Energy and protein intake in pregnancy

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Dietary advice is unlikely to yield any major benefits for either the infant or the mother. The best way of improving the dietary status of pregnant women may be to supplement their diets with energy-rich foods through community-based sustainable programmes. The best long-term solution is to raise the social and economic status of women.

RHL Commentary by Lindmark G

1. EVIDENCE SUMMARY

Five interventions, previously reviewed separately, addressing energy and protein intake in pregnancy have been included in this Cochrane review.

Nutritional advice:

Advice to pregnant women to increase energy and especially protein intake seems to increase these intakes slightly, but no health benefits for infants or mothers have been documented, except in one study in which a reduction in preterm births was observed although this finding was not consistent with the lack of effect on mean gestational age or birth weight found in the same study.

Balanced energy/protein supplementation:

Compared with no energy supplementation, energy supplementation during pregnancy (300-850 kcal/day with less than 25% of that energy coming from protein) is associated with moderate increases in maternal weight gain and birth weight, and a substantial reduction in the risk of small for gestational age (SGA) infants (Relative risk [RR]: 0.68; 95% Confidence interval [CI]: 0.56–0.84). Three trials found important reductions in stillbirths (RR: 0.55; 95% CI: 0.31 0.97) and possibly neonatal deaths although this was not statistically significant (RR: 0.62; 95% CI: 0.37–1.05). In the few studies with follow-up in the postnatal period, neither any evidence of lasting weight improvement in mother or baby, nor of improved neurocognitive development at one or five years, was found.

High protein supplementation:

Two trials with 1076 women were included. There were no beneficial effects on any of the maternal or fetal outcomes and a statistically nonsignificant increase in neonatal death (RR: 2.78; 95% CI: 0.75 – 10.36) in one trial that provided data on this outcome.
Isocaloric protein supplementation:

Isocaloric protein supplementation, (in which less than 25% of the energy content of the supplement comes from protein), when compared to the same level of energy supplementation, was associated with a reduction in maternal weight gain as well as mean birth weight and increase in the risk of an SGA infant (one trial, RR: 1.35; 95% CI: 1.12–1.61). No change in gestational age distribution has been noted. Studies are not large enough to give reliable information on possible effects on perinatal mortality and do not give information on maternal health outcomes other than weight gain.

Energy/protein restriction in overweight or with high weight gain women:

384 women participated in the three trials included. Energy/protein restriction reduced the weekly weight gain but there was inadequate evidence to assess any substantial beneficial or adverse effect on the mother and the baby.

Overall, the methodology of the review seems to be rigorous and the trial characteristics are presented in detail.

2. RELEVANCE TO UNDER-RESOURCED SETTINGS

2.1. Magnitude of the problem

Maternal under-nutrition and malnutrition are major problems in especially the poorest developing countries and are generally considered to be of importance for the high prevalence of low birth weight and fetal growth retardation. Limited access to high quality foods is the major reason for under-nutrition, but traditional food habits, food taboos and limited knowledge may also contribute to undernutrition.

The important role of low birth weight and prematurity for perinatal mortality and morbidity in developing countries and its association with under-nutrition and malnutrition in the mothers, has motivated various attempts to improve pregnancy outcome through food supplementation.

2.2. Applicability of the results

The most recent trial included in the review was published in 1997 (1). This trial was conducted in rural Gambia and the beneficial effects of high energy with balanced protein content supplementation would likely apply to similar settings where a substantial proportion of the population are undernourished. However, the applicability of findings from some of the studies included in the review could be questioned due to the time lag and large differences in demographic characteristics.

2.3. Implementation of the intervention

Ideally, raising of the social and economic status of women in developing countries is the best long-term solution for improving the nutritional status of undernourished pregnant women. With regard to the specific interventions, the best way would be to supplement the diets of pregnant women with energy-rich foods through community-based sustainable programmes.

The available information from the other trials does not suggest any additional benefit of providing nutritional advice and extra protein supplementation (high or isocaloric) but rather suggest the possibility of adverse effects hence, these should not be considered at all for implementation.

3. RESEARCH
More basic research is needed on the aspects of maternal nutritional status most essential for fetal development and pregnancy outcome. Once this knowledge has been attained then interventions to change the composition of maternal diet based on this information can be undertaken.

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References