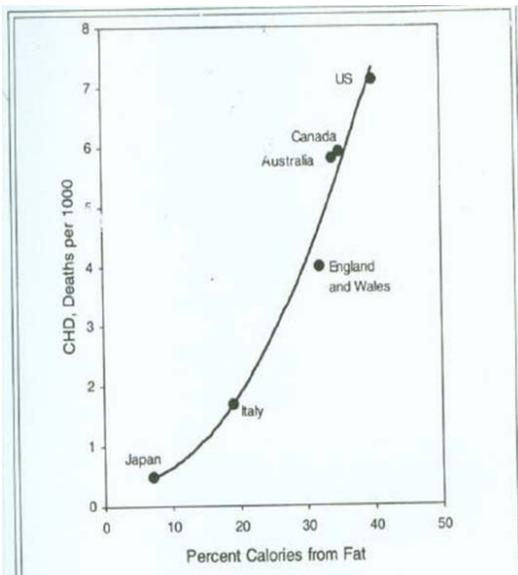


Figure 2: Figure 1A from Ravnskov, U. (2002). *The Cholesterol Myths*. Washington DC: New Trends Publishing

⁸ This is true if you restrict what is fed to the rabbit to actual food substances. However, it has been pointed out to me that atherosclerosis can be produced in rabbits by feeding them “rabbit chow” containing 2% added cholesterol. Among foods eaten by omnivores, egg yolk has the highest cholesterol content by far (slightly less than 1.5%), so this level of cholesterol could not be achieved even on a diet consisting only of pure egg yolks.

shows the data presented by Keys (Keys A. Atherosclerosis: A problem in newer public health. *Journal of Mount Sinai Hospital* 20, 118-139, 1953) to show a correlation between total fat consumption as a percent of total calorie consumption, and mortality from coronary heart disease. Like the NCEP, he presented data from only six countries. Ravnskov reproduces this curve, then presents

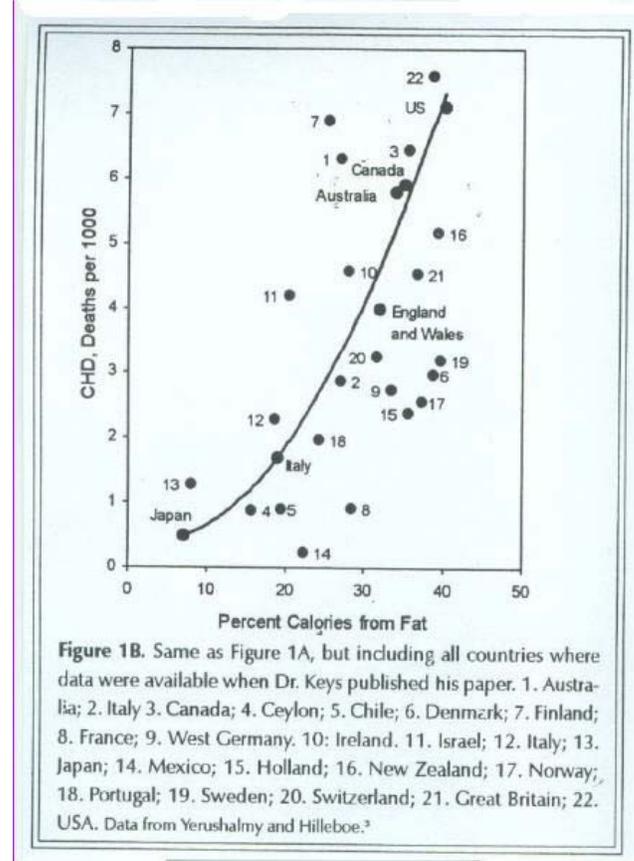


Figure 3: Figure 1B from Ravnskov, U. (2002). *The Cholesterol Myths*. Washington DC: New Trends Publishing

another curve overlaid with data points from all countries where data were available when Keys published his paper (from Yerushalmy J, Hilleboe HE. Fat in the diet and mortality from heart disease. A methodologic note. *The New York State Journal of Medicine* 2343-2354, 1957). Inspecting these data, it is obvious that speaking English is much more closely related to the incidence of coronary heart disease than is consumption of fat. *Peut-être on doit continuer en parlant français.*

Just kidding!

