Micronutrient and vitamin supplementation during pregnancy improves some maternal and child health outcomes

Micronutrients and vitamins are important for the body's normal functioning, growth and development, but many women and children get too few from their diets.

What is this review about?
 Micronutrient deficiencies, the lack of essential vitamins and minerals, are especially a concern during pregnancy, when energy and nutrient demands are greater for both mother and foetus, and can lead to adverse health and development outcomes for the mother and child, such as being born too soon or too small.

A cost-effective strategy that has been implemented worldwide is to provide micronutrient and vitamin supplementation during pregnancy to achieve better health outcomes in the mother and child. There are different types of supplementation, including provision of a single micronutrient/vitamin (e.g. vitamin D), two micronutrients/vitamins (e.g. iron-folic acid supplementation), or several micronutrients/vitamins, which can be in the form of tablets, powders, or fat-based products.

Multiple micronutrient supplementation will help women and children who have more than one type of deficiency. However, it is understood that some micronutrients and vitamins can compete for absorption in the body and, as such, intake of several micronutrients at the same time may not be as effective as one would hope.

It is important to evaluate the various types of supplementation in pregnancy and their effects on maternal and child health outcomes to determine the best strategy for reducing poor outcomes.

What studies are included?
We searched for papers published between 1995 and 31 October 2019 in a variety of relevant databases and within grey literature. This systematic review included 314 papers across 72 studies (involving 451,723 women), of which 64 studies (involving 439,649 women) contributed to meta-analysis.
The included studies used the following comparisons: iron-folic acid supplementation versus folic-acid only; multiple-micronutrient supplementation versus iron-folic acid or iron alone; lipid nutrient-based supplementation versus multiple micronutrients; and iron, zinc, vitamin A, vitamin D or calcium supplementations, each compared to placebo.

**What are the main findings of the review?**
Across all comparisons, micronutrient and vitamin supplementation had little to no effect on the number of deaths among mothers and infants. Overall, women who received multiple micronutrient supplementation had fewer babies that were born early (< 37 weeks of gestation), fewer babies born too small (< 2500 g) and fewer babies who were smaller in size than normal for their gestational age, compared to women who received iron-folic acid supplementation. Iron or iron-folic acid supplementation was very good at improving maternal anaemia.

Mothers who received calcium supplementation may have had a decreased risk of pre-eclampsia and eclampsia during pregnancy, and mothers who received vitamin D compared to mothers who received placebo may have had fewer babies that were born early (< 37 weeks of gestation).

Women supplemented with vitamin A compared to mothers given placebo had higher amounts of serum/plasma retinol, while zinc supplementation had no effect on all maternal and child outcomes reported.

Lipid nutrient-based supplementation showed little to no effect compared to multiple micronutrients; however, there were very few studies included and further research should be conducted.

**What do the findings of this review mean?**
The findings of this review support the use of micronutrient and vitamin supplementation during pregnancy to improve certain maternal and child health outcomes, which is especially important for populations living in low- and middle-income countries. Supplementation with multiple micronutrients was particularly good at improving several outcomes.

Further research should be done to establish the effects of supplementation on pregnant adolescents, who may have specific needs. Also, more data is needed to understand supplementation effects on long-term health and development outcomes for mother and child.