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Reduced or modified dietary fat for preventing cardiovascular disease

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ABSTRACT

BACKGROUND: Reduction and modification of dietary fats have differing effects on cardiovascular risk factors (such as serum cholesterol), but their effects on important health outcomes are less clear.

OBJECTIVE: To assess the effect of reduction and/or modification of dietary fats on mortality, cardiovascular mortality, cardiovascular morbidity and individual outcomes including myocardial infarction, stroke and cancer diagnoses in randomised clinical trials of at least 6 months duration.

METHODS:

Search methods: For this review update, the Cochrane Central Register of Controlled Trials (CENTRAL), Medline and Embase, were searched through to June 2010. References of Included studies and reviews were also checked.

Selection criteria: Trials fulfilled the following criteria: 1) randomized with appropriate control group, 2) intention to reduce or modify fat or cholesterol intake (excluding exclusively omega-3 fat interventions), 3) not multi factorial, 4) adult humans with or without cardiovascular disease, 5) intervention at least six months, 6) mortality or cardiovascular morbidity data available.

Data collection and analysis: Participant numbers experiencing health outcomes in each arm were extracted independently in duplicate and random effects meta-analyses, meta-regression, sub-grouping, sensitivity analyses and funnel plots were performed.

MAIN RESULTS: This updated review suggested that reducing saturated fat by reducing and/or modifying dietary fat reduced the risk of cardiovascular events by 14% (RR 0.86, 95% CI 0.77 to 0.96, 24 comparisons, 65,508 participants of whom 7% had a cardiovascular event, I2 50%). Subgrouping suggested that this reduction in cardiovascular events was seen in studies of fat modification (not reduction — which related directly to the degree of effect on serum total and LDL cholesterol and triglycerides), of at least two years duration and in studies of men (not of women). There were no clear effects of dietary fat changes on total mortality (RR 0.98, 95% CI 0.93 to 1.04, 71,790 participants) or cardiovascular mortality (RR 0.94, 95% CI 0.85 to 1.04, 65,978 participants). This did not alter with sub-grouping or sensitivity analysis. Few studies compared reduced with modified fat diets, so direct comparison was not possible.

AUTHORS' CONCLUSIONS: The findings are suggestive of a small but potentially important reduction in cardiovascular risk on modification of dietary fat, but not reduction of total fat, in longer trials. Lifestyle advice to all those at risk of cardiovascular disease and to lower risk population groups, should continue to include permanent reduction of dietary saturated fat and partial replacement by unsaturates. The ideal type of unsaturated fat is unclear.

The abstract is available free-of-charge from: http://onlinelibrary.wiley.com/doi/10.1002/14651858.CD002137.pub3/abstract.

REFERENCE

1. Hooper L, Summerbell CD, Thompson R, et al. Reduced or modified dietary fat for preventing cardiovascular disease. Cochrane Database Syst Rev. 2012;(5):CD002137.

COMMENTS

Implications for practice

This systematic review provides important data regarding the impact of diet modification on cardiovascular outcomes (including acute myocardial infarction and stroke). The authors found that dietary changes to reduce saturated fat and partly replace it with unsaturated fats (the ideal type of unsaturated fat is unclear) appears to reduce the incidence of cardiovascular events, but that replacing the saturated fat with carbohydrate (creating a low-fat diet) was not clearly protective (despite modest improvements in weight, body mass index, total and low-density lipoprotein, LDL). The protective effect was seen almost exclusively in men who maintained the dietary modification over a period of at least two years. The reasons why the long-term effect from modifying women's diets was neutral remain unclear. Dietary counseling should be recommended for individuals at high risk of cardiovascular disease (particularly when lipid-lowering medication is unavailable), and probably for low-risk populations as well. Despite the significant impact of reduced or modified dietary fat on cardiovascular events, its effects on total and cardiovascular mortality are much less clear. No evidence was found regarding the long-term effects of altering trans fat intake.

While interventions to alter dietary fat intake in individuals at high cardiovascular risk have been fairly successful, such health promotion initiatives in the general population have been less successful. Further investment is needed to help individuals at high and low cardiovascular risk to make effective changes to dietary fat intake and to maintain these changes over their lifetimes. Continuous efforts to change the current legislation so as to alter the fat content of foods, improve labeling, enable price reductions and provide greater availability of healthier foods, thereby placing food production and processing as priority items for health promotion may yield major advances in this field.

Implications for research

Despite the evidence provided by this systematic review, long-term research to help us understand what types of unsaturated fats are most useful in the diet for replacing saturated fats (monounsaturated fats, polyunsaturated fats and specific fatty acids) is clearly necessary. The financial implications (with cost analyses) and legislation to modify fat intake among individuals at various levels of cardiovascular risk should be assessed and reflected in health policies. It is unclear whether there is any additional benefit in relation to cardiovascular events from modifying dietary fat in individuals at high risk of cardiovascular disease who are on lipid-lowering medication. The relative impact of exercise activity is also not clear in this scenario. There are no studies assessing the long-term health implications of reducing trans fat intake. Most trials have not reported trans fat intake in

intervention groups in randomized studies, such that the evidence relating to the long-term impact of modifying the quantity of trans fat comes from intermediate outcomes only. Thus, long-term clinical trials evaluating the impact of reductions in trans fats would be useful for clarifying these effects on cardiovascular prognoses.

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