But that’s not the only questionable thing about the correlation. Ravnskov points out that the figures for calories from fat do not accurately represent the amounts eaten, because they fail to account for “fat never delivered to the consumers, that is lost, stolen, eaten by rats or mice or spoiled..., eaten by dogs, cats and other pet animals...thrown away in the kitchen or left on the plate...In

the U.S., where eating fat is considered almost a sin, a great deal of fat certainly disappears that way. In poor countries, however, where famine is a greater threat than obesity or heart disease, it is not so. Here, the diet even includes brain and bone marrow, both of which are crammed with animal fat and cholesterol.” He concludes that the figures for fat consumption in various countries are unreliable, and then goes on to show that the figures for coronary heart disease mortality are even more erroneous.

Here’s just a peek at the evidence—I must resist my temptation to quote the entire book—he cites studies showing that the diagnoses on death certificates (the source of statistics on CHD deaths) are wrong one-third of the time and that studies made at university hospitals (where one might expect better results than at small local hospitals) showed that 51% of the time that death certificates recorded death from CHD, autopsies showed them to be wrong, while autopsies showed that among 100 patients who died from a heart attack, only 53 had a correct diagnosis before they died.

But many studies have been made attempting to correlate dietary habits with heart disease. Ravnskov examines them in detail, showing for instance, that relationships demonstrated between inhabitants of various countries can appear in reverse when inhabitants of different areas within one of these countries are studied. I’m leaving out a lot of fascinating criticism, but can’t resist quoting a summary statement: “By 1998, a total of 27 studies had been published including 34 groups (cohorts) of patients and control individuals and more than 150,000 individuals. In three of these 34 cohorts, patients with coronary disease had eaten more animal fat than the control individuals, and in one cohort they had eaten *less*. In the rest of the groups—30 in all—investigators found no difference in animal fat consumption between those who had heart disease and those who had not. In three cohorts the patients had eaten *more* polyunsaturated vegetable oils than the control individuals, and in only one they had eaten *less*.” Ravnskov goes on to demolish eight other myths in eight equally well-reasoned chapters. The rest of the myths are: high cholesterol causes heart disease, high-fat foods raise blood cholesterol, cholesterol blocks arteries, animal studies prove the diet-heart idea, lowering your cholesterol will lengthen your life, polyunsaturated oils are good for you, the cholesterol campaign is based on good science and all scientists support the diet-heart idea.

When I read this wonderful book, I was planning to attend the 18th International Congress of Clinical Chemistry and Laboratory Medicine, to be held on October 20-25, 2002, in Kyoto, Japan. It occurred to me that this might be another chance to publicize my observations on blood cholesterol and childhood mortality. Yes, I would be getting an awful lot of mileage out of less than an hour’s worth of research. It also occurred to me that my concerns would be better addressed if my demonstration that high blood cholesterol levels in children were not a matter of concern were

accompanied by evidence that, even if they were, dietary, or other, intervention would not be justifiable. Uffe Ravnskov had a lot of evidence to demonstrate the second point, so I e-mailed him to ask if he would like to be my coauthor for a poster on the subject. He readily assented, and I sent an abstract to the meeting sponsors, which they accepted, surprising me a bit since their questionnaires seemed to make much ado about sponsoring organizations, which neither one of us had. They were happy to list us as “independent investigators.”

You can read the poster on line (at <http://www.thincs.org/unpublic.Deutsch-Ravnskov.htm>).

It was well received, and among those who requested copies was an official concerned with the diets of children in Slovakia.

