International Centre for Allied Health Evidence

University of South Australia

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iCAHE

A member of the Sansom Institute

*i*CAHE JC Critical Appraisal Summary

Journal Club Details

Journal Club location	Repatriation General Hospital
JC Facilitator	Cassandra Ofner
JC Discipline	Nutrition and Dietetics

Question

There has been a lot of debacle about saturated fat (full fat dairy, meat products, butter) vs unsaturated fats from margarines etc. we would like a paper that has studied the effect of fats on heart disease.

This appraisal was requested to continue the theme above, and the article was provided by the requesting club facilitator.

Review Question/PICO/PACO

P any age, any gender

I saturated fat in diet

C unsaturated fat in diet

O measures of cardiovascular disease, e.g. stroke, blood lipids (e.g. total cholesterol, LDL, HDL)

Article/Paper

Hooper L, Martin N, Abdelhamid A, Davey Smith G, 2015. Reduction in saturated fat intake for cardiovascular disease. *The Cochrane Library*.

Please note: due to copyright regulations CAHE is unable to supply a copy of the critically appraised paper/article. If you are an employee of the South Australian government you can obtain a copy of articles from the DOHSA librarian.

Article Methodology:

Click here to access critical appraisal tool

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CONTACTS
www.unisa.edu.au/cahe
iCAHE@unisa.edu.au
Telephone: +61 8 830 22099
Fax: +61 8 830 22853

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Adelaide SA 5001
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Ques No.	Yes	Can't Tell	No	Comments
1	✓			**Did the review address a clearly focused question?** To assess the effect of reducing saturated fat intake and replacing it with carbohydrate (CHO), polyunsaturated (PUFA) or monounsaturated fat (MUFA) and/or protein on mortality and cardiovascular morbidity, using all available randomised clinical trials.
2	✓			**Did the authors look for the appropriate sort of papers?** Selection Criteria: 1) Randomised with appropriate control group; 2) Intention to reduce saturated fat intake OR intention to alter dietary fats and achieving a reduction in saturated fat; 3) Not multifactorial; 4) Adult humans with or without cardiovascular disease (but not acutely ill, pregnant or breastfeeding); 5) Intervention at least 24 months; 6) Mortality or cardiovascular morbidity data available. **Is it worth continuing?** **YES**
3	✓			**Do you think the important, relevant studies were included?** Searches of the Cochrane Central Register of Controlled Trials (CENTRAL), MEDLINE (Ovid) and EMBASE (Ovid); checked references of included studies and reviews.
4	✓			**Did the review's authors do enough to assess the quality of the included studies?** Reviewers utilised GRADE to grade quality of evidence, alongside the Cochrane Risk of Bias assessment. They also assessed reporting bias via funnel plots.
5	✓			**If the results of the review have been combined, was it reasonable to do so?** Examined heterogeneity using the I^2 test, and considered it important where greater than 50% as recommended by Higgins 2003, 2011) Studies with greater than 50% homogeneity were evaluated utilizing a meta-analysis. Incomplete data was accounted for: *"We tried to contact study authors. This allowed inclusion of many studies that would otherwise have had to be excluded. We excluded studies which were otherwise relevant but where we could not establish the presence or absence of primary outcomes, despite multiple attempts at author contact."*

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6				**What are the overall results of the reviews?** We include 15 randomised controlled trials (RCTs) (17 comparisons, ~59,000 participants), which used a variety of interventions from providing all food to advice on how to reduce saturated fat. The included long-term trials suggested that reducing dietary saturated fat reduced the risk of cardiovascular events by 17% (risk ratio (RR) 0.83; 95% confidence interval (CI) 0.72 to 0.96, 13 comparisons, 53,300 participants of whom 8% had a cardiovascular event, I^2 65%, GRADE moderate quality of evidence), but effects on all-cause mortality (RR 0.97; 95% CI 0.90 to 1.05; 12 trials, 55,858 participants) and cardiovascular mortality (RR 0.95; 95% CI 0.80 to 1.12, 12 trials, 53,421 participants) were less clear (both GRADE moderate quality of evidence). There was some evidence that reducing saturated fats reduced the risk of myocardial infarction (fatal and non-fatal, RR 0.90; 95% CI 0.80 to 1.01; 11 trials, 53,167 participants), but evidence for non-fatal myocardial infarction (RR 0.95; 95% CI 0.80 to 1.13; 9 trials, 52,834 participants) was unclear and there were no clear effects on stroke (any stroke, RR 1.00; 95% CI 0.89 to 1.12; 8 trials, 50,952 participants). These relationships did not alter with sensitivity analysis. Subgrouping suggested that the reduction in cardiovascular events was seen in studies that primarily replaced saturated fat calories with polyunsaturated fat, and no effects were seen in studies replacing saturated fat with carbohydrate or protein, but effects in studies replacing with monounsaturated fats were unclear (as we located only one small trial). Subgrouping and meta-regression suggested that the degree of reduction in cardiovascular events was related to the degree of reduction of serum total cholesterol, and there were suggestions of greater protection with greater saturated fat reduction or greater increase in polyunsaturated and monounsaturated fats. There was no evidence of harmful effects of reducing saturated fat intakes on cancer mortality, cancer diagnoses or blood pressure, while there was some evidence of improvements in weight and BMI
7				**How precise are the results?** Results utilised 95% confidence intervals to indicate precision. Other statistical measures were also utilized, such as p values and risk ratios.
8	Journal Club to discuss			**Can the results be applied to the local population?** **CONTEXT ASSESSMENT (please refer to attached document)** – *Infrastructure* – *Available workforce (? Need for substitute workforce?)* – *Patient characteristics* – *Training and upskilling, accreditation, recognition* – *Ready access to information sources* – *Legislative, financial & systems support* – *Health service system, referral processes and decision-makers* – *Communication* – *Best ways of presenting information to different end-users* – *Availability of relevant equipment* – *Cultural acceptability of recommendations* – *Others*

9		**Were all important outcomes considered?**
10		**Are the benefits worth the harms and costs?**
11		**What do the study findings mean to practice (i.e. clinical practice, systems or processes)?**
12		**What are your next steps?** ***ADOPT, CONTEXTUALISE, ADAPT*** **And then (e.g. evaluate clinical practice against evidence-based recommendations; organise the next four journal club meetings around this topic to build the evidence base; organize training for staff, etc.)**
13		**What is required to implement these next steps?**

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