

Abstract

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Global and regional child mortality and burden of disease attributable to zinc deficiency.

Fischer Walker CL, Ezzati M, Black RE.

Department of International Health, Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, USA.

BACKGROUND/ OBJECTIVES: Zinc is an essential micronutrient and deficiency can lead to an increased risk for infectious diseases and growth retardation among children under 5 years of age. We aimed to estimate disease-specific and all-cause mortality attributable to zinc deficiency.

SUBJECT/ METHODS: We estimated the prevalence of zinc deficiency in Latin America, Africa and Asia, where based on zinc availability in the diet and childhood stunting rates, zinc deficiency is widespread. The relative risks of death among zinc-deficient children for diarrhea, malaria and pneumonia were estimated from randomized controlled trials. We used the comparative risk assessment methods to calculate deaths and burden of disease (measured in disability-adjusted life years, DALYs) from each of these three diseases attributable to zinc deficiency in these regions.

RESULTS: Zinc deficiency was responsible for 453 207 deaths (4.4% of childhood deaths), and 1.2% of the burden of disease (3.8% among children between 6 months and 5 years) in these three regions in 2004. Of these deaths, 260 502 were in Africa, 182 546 in Asia and 10 159 in Latin America. Zinc deficiency accounted for 14.4% of diarrhea deaths, 10.4% of malaria deaths and 6.7% of pneumonia deaths among children between 6 months and 5 years of age.

CONCLUSIONS: Zinc deficiency contributes to substantial morbidity and mortality, especially from diarrhea. Zinc supplementation provided as an adjunct treatment for diarrhea may be the best way to target children most at risk of deficiency.

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