

ORIGINAL RESEARCH COMMUNICATION

Comparison of the effects of zinc delivered in a fortified food or a liquid supplement on the growth, morbidity, and plasma zinc concentrations of young Peruvian children^{1, 2, 3}

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Background: Zinc supplementation decreases morbidity from infections and increases growth of stunted children, but there is little information on functional responses to zinc delivered in fortified foods.

Objective: The aim was to examine the effects of zinc fortification on the growth, morbidity from infections, and plasma zinc concentrations of young children.

Design: We compared the physical growth, morbidity, and micronutrient status of 6–8-mo-old Peruvian children with initial length-for-age z score (LAZ) < –0.50 who were randomly assigned to receive one of the following treatments daily for 6 mo: 1) 30 g dry weight of an iron-fortified cereal porridge and a separate dose of an aqueous multivitamin (MV) supplement between meals (control group), 2) the same porridge and MV with 3 mg Zn added to the supplement dose (ZnSuppl group), or 3) the porridge with added zinc (150 mg/kg dry weight) and MV without zinc (ZnFort group).

Results: The children consumed a mean of 22–26 g dry porridge/d and 96% of the possible MV doses. After adjustment for small baseline differences in socioeconomic status and morbidity, no significant differences in weight or length increments were observed between the groups, even among the subset with an initial LAZ < –1.5, and no significant differences in the rates of common illnesses were observed. Mean plasma zinc concentrations decreased in the control group (–3.9 µg/dL), increased in the ZnSuppl group (4.3 µg/dL), and did not change significantly in the ZnFort group (–1.5 µg/dL; *P* < 0.001 for group-wise comparison).

Conclusions: Provision of additional zinc, either in an aqueous supplement or a fortified porridge, did not significantly affect the children's physical growth or morbidity from infections, possibly because they were not sufficiently growth-restricted or zinc-deficient initially or because the level of zinc intake or absorption was inadequate. Additional studies of the functional effect of zinc-fortified foods are needed in populations that are known to respond to zinc supplements.

Key Words: Zinc • fortification • supplementation • growth • diarrhea • infants

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