A systematic review on fluoridated food in caries prevention

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CRD summary
The authors concluded that evidence on the effectiveness of food fluoridation for caries prevention was scant. This reflects the evidence presented but search restrictions may have contributed to a poor yield of studies. Given the authors' implication that research in this area is relatively new, this review may be a reliable reflection of the current evidence.

Authors' objectives
To evaluate the effectiveness of fluoridated food to prevent caries.

Searching
MEDLINE, EMBASE and The Cochrane Library were searched from 1966 to 2011 for articles written in English. Search terms were reported.

Study selection
Eligible studies were randomised controlled trials and clinical trials that focused on the effects of fluoridated food on caries outcomes. Studies were excluded if fluoridated food was used in combination with one or more other types of fluoride delivery mechanisms or where fluoride supplementation was given indirectly (for example, during pregnancy).

Included studies were of fluoridated milk and fluoridated sugar (used as an ingredient in tea and porridge). Mean ages of participants ranged from 3.5 years to 19 years. Where reported, studies included approximately equal proportions of males and females. Intervention duration ranged from 18 to 21 months. Supplemental fluoride intake ranged from 0.38 to 0.58 mg per day.

Two reviewers independently selected the studies for inclusion. Disagreements were resolved by discussion and by involving two other reviewers if needed.

Assessment of study quality
Study quality was assessed on the basis of internal and external validity (criteria not specified). Study quality was graded as high, medium or low.

Two reviewers independently carried out the quality assessment. Disagreements were resolved by consensus.

Data extraction
Data were extracted to calculate changes in decayed, missing, filled surfaces (DMFS), decayed, missing, filled teeth (DMFT) or the percentage of prevented caries fraction.

The authors did not state how many reviewers carried out the data extraction.

Methods of synthesis
A narrative synthesis was presented.

Results of the review
Three studies (978 participants) were included in the review.

Milk fluoridation (two studies; medium quality): Both studies favoured the intervention in terms of caries outcomes. In one study, a net caries increment of 0.4 DMFT was observed in the intervention group compared with 1.3 DMFT in the control group (a change of -0.9 DMFT); the change in DMFS was -1.3. A prevention fraction of 75% was reported in the other study.

Sugar fluoridation (one study; low quality): After 18 months the intervention favourably impacted on the DMFS score.
incremental increase of 0.3 in the intervention group and 1.47 in the control group; change -1.17 DMFS).

Authors' conclusions
Evidence on the effectiveness of fluoridation in food for caries prevention was scant.

CRD commentary
The review question was clear and inclusion criteria were specified for all aspects apart from population. The search strategy included relevant databases. The restriction to articles in English and no apparent search for unpublished material meant that other studies may have been missed. The review process for study selection and quality assessment included steps to minimise error and bias. There was little detail on the included study designs and settings or on specific quality criteria applied. The selected reporting of outcomes in places was not justified.

The small number of included studies meant that the authors conclusion reflected the evidence presented but restrictions in the search may have contributed to a poor yield of studies. Given the authors' implication that food fluoridation is a relatively new research area, this review may be a reliable reflection of the current evidence.

Implications of the review for practice and research
The authors did not state any implications for practice and further research.

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Record Status
This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.