Iron Supplementation with or without Optimized Complementary Feeding Recommendations: Effect on Micronutrient Status and Growth of 1-2 Year Old Myanmar Children

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ABSTRACT

Objectives: Children under 2-years of age are at high risk of micronutrient deficiencies and growth faltering due partly to poor complementary feeding. This study aimed to compare the effect of optimized complementary feeding recommendations (CFRs) to iron supplementation on micronutrient status and growth of Myanmar children.

Methods: A randomized, partially-blinded, placebo-controlled trial (NCT01758159) was conducted for 24 weeks among 1-2 year old children from Ayeyarwady, Myanmar. Optimized CFRs were developed by Linear Programming using locally available foods. Randomization by village for...
CFRs or non-CFRs and by child (n=432) for iron supplements or placebo, created: 1. CFR+Fe; 2. CFR-alone; 3. Fe-alone; or 4. Placebo-control groups. Mother from CFRs received regular training on optimized CFRs and children from Fe received 15mg Ferric-NaEDTA daily. Serum ferritin(SF), transferrin-receptor(sTfR), zinc(Zn), retinol-binding-protein(RBP); C-reactive protein, α-1 acid glycoprotein and anthropometry were assessed at baseline and endline.

Results: At baseline, 88.4% of children had anemia (Hb<110g/L); after adjusting for infection, 36.1% had iron-deficiency-anemia(IDA) (Hb<110g/L, SF<12µg/L), 37.2% iron-deficiency(ID) (SF<12µg/L), 33.6% zinc-deficiency (Zn<9.9µmol/L), 54.9% low vitamin-A status (RBP<1.05µmol/L); and 27.7% were stunted. At endline, anemia was reduced by all 3 interventions. Fe-alone reduced ID and IDA [OR=0.02, 95%CI(0.02,0.44), P=0.002] and [OR=0.06, 95%CI(0.01,0.41) P=0.004] respectively but increased stunting [OR=2.96, 95%CI(1.05, 8.33), P=0.04]. There was no between-groups difference for zinc and vitamin-A deficiencies at endline.

Conclusions: Optimized CFRs with or without iron supplementation can reduce anemia. Iron supplementation reduce ID and IDA but also increase stunting. It is interesting to study about competitive absorption of supplemental iron or dietary iron with dietary zinc with potential to zinc deficiency and stunting.