Low-dose iron supplements in pregnancy prevent iron deficiency at the end of pregnancy and during the post-partum period: the results of a randomised controlled trial

M Makrides[1], CA Crowther[2], RA Gibson[1], RS Gibson[3], CM Skeaff[3]

[1]*Child Health Research Institute and Adelaide University Dept Paediatrics, Women's & Children's Hospital, North Adelaide, SA, 5006*
[2]*Adelaide University Dept Obstetrics & Gynaecology, Women's & Children's Hospital, North Adelaide, 5006*
[3]*Department of Human Nutrition, University of Otago, Otago, New Zealand*

Context: Iron deficiency anaemia (IDA) is common in pregnant women in industrialised countries and previous trials aimed at preventing IDA have used high-dose iron supplements that are known to cause gastrointestinal side effects. Current clinical practice in Australia is to screening for anaemia at 28 weeks gestation and treat if detected. There have been no reports to systematically assess the benefits and tolerance of routine low-does iron supplementation in pregnancy.

Objective: To assess the effect of supplementing the diet with 20 mg/d iron, a low-dose designed to meet the recommended intake during pregnancy on maternal iron deficiency (ID, without anaemia), IDA, and gastro-intestinal side effects.

Design: Randomised, double blind, controlled trial conducted December 1997 – October 1999 with a follow-up to six months post-partum.

Setting: Maternity hospital in Adelaide, Australia.

Participants: 430 women with singleton or twin pregnancies, without pre-existing anaemia and not taking iron supplements. 386 (89.7%) women completed the follow-up to six months post-partum.

Intervention: 20 mg daily iron supplement (ferrous sulphate) from 20 weeks gestation until birth.

Main outcome measures: Maternal IDA and ID at the end of pregnancy and at six months post-partum. Gastro-intestinal side effects assessed via questionnaire at 24 and 36 weeks of gestation.

Results: At the end of pregnancy, fewer women from the iron supplemented group had IDA than the placebo group (6/198, 3% vs 20/185, 11%; relative risk, RR 0.28, 95% confidence interval, CI, 0.12, 0.68, $P < 0.005$) and fewer iron supplemented women had ID than placebo treated women (65/186, 35% vs 102/176, 58%; RR, 0.60, 95% CI, 0.48, 0.76, $P < 0.001$). There were no differences between the groups in the numbers of women reporting any gastrointestinal side effects. At six months post-partum fewer women from the iron group had ID compared with the placebo group (31/190, 16% vs 51/177, 29%; RR 0.57, 95% CI 0.38, 0.84, $P < 0.005$). The rate of IDA between the groups did not differ.

Conclusion: Supplementing the diet of women with 20 mg of iron daily from 20 weeks of pregnancy offers a low risk strategy to prevent IDA and ID.

Supported by the NH&MRC, Channel 7 Medical Research Foundation, Gunn & Gunn Research Foundation, Perinatal Pathology Fund and Soul Pattinson Manufacturing.
Key words: iron, pregnancy, iron deficiency