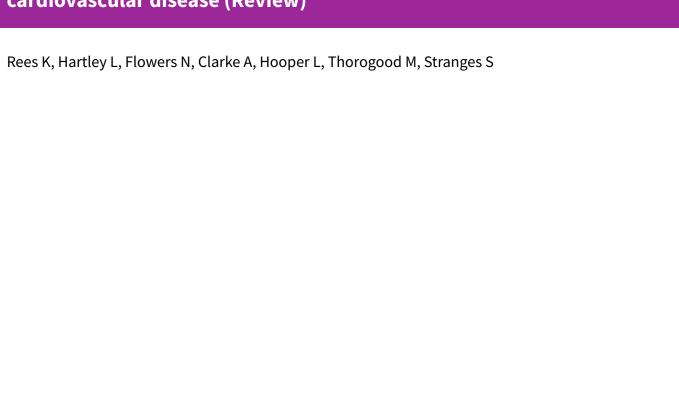


Cochrane Database of Systematic Reviews

'Mediterranean' dietary pattern for the primary prevention of cardiovascular disease (Review)



Rees K, Hartley L, Flowers N, Clarke A, Hooper L, Thorogood M, Stranges S. 'Mediterranean' dietary pattern for the primary prevention of cardiovascular disease. *Cochrane Database of Systematic Reviews* 2013, Issue 8. Art. No.: CD009825. DOI: 10.1002/14651858.CD009825.pub2.

www.cochranelibrary.com



[Intervention Review]

'Mediterranean' dietary pattern for the primary prevention of cardiovascular disease

Karen Rees¹, Louise Hartley¹, Nadine Flowers¹, Aileen Clarke¹, Lee Hooper², Margaret Thorogood³, Saverio Stranges¹

¹Division of Health Sciences, Warwick Medical School, University of Warwick, Coventry, UK. ²Norwich Medical School, University of East Anglia, Norwich, UK. ³Public Health and Epidemiology, Division of Health Sciences, Coventry, UK

Contact address: Karen Rees, Division of Health Sciences, Warwick Medical School, University of Warwick, Coventry, CV4 7AL, UK. Karen.Rees@warwick.ac.uk, rees_karen@yahoo.co.uk.

Editorial group: Cochrane Heart Group.

Publication status and date: Edited (no change to conclusions), published in Issue 7, 2014.

Citation: Rees K, Hartley L, Flowers N, Clarke A, Hooper L, Thorogood M, Stranges S. 'Mediterranean' dietary pattern for the primary prevention of cardiovascular disease. *Cochrane Database of Systematic Reviews* 2013, Issue 8. Art. No.: CD009825. DOI: 10.1002/14651858.CD009825.pub2.

Copyright © 2014 The Cochrane Collaboration. Published by John Wiley & Sons, Ltd.

ABSTRACT

Background

The Seven Countries study in the 1960s showed that populations in the Mediterranean region experienced lower cardiovascular disease (CVD) mortality probably as a result of different dietary patterns. Later observational studies have confirmed the benefits of adherence to a Mediterranean dietary pattern on CVD risk factors. Clinical trial evidence is limited, and is mostly in secondary prevention.

Objectives

To determine the effectiveness of a Mediterranean dietary pattern for the primary prevention of CVD.

Search methods

We searched the following electronic databases: the Cochrane Central Register of Controlled Trials (CENTRAL, Issue 9 of 12, September 2012); MEDLINE (Ovid, 1946 to October week 1 2012); EMBASE (Ovid, 1980 to 2012 week 41); ISI Web of Science (1970 to 16 October 2012); Database of Abstracts of Reviews of Effects (DARE), Health Technology Assessment Database and Health Economics Evaluations Database (Issue 3 of 12, September 2012). We searched trial registers and reference lists of reviews and applied no language restrictions.

Selection criteria

We selected randomised controlled trials in healthy adults and adults at high risk of CVD. A Mediterranean dietary pattern was defined as comprising at least two of the following components: (1) high monounsaturated/saturated fat ratio, (2) low to moderate red wine consumption, (3) high consumption of legumes, (4) high consumption of grains and cereals, (5) high consumption of fruits and vegetables, (6) low consumption of meat and meat products and increased consumption of fish, and (7) moderate consumption of milk and dairy products. The comparison group received either no intervention or minimal intervention. Outcomes included clinical events and CVD risk factors.

