

Frequency of Small Fish Consumption Is Associated With Improved Iron and Hemoglobin in Young Malawian Children

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Objectives: Our objective was to assess whether fish and meat consumption over 6mo was associated with plasma ferritin, soluble transferrin receptor (sTfR), hemoglobin (Hb), iron deficiency (ID), and anemia in a population of young Malawian children with a high (>50%) prevalence of iron deficiency anemia.

Methods: This secondary data analysis includes 585 Malawian infants, age 6–9mo, from a 6mo egg feeding trial. At enrollment and 6mo follow-up, 24hr dietary recalls and blood draws were conducted. Days with any small fish, large fish, or meat consumption were reported weekly in 7-day food frequency questionnaires. The % of days with flesh food consumption were totaled for each child. Plasma ferritin, sTfR, and Hb were assessed for associations with the % of days with small fish, large fish, and meat intake using linear regression. Prevalence ratios (PR) of ID (ferritin < 12μg/L or sTfR > 8.3 mg/L) and ane-

mia (Hb < 11g/dL) were compared for each flesh food category using log binomial or modified Poisson regression.

Results: The % of children with observed intake of small fish (4%), large fish (1%), and meat (2%) from 24-hr recalls at enrollment increased to 40%, 12%, and 9%, respectively, at the 6mo follow-up. Over 6mo, children averaged consumption of small fish, large fish, and meat on 25%, 8%, and 6% of days, respectively. More frequent intake of small fish was associated with higher Hb [geometric mean ratio (95% CI) per 10 percentage point difference: 1.01 g/dL (1.00, 1.01)] and lower sTfR [0.98 mg/L (0.96, 1.00)] but was not associated with ferritin concentration [1.03 μg/L (0.99, 1.07)]; nor was it associated with the prevalence of ID [PR (95% CI): 0.99 (0.97, 1.01)] or anemia [0.94 (0.88, 1.01)]. More frequent consumption of large fish was associated with a higher prevalence of anemia [1.09 per 10 percentage point difference in frequency, (1.00, 1.18)] but was not associated with ID [0.96 (0.92, 1.00)]. Meat consumption was predominantly chicken and not associated with iron or anemia indices.

Conclusions: Small fish are a primary contributor to total flesh food intake of young Malawian children and may provide modest improvements to iron status and hemoglobin. Meat and large fish were infrequently consumed and not associated with ID.

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