

Effects of iron supplementation in nonanemic pregnant women, infants, and young children on the mental performance and psychomotor development of children: a systematic review of randomized controlled trials.

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Background: Uncertainty exists regarding the effects of iron supplementation on neurodevelopmental outcomes in the absence of anemia.

Objective: Our objective was to evaluate the effects of iron supplementation in nonanemic pregnant women and in nonanemic healthy children aged, 3 y on the mental performance and psychomotor development of children.

Design: In this systematic review, MEDLINE, EMBASE, and The Cochrane Library were searched through December 2009 for randomized controlled trials (RCTs).

Results: None of 5 RCTs individually showed a beneficial effect of iron supplementation during early life on the Mental Developmental Index of the Bayley Scales of Infant Development at different ages throughout the first 18 mo. Meta-analysis of 3 RCTs (n = 561) showed that, compared with placebo, supplementation with iron had no significant effect on children's Mental Developmental Index at '12 mo of age (weighted mean difference: 1.66; 95% CI: 20.14, 3.47). Three of 5 RCTs showed a beneficial effect of iron supplementation on the Psychomotor Development Index at some time points, whereas 2 did not. Meta-analysis of 3 RCTs (n = 561) showed significant improvement on the Psychomotor Development Index at '12 mo of age in the iron-supplemented group compared with the control group (weighted mean difference: 4.21; 95% CI: 2.31, 6.12). Two RCTs showed no effect of iron supplementation on behavior. Neither of the 2 RCTs that addressed the influence of prenatal iron supplementation showed an effect of iron on either the intelligence quotient or behavioral status of the children.

Conclusion: Limited available evidence suggests that iron supplementation in infants may positively influence children's psychomotor development, whereas it does not seem to alter their mental development or behavior.

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