ABSTRACT

Objectives: Adding iron-rich foods or multi-micronutrients powder (MNP) could be options to control iron deficiency anaemia (IDA) in children. Data evaluating the impact of fortification with iron-rich foods such as amaranth grain and MNP containing low doses of highly bio-available iron to control IDA is limited. We assessed the efficacy of maize porridge enriched with amaranth grain or MNP to reduce IDA in Kenyan pre-school children. Methods: In a 16-week intervention trial, children (n=279; 12-59 months) were randomly assigned to: unrefined maize porridge (control; 4.1 mg of iron/meal); unrefined maize (30%) and amaranth grain (70%) porridge (amaranth group; 23 mg of iron/meal); or unrefined maize porridge with MNP (MNP group; 6.6 mg iron/meal; 2.5 mg iron as NaFeEDTA). Primary outcomes were anaemia and iron status with treatment effects estimated relative to control. Results: At baseline, 38% were anaemic and 30% iron deficient. Consumption of MNP reduced prevalence of anaemia [-46% (95% CI= -67,-12)], ID [-70% (95% CI=-89,-16)], IDA [-75% (95% CI= -92,-20)] and soluble transferrin receptor [-10% (95% CI=-16,-4)] concentration while significantly increasing haemoglobin [2.7 g/L (95% CI= 0.4, 5.1)] and plasma ferritin [40% (95% CI=10, 95)] concentration. There was no significant change in haemoglobin or iron status in the amaranth group. Conclusions: Consumption of maize porridge fortified with low dose highly bio-available iron MNP can reduce the prevalence of IDA in pre-school children. In contrast, fortification with amaranth grain even when shown to have high iron concentration without reduction of phytic acid may not show significant improvement in iron status.