Multiple-micronutrient supplementation for women during pregnancy

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This review found no added benefit of multiple-micronutrient supplementation compared with supplementation with iron and folic acid alone. Until more information becomes available, it is advisable to follow the WHO recommendation of providing iron and folate supplementation to all women during pregnancy.

RHL Commentary by Lumbiganon P

1. EVIDENCE SUMMARY

This Cochrane review (1) was updated in 2006. Nine trials involving 15 378 women have been included in this review. All trials were conducted in low-income countries and were methodologically sound.

The review found that, compared with supplementation of two or less micronutrients or no micronutrient supplementation or supplementation with a placebo, multiple-micronutrient supplementation significantly decreases the risk of low birth weight babies [relative risk (RR) 0.83; 95% confidence interval (CI) 0.76–0.91], small-for-gestational-age babies (RR 0.92; 95% CI 0.86–0.99) and maternal anaemia (RR 0.61; CI 0.52–0.71). Multiple-micronutrient supplementation did not statistically significantly change two other outcomes, namely preterm birth and perinatal mortality.

Since the World Health Organization recommends routine use of iron and folic acid supplementation in women during pregnancy as a part of antenatal care, this review also evaluated the effect of multiple-micronutrient supplementation versus supplementation with iron and folic acid alone. Analyses showed no added benefit of multiple-micronutrient supplements compared with iron and folic acid supplementation alone.

A number of pre-specified clinically important outcomes could not be assessed due to insufficient or unavailable data from the included trials. These included placental abruption, congenital anomalies (including miscarriage), neural tube defects, prelabour rupture of membranes, pre-eclampsia, maternal mortality, very preterm births, neuro-developmental delay, cost of supplementation and side-effects of supplements, maternal wellbeing or satisfaction and nutritional status of children.

The reviewers chose appropriate outcomes and used the standard strategies recommended by the Cochrane Pregnancy and Childbirth Review Group for literature search, assessment of methodological quality and data analyses.
The evidence provided in this review is insufficient to suggest replacement of iron and folate supplementation during pregnancy as recommended by the World Health Organization with multiple-micronutrient supplementation.

2. RELEVANCE TO UNDER-RESOURCED SETTINGS

2.1. Magnitude of the problem

Micronutrient deficiency among pregnant women is widespread in low-income countries as illustrated by the following three examples.

In Nepal, an assessment of 1165 pregnant women in their first trimester before supplementation found that the prevalence rates for deficiencies of vitamins A, E, and D were 7, 25, and 14% respectively. About 33%, 40% and 28% of these women were deficient in riboflavin, vitamin B-6 and B-12, respectively. The prevalence of folate deficiency was only 12%, but 61% of these women were zinc deficient (2).

Between November 2000 and October 2001, a community based cross-sectional survey was conducted in six villages in Faridabad district in the Indian state of Haryana. All pregnant women aged 18 years or more, with pregnancy duration of more than 28 weeks were enrolled. Nearly 73.5%, 2.7%, 43.6%, 73.4%, 26.3%, and 6.4% of the women were deficient in zinc, copper, magnesium, iron, folic acid and iodine, respectively. The highest concurrent prevalence of two, three, four and five micronutrient deficiency was of zinc and iron (54.9%); zinc, magnesium and iron (25.6%); zinc, magnesium, iron and folic acid (9.3%) and zinc, magnesium, iron, folic acid and iodine (0.8%), respectively (3).

In Venezuela, surveys conducted between 2001 and 2002 among infants, children, adolescents and pregnant women from labour and poor socioeconomic strata of the population found that 36% and 61% of pregnant women were deficient in folic acid and vitamin B12, respectively (4).

2.2. Applicability of the results

Since all trials included in this review were conducted in low-income countries, the results should be applicable to under-resourced settings.

2.3. Implementation of the intervention

The evidence provided in this review indicates that there is no added benefit of multiple-micronutrient supplementation compared with supplementation with iron and folic acid alone. Iron and folate supplementation during pregnancy as recommended by the World Health Organization should be implemented until more information is available.

3. RESEARCH

Further research is needed to assess whether multiple-micronutrient supplementation during pregnancy is more effective than iron and folate supplementation in improving maternal and/or fetal outcomes. Future trials should also evaluate the risk of excess supplementation, potential adverse interactions between the micronutrients. Future reviews and trials should also assess the effect of different combinations and dosages of the micronutrients in the supplements.

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References


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