Low quality evidence for effectiveness of fluoridated milk

Abstracted from

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Question: Does drinking fluoridated milk prevent dental caries in children?

Data sources The Cochrane Oral Health Group's Trials Register, the Cochrane Central Register of Controlled Trials (CENTRAL), Medline, Embase, the U.S. National Institutes of Health Trials Register and WHO International Clinical Trials Registry.

Study selection Randomised controlled trials with an intervention and follow-up period of at least two years, comparing fluoridated milk with non-fluoridated milk.

Data extraction and synthesis Two reviewers independently extracted data and assessed risk of bias with the Cochrane risk of bias tool.

Results Only one unpublished trial was included. It involved 180 children aged three years at study commencement and was considered to be at high risk of bias. After three years permanent teeth had a caries reduction (mean difference (MD) -0.13, 95% CI -0.24 to -0.02) and primary teeth a caries reduction (MD -1.14, 95% CI -1.86 to -0.42). For primary teeth this is a substantial reduction, equivalent to a prevented fraction of 31%. For permanent teeth, the disease level was very low in the study, resulting in a small absolute effect size.

Conclusions There is low quality evidence to suggest fluoridated milk may be beneficial to schoolchildren, contributing to a substantial reduction in dental caries in primary teeth. Due to the low quality of the evidence, further research is likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate. There was only one relatively small study, which had important methodological limitations on the data for the effectiveness in reducing caries. Furthermore, there was no information about the potential harms of the intervention. Additional RCTs of high quality are needed before we can draw definitive conclusions about the benefits of milk fluoridation.

Commentary

This updated Cochrane review wanted to find out if milk fluoridation could prevent caries at the community level. The search was comprehensive and the standard methods of Cochrane reviews were employed in data collection and analysis.

This paper is based on a Cochrane Review published in the Cochrane Library 2015, issue 8 (see www.thecochranelibrary.com for information). Cochrane Reviews are regularly updated as new evidence emerges and in response to feedback, and the Cochrane Library should be consulted for the most recent version of the review.

The review included randomised trials only and thus included only one study that fulfilled the set of inclusion criteria. Despite being a randomised trial the study was at a high risk of bias and was small in size (180 children randomised, 166 analysed) which precluded clear conclusions about potential effectiveness of fluoridated milk in controlling caries compared to non-fluoridated milk. The review therefore correctly advised that its findings be interpreted with caution.

The most that can be said based on the single study is that in a population of similar children in a similar setting with low fluoride in water who have high caries rate, the fluoridation of milk at 2.5mg/l may prevent more caries than milk without added fluoride. Thus the choice of this fluoride modality for prevention of decay in a young child will still need careful assessment of other proven effective options which may be more easily or inexpensively available in a local context. Since there was no evidence on potential harmful effects of drinking fluoridated milk at any given dose these still need investigation, especially in young populations that usually drink more milk than an adult.

Until more and better quality trials comparing fluoridated milk versus regular milk are conducted a community level decision is not advisable. Fortunately there are two on-going studies (funded by the same organisation that funded the included study). An update of this review is therefore indicated when both these studies are completed. It is important to keep a lookout for other unpublished studies in this area of research as the funding may not always provide resources for peer reviewed publication. The cost effectiveness of milk fluoridation is an important outcome that should be assessed alongside future trials, because decision makers (parents or local governments) may not be convinced with effectiveness alone, especially if a cheaper alternative fluoride source is available. For the same reason uptake of reviews (and studies) on community interventions in decision making circles may be better if the prevented fractions are interpreted into numbers needed to treat.

Practice point

- At the moment we cannot advise use of fluoridated milk instead of regular milk for children to prevent caries based on limited and low quality evidence.

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