



ORIGINAL RESEARCH PAPER

Medicine

DIET HEART HYPOTHESIS

KEY WORDS:

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What is it ?

The hypothesis assumes that

- 1 Dietary cholesterol / saturated fat increases serum cholesterol.
- 2 Increased serum cholesterol increases risk of Coronary Artery Disease .

Based on this hypothesis physicians all across the globe advise -

- 3 Decrease cholesterol (statins) so as to decrease risk of CAD.
- 4 Cholesterol is a health hazard and should be maintained at lowest possible level . Let us peep into the history to understand how this hypothesis was conceived

An abbreviated history of the hypothesis

- 1 Dr Ancel Keys first proposed the hypothesis in 1950s. Several years later, he published the Seven Countries Study that reported a strong correlation between dietary fat and coronary mortality in seven countries.
- 2 In 1977 U.S. Senate Select Committee on Nutrition and Human Needs, set up by Senator George McGovern in 1968, announced the publication of its famous-

National Dietary guidelines. Which suggest as follows

Goal 1. **Increase carbohydrate** consumption to account for approximately 55 to 60 percent of energy (caloric) intake.

Goal 2. **Reduce overall fat** consumption from approximately 40 percent to 30 percent of energy intake.

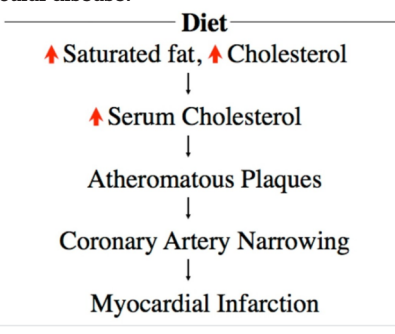
Goal 3. **Reduce saturated fat** consumption to account for about 10 percent of total energy intake; and balance that with polyunsaturated and monounsaturated fats, which should account for about 10 percent of energy intake.

Goal 4. **Reduce cholesterol** consumption to about 300 mg a day.

Goal 5. **Reduce sugar consumption** by about 40 percent to account for about 15 percent of total energy intake.

Goal 6. **Reduce salt consumption** by about 50 to 85 percent to about 3 g/day.

Presently, the American Heart Association recommends 'lowering intake of saturated fat and replacing it with unsaturated fats, especially polyunsaturated fats' to reduce cardiovascular disease.



Let us have a look at the evidence for dietary guide lines - National dietary guidelines were introduced in 1977 and 1983, by the US and UK governments, respectively, with the ambition of reducing coronary heart disease (CHD) by reducing fat intake. To date, no analysis of the evidence base for these recommendations has been undertaken.

The study which examines the evidence from randomised controlled trials (RCTs) available to the US and UK regulatory committees at their respective points of implementation concludes Conclusions: Dietary recommendations were introduced for 220 million US and 56 million UK citizens by 1983, in the absence of supporting evidence from RCTs .

From the literature available, it is clear that at the time dietary advice was introduced, - 2467 men had been observed in RCTs .

- No women had been studied;
- No primary prevention study had been undertaken;
- No RCT had tested the dietary fat recommendations;
- No RCT concluded that dietary guidelines should be introduced.

Does Dietary cholesterol increases serum cholesterol ? Cholesterol absorption

Dietary cholesterol , combines with bile salts, from which cholesterol can be absorbed by the enterocyte. After that cholesterol is reassembled into chylomicrons.

Most ingested cholesterol is esterified, which causes it to be poorly absorbed by the gut. Cholesterol homeostasis

The body also compensates for absorption of ingested cholesterol by reducing its own cholesterol synthesis. For these reasons, cholesterol in food, seven to ten hours after ingestion, has little, if any effect on concentrations of cholesterol in the blood. However, during first seven hours after meal cholesterol, as absorbed fats are being distributed around the body within various lipoproteins the concentrations increase.

A higher cholesterol intake from food leads to a net decrease in endogenous production of cholesterol , whereas lower intake from food has the opposite effect

Ansel keys wrote:

The evidence — both from experiments and from field surveys — indicates that cholesterol content, per se, of all natural diets has no significant effect on either the cholesterol level or the development of atherosclerosis in man.

Keys then shifted sideways from cholesterol to saturated fat in the diet, leading to the creation of the highly influential

“Keys equation,”
 Cholesterol (mmol/L) = 0.031(2Dsf – Dpuf) + 1.5√Dch
 He appeared on the cover of Time magazine as “Mr. Cholesterol.”

Despite a growing acceptance of this “somewhat altered” diet-heart hypothesis, no explanation was given as to

- How saturated fat raised blood cholesterol levels?
- How raised blood cholesterol levels causes atherosclerosis to develop?. It was simply believed that A caused B and B caused C.

The definition of high cholesterol was also lowered from 280 mg/dL (7.2 mmol/L) to 200 mg/dL (5.2 mmol/L).

Does increased serum cholesterol levels increases risk of coronary artery disease

Dr. George Mann - He had studied the Masai in Africa, who had a very high consumption of saturated fat, low cholesterol levels, and almost no deaths from heart disease.

Prospective Urban and Rural Epidemiology study - PURE - observational study 135,335 individuals aged 35 to 70 years from 18 low-, middle- and high-income countries - Suggest that

- High carbohydrate intake increases total mortality, while
- High fat intake is associated with a lower risk of total mortality and
- Has no association with the risk of myocardial infarction or cardiovascular disease-related mortality.
- Higher saturated fat intake appeared to be associated with a 21% lower risk of stroke.
- explains Professor Salim Yusuf (McMaster University, Hamilton, Ontario, Canada), senior investigator for the PURE study. "The problem is that poorly designed studies performed 25-30 years ago were accepted and championed by various health organisations when, in fact, there are several recent studies using better methods, which show that a higher fat intake has a neutral effect," he continues, citing the example of the Women's Health Initiative trial conducted by the National Institutes of Health in 49,000 women that showed no benefit of a low-fat diet on heart disease, stroke or cardiovascular disease.

Looking at all available trials up to 2009, there was no evidence found to support a link between total fat and heart disease.-----

- Saturated fats was not associated.
- Neither was polyunsaturated fats.
- Saturated fats were not bad.---
- Polyunsaturated fats (vegetable oils) were not good. There was simply no link at all.

In the 20 year follow up to the Framingham data, the exact same protective effect of fat on stroke was seen. The 1997 study "Inverse association of dietary fat with development of ischemic stroke in men". Dividing the group by intake of dietary fat, it was found that -

- Those eating the most fat had the least strokes.
- Those with the lowest fat had the most strokes. Again here, eating fat was not bad, it was good