

## Does prenatal micronutrient supplementation improve children's mental development? A systematic review

Brenda MY Leung<sup>1,2\*</sup>†, Kristin P Wiens<sup>2</sup>†, Bonnie J Kaplan<sup>1,2</sup>†

### Abstract

**Background:** Although maternal nutrient status influences all aspects of fetal development including the brain, the impact of micronutrient supplementation on the baby's mental function is a topic of debate. This systematic review assesses the effect of single and multiple micronutrient supplementation during pregnancy on offspring mental development.

**Methods:** Eleven electronic literature databases were searched using key terms of various combinations and filter string terms. Reference lists of articles selected for review were scanned for citations fitting the same inclusion criteria. Each stage of the literature retrieval and review process was conducted independently by two reviewers. The CONSORT checklist was used to assess study quality.

**Results:** A total of 1316 articles were retrieved from the electronic database search, of which 18 met the inclusion criteria and were evaluated. The selected studies were randomized controlled trials published from 1983 to 2010, with high variance in sample size, intervention type, and outcome measures. The median CONSORT score was 15 (range 12 - 19). Due to inconsistent interventions and outcome measures among the studies, no conclusive evidence was found that enhancing the intrauterine environment through micronutrient supplementation was associated with child mental development in a number of dimensions. There was some evidence to support n-3 fatty acids or multi-micronutrients having some positive effect on mental development, but the evidence for single nutrients was much weaker.

**Conclusions:** The study of children's mental outcomes as a function of prenatal supplementation is still relatively new, but the results of this systematic review suggest that further work with multiple micronutrients and/or n-3 fatty acids should be conducted.