

This Week's Citation Classic

Turpeinen O, Miettinen M, Karvonen M J, Roine P, Pekkarinen M, Lehtosuo E J & Alivirta P. Dietary prevention of coronary heart disease: long-term experiment. *Amer. J. Clin. Nutr.* 21:255-76, 1968. [Depts. Biochem. and Physiol., Coll. Vet. Med., Helsinki; Dept. Nutr. Chem., Univ. Helsinki; Nikkilä, Kellokoski, and Koskela Hosps., Finland]

An intervention trial to test the hypothesis that the incidence of coronary heart disease could be reduced by dietary means was carried out in two mental hospitals. Practically total replacement of dairy fats by vegetable oils resulted in a substantial reduction of this disease. [The SCJ[®] indicates that this paper has been cited over 130 times since 1968.]

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"The idea that coronary heart disease (CHD) might, at least partly, be a nutritional disease, and hence preventable by dietary means, presented itself soon after World War II, when it was noted that the mortality from this disease had been remarkably low in some countries during the war. These were, above all, countries which had experienced severe food rationing measures and in which, particularly, the consumption of saturated fats (dairy fats and meat fats) had greatly declined

"The international vital statistics and certain epidemiological studies offered additional evidence on the interrelations between the consumption of saturated fats and the mortality from CHD. These two things appeared indeed to be closely correlated: high dietary intake of such fats was clearly associated with high mortality from CHD.

"These findings are of particular relevance to Finland, where the dairy fat consumption and the mortality from CHD are both very high.

"The available evidence, however, was not sufficient to establish a cause-and-effect relationship between dietary fats and CHD or to justify the conclusion that a change in the fat composition of the diet would reduce the

incidence of CHD. Such problems cannot be solved by usual epidemiological studies alone. For this purpose intervention trials are required in which the diet of a population group is deliberately changed and the development of manifestations of CHD is followed over a sufficiently long period.

"In 1958 our small research group, composed of individuals interested in nutrition and preventive cardiology, decided to attempt such an intervention trial. Had we then known all that was to be written about the formidable difficulties and the deceptive pitfalls in such a study, we might have given up the whole project. Fortunately, perhaps, we were ignorant and started the trial.

"The study ran smoother than we had expected. The difficulties anticipated because of the nature of the patient material did not arise. In fact, the patients were quite cooperative, as were also the hospital staffs. The modified diet was well accepted, and very few complaints were heard. The initial financial worries were effectively dispelled by research grants from the United States National Heart Institute.

"The first part of the study lasted from 1959 to 1965. In 1965 the diets of the hospitals were reversed, and the trial was continued according to this crossover design another six years.

"This paper is an account of the first part only. The whole intervention trial has been reported in two later publications.^{1,2}

"Why has this paper been frequently cited? Mainly, perhaps, because it is an attempt to solve an urgent public health problem, a try to answer the all-important question: whether the incidence of CHD can be decreased by dietary means. Intervention trials are, obviously, the best way of obtaining conclusive evidence in this sphere. Such trials, however, are laborious and costly and consequently few in number. Their relative rarity may be another reason for the frequent citation of our paper."

1. **Miettinen M, Turpeinen O, Karvonen M J, Elosuo R & Paavilainen E.** Effect of cholesterol-lowering diet on mortality from coronary heart-disease and other causes. A twelve-year clinical trial in men and women. *Lancet* 2:835-8, 1972.
2. **Turpeinen O, Karvonen M J, Pekkarinen M, Miettinen M, Elosuo R & Paavilainen E.** Dietary prevention of coronary heart disease: the Finnish mental hospital study. *Int. J. Epidemiol.* 8:99-118, 1979.