Data collection and analysis

Two review authors independently extracted data and contacted chief investigators to request additional relevant information.

Main results

We included 11 trials (15 papers) (52,044 participants randomised). Trials were heterogeneous in the participants recruited, in the number of dietary components and follow-up periods. Seven trials described the intervention as a Mediterranean diet. Clinical events were reported in only one trial (Women's Health Initiative 48,835 postmenopausal women, intervention not described as a Mediterranean



diet but increased fruit and vegetable and cereal intake) where no statistically significant effects of the intervention were seen on fatal and non-fatal endpoints at eight years. Small reductions in total cholesterol (-0.16 mmol/L, 95% confidence interval (CI) -0.26 to -0.06; random-effects model) and low-density lipoprotein (LDL) cholesterol (-0.07 mmol/L, 95% CI -0.13 to -0.01) were seen with the intervention. Subgroup analyses revealed statistically significant greater reductions in total cholesterol in those trials describing the intervention as a Mediterranean diet (-0.23 mmol/L, 95% CI -0.27 to -0.2) compared with control (-0.06 mmol/L, 95% CI -0.13 to 0.01). Heterogeneity precluded meta-analyses for other outcomes. Reductions in blood pressure were seen in three of five trials reporting this outcome. None of the trials reported adverse events.

Authors' conclusions

The limited evidence to date suggests some favourable effects on cardiovascular risk factors. More comprehensive interventions describing themselves as the Mediterranean diet may produce more beneficial effects on lipid levels than those interventions with fewer dietary components. More trials are needed to examine the impact of heterogeneity of both participants and the intervention on outcomes.

PLAIN LANGUAGE SUMMARY

Mediterranean diet for the prevention of cardiovascular disease

It is well established that diet plays a major role in cardiovascular disease risk. The traditional Mediterranean dietary pattern is of particular interest because of observations from the 1960s that populations in countries of the Mediterranean region, such as Greece and Italy, had lower mortality from cardiovascular disease compared with northern European populations or the US, probably as a result of different eating habits.

This review assessed the effects of providing dietary advice to follow a Mediterranean-style dietary pattern to healthy adults or people at increased risk of cardiovascular disease in order to prevent the occurrence of cardiovascular disease and reduce the risk factors associated with it. Definitions of a Mediterranean dietary pattern vary and we included only randomised controlled trials (RCTs) of interventions that reported at least two of the following components: (1) high monounsaturated/saturated fat ratio, (2) low to moderate red wine consumption, (3) high consumption of legumes, (4) high consumption of grains and cereals, (5) high consumption of fruits and vegetables, (6) low consumption of meat and meat products and increased consumption of fish, and (7) moderate consumption of milk and dairy products. The control group was no intervention or minimal intervention. We found 11 RCTs (15 papers) that met these criteria. The trials varied enormously in the participants recruited and the different dietary interventions. Four trials were conducted in women only, two trials were in men only and the remaining five were in both men and women. Five trials were conducted in healthy individuals and six trials were in people at increased risk of cardiovascular disease or cancer. The number of components relevant to a Mediterranean dietary pattern ranged from two to five and only seven trials described the intervention as a Mediterranean diet.

The largest trial, which recruited only postmenopausal women and was not described as a Mediterranean diet meeting only two of the criteria described above, reported no difference in the occurrence of cardiovascular disease between the dietary advice group and the control group. The other trials measured risk factors for cardiovascular disease. As the studies were so different, it was not possible to combine studies for most of the outcomes. Where it was possible to combine studies, we found small reductions in total cholesterol levels as well as in the harmful low-density lipoprotein (LDL) cholesterol concentrations. The reductions in total cholesterol were greater in the studies that described themselves as providing a Mediterranean diet. None of the trials reported side effects.

The review concludes that, from the limited evidence to date, a Mediterranean dietary pattern reduces some cardiovascular risk factors. However, more trials are needed to look at the effects of the different participants recruited and the different dietary interventions to see which interventions might work best in different populations.