

The cholesterol-heart hypothesis: How public health advice on nutrition may be on the verge of a major paradigm shift

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Modern societies are afflicted with what has been described by broad range of health problems (1), including epidemics of over consumption (2) and rising rates of mental distress and disorder (3) diminishing levels of well-being and increasing health and social inequalities (4).

In particular, there is a plethora of advice on diet and nutrition to prevent coronary heart disease. The cornerstone of dietary advice in western Europe and the US to reduce coronary heart disease has been based on promoting low fat diets, and more specifically reducing or eliminating bad (LDL) cholesterol from the diet. Such foodstuffs as milk, butter, eggs and red meat have all been castigated as bad for health in the west. In their place, consumers have been encouraged to replace these foods with low fat foods, and processed food products, such as margarines high in polyunsaturated fats.

The uncomfortable issue is that despite the fact that this advice has, in one way, shape or form, been given since the late 1950's rates of cardiovascular disease, metabolic illnesses such as type 2 diabetes and mental ill health have increased rapidly to the epidemic proportions that are reported. Whilst to some extent this increase in chronic illness is due to increasing life expectancy, these epidemics are

afflicting all age groups. In the UK that some health experts repeatedly forecast that many children are now so unhealthy that they may well die before their parents (5). Lifestyles have also changed dramatically with the availability of consumer technologies such as cars, TV and computing and the internet.

However, a recently published study (6) has once again raised awkward questions: Is the standard advice on healthy eating correct, and if so why is this epidemic of chronic disease continuing to grow?

Some nutritionists, medical professionals and researchers have long stated that the dietary advice around cholesterol is untrue. To date, however, the medical establishment has been quick to rubbish these ideas as dangerous and without a high quality evidence base. A recently published systematic review and meta-analysis (6) has provided convincing evidence that confounds standard dietary advice however. The study, a review and meta-analysis all data from high quality randomized trials and observational studies published before 1 July 2013 found *“no supportive evidence for current cardiovascular guidelines that encourage high consumption of polyunsaturated fatty acids and low consumption of saturated fats”*.

So what is the evidence base for the current dietary advice on cholesterol, and where did it emanate from? A review of the historical evidence makes uncomfortable reading. In the 1950's heart disease was starting to become a big problem in the USA as wealth increased and consumption increased after World War 2. As a result politicians were becoming increasingly worried and looked to find a solution. The diet-heart hypothesis; that dietary fats, including cholesterol caused heart disease, and that by avoiding fatty foods we could avoid heart disease; was first proposed by Ancel Keys (7). As evidence Keys had obtained data on dietary fat consumption and prevalence of heart disease from 22 countries. In the pivotal article on the study he presented a graph that shows an almost perfect correlation between fat consumption and heart disease. However, it was later revealed that though Keys had data from 22 countries he had only selectively used data from six countries in presenting his "evidence". When the data from all 22 countries that Keys had available was analysed, no correlation could be found (8).

Wanting to find a solution to the heart attack problem, this evidence was seized upon by US politicians and the media as a vital breakthrough, and the government and various institutions began throwing large amounts of money at research to 'prove' the hypothesis and develop the evidence base. According to Campbell-McBride (9) there is no medical hypothesis that has been researched so much. Hundreds of medical studies were commissioned and published that attempted to prove the hypothesis. As any decent scientist knows however, developing research to prove an already believed idea is a dangerous proposition. A major review of the studies conducted from the 1950's to the 1970's that supported the diet heart hypothesis found that most of them "were uncontrolled, primitive, trial and error type explorations... biased by serious faults" (10).

George Mann, professor of medicine and biochemistry at Vanderbilt University has called it the "greatest scientific deception of our time." He

qualifies this with the statement, "*fearing to lose their soft money funding, the academicians who should speak up and stop this wasteful anti-science are strangely quiet. Their silence has delayed a solution for coronary heart disease by a generation*" (11).

One of the most comprehensive reviews of evidence prior to the 2014 study first quoted was undertaken by Dr Uffe Ravenskov. He concluded that, "*Masses of valid scientific evidence should have destroyed the diet-heart hypothesis by now. Yet, like the ancient Greek Hydra, a mythological monster that grew new heads whenever one was chopped off, the cholesterol hydra continues its life as if nothing has happened.... One of my objections to the diet heart idea is that its proponents are extremely selective about their data. They lean on studies that support the idea – or that they claim, not always truthfully, support it – and ignore those that contradict them. Often researchers get a result that is contrary to the cholesterol hypothesis, and yet still write conclusions, which support it. These misleading conclusions are often written up in the abstract or the papers, the only part that doctors and researchers are likely to read. To find the contradictory results, you have to read the whole paper and meticulously study the tables*" (12).

This problem of identifying the best evidence is a difficult. According to Dr Paul J Rosch, "*Practising physicians get most of their information from drug companies. Compared to their peers of half a century ago most have the time or skills to critically evaluate reports, very few know anything about research, nor did the generation who taught them*"(13). This means that essentially, medical professionals most often get their information from the same place that the general public does: from large pharmaceutical and processed food corporations who make billions out of the cholesterol hypothesis".

To be more positive as Kuhn stated is his ground breaking book "the structure of scientific revolutions"

(14) all fields of science undergo paradigm shifts. The competing paradigms in any field introduce new approaches and views that would never have been considered valid previously. It may be that we are about to see a major paradigm shift in dietary advice over

the next decade. I think though that the fight will not be easy. There are many vested interests in the current status quo and for some while the cholesterol hydra will continue to grow new heads until finally defeated by the crushing weight of evidence.

Conflicts of interest: None declared.

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