Multivitamin and Iron Supplementation to Prevent Periconceptional Anemia in Rural Tanzanian Women

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ABSTRACT

Objectives: Women's nutritional status during conception and early pregnancy can influence maternal and infant outcomes. This study examined the efficacy of pre-pregnancy supplementation with iron and multivitamins to reduce anemia prevalence during the periconceptional period among rural Tanzanian women and adolescent girls.

Methods: A double-blind, randomized controlled trial was conducted in which non-pregnant women aged 15-29 years (n=802) were randomized to receive daily oral supplements of folic acid alone, folic acid and iron, or folic acid, iron, and vitamins A, B-complex, C, and E at approximately single recommended dietary allowance doses for six months.

Results: The study arms were comparable in participant characteristics including compliance (p>0.05). In total, 561 (70%) completed the study and were included in the intention-to-treat analysis. Hemoglobin levels were not different across treatments (median: 11.1 g/dL, Q1-Q3: 10.0-12.4 g/dL, p=0.65). However, compared with the folic acid arm (28%), there was significant reduction in the risk of hypochromic microcytic anemia in the folic acid and iron arm (17%, RR: 0.61, 95% CI: 0.42-0.90, p=0.01) and the folic acid, iron, and multivitamin arm (19%, RR: 0.66, 95% CI: 0.45-0.96, p=0.03). Inverse probability of treatment weighting (IPTW) to adjust for potential selection bias due to loss to follow-up did not materially change results. The regimen effect was not modified by baseline characteristics or compliance (p>0.2).
Conclusions: Daily oral supplementation with iron and folic acid among non-pregnant women and adolescents reduces risk of anemia. The potential benefits of supplementation on the risk of periconceptional anemia and adverse pregnancy outcomes warrant investigation in larger studies.