Okay, maybe children need cholesterol to build new brain cells and nerves and the cell membranes of other new cells. But statin drugs are the most frequently prescribed drugs in the United States, and everybody knows that they are needed to prevent heart attacks by lowering blood cholesterol. Maybe Ravnskov is right about the relationship (or lack thereof) between diet and blood cholesterol, but wouldn’t adults be wise to take statins to lower their blood cholesterol and thus decrease their chance of a heart attack? Ravnskov discusses them briefly, but there is a fuller treatment of statins, the flaws in the reasoning that led to their popularity and the reasons why they have become prescribed so widely in a book by John Abramson, a physician on the clinical faculty of Harvard Medical School. Read the book (Abramson, J. *Overdo\$ed America*. (2004). New York: HarperCollins) to see what is promised by the subtitle: “How the Pharmaceutical Companies Distort Medical Knowledge, Mislead Doctors, and Compromise Your Health.”

But let me describe what is shown by the data collected in large studies conducted on the effects of statin drugs. As Abramson explains and shows, what the data show is not the same as what the authors of the studies say in their conclusions. Hardly any studies have been made of the effects of statins on women, so I can’t say much about that, but, in brief, statins *do* lower the chance of a second heart attack in men who have had one heart attack, but do this even in men with low blood cholesterol levels, suggesting that the effect is not mediated by an effect on blood cholesterol. And the effect is small: the reduction in fatal and nonfatal heart attacks in people treated with Pravachol in two large studies was 0.6 percent each year. The side effects of statins, on the other hand are such that over half the people who start taking them drop out within two years. As for people who have not had a previous heart attack, Abramson cites the Antihypertensive and Lipid-Lowering Treatment to Prevent Heart Attacks Trial (ALLHAT) study, a study which enrolled 10,000 people, and one arm of which compared a group in which the number of people on statins was tripled with a group continuing their usual course. This showed that tripling the number of people on statins neither prevented heart disease nor decreased the overall risk of

death. And Abramson goes on to point out that the data showed that “There was no benefit to increasing the number of patients taking statins beyond the community norm of the mid-1990s: not for people age 55 to 64 or 65 and older, not for men or women, not for those with or without diabetes, not for those with or without heart disease, and not for those with LDL cholesterol higher or lower than 130 mg/dL. The only group that derived any significant benefit from more statins were African Americans who had fewer episodes of heart disease but no fewer deaths.”

Okay, taking statins is not worth the expense and side-effects, but shouldn't we worry about our blood cholesterol levels? The answer is “no.” You'd do far better to be concerned about exercising enough than to be concerned about your cholesterol level. Even the famed Framingham Heart Study, which has done so much to foster concern about cholesterol levels, has shown this. As pointed out by Abramson (p. 134) “Other data from the Framingham Heart Study published in 1999 show that physical activity, unlike total cholesterol levels, is highly correlated with overall mortality rate: The most active third of the original 5000 men and women in the study had a 40 percent lower death rate than the least active third..”

Strangely, Abramson recommends minimizing intake of saturated fats and cholesterol despite his obvious awareness that there might be reasons to question the myths about cholesterol. For instance, at one point he notes that among 13 industrialized nations, the health of Americans ranked second to last “despite” their having the third lowest blood cholesterol level. In another place he notes that in a manufacturer-sponsored study, HRT [hormone-replacement therapy] increased women's risk of heart disease by 50% in the first year “despite” significantly lowering LDL (bad) cholesterol and raising HDL (good) cholesterol. It seems that he noticed the Emperor wasn't wearing socks, but neglected to raise his head to check out the rest of the Emperor's new clothes. Nevertheless, I must admit that his book is very well written and convincingly documented.

Acknowledgment

I thank Dr. Harriett Hall for reminding me of the use of ingested levels of cholesterol vastly in excess of what is achievable with foods to create a model of atherosclerosis in rabbits.