

Conclusion: The results of the study demonstrate that active rickets in Chakaria is not usually associated with vitamin D deficiency, and that the clinical presentation of rickets in Bangladeshi children is similar to that of African children with calcium-deficiency rickets. Furthermore, the findings of rachitic deformities and elevated serum 1,25(OH)₂ vitamin D levels among "unaffected" children suggest that subclinical calcium deficiency might be much more prevalent than previously suspected.

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Effect of Zinc and Vitamin A Supplementation in Undernourished Children with Persistent Diarrhoea in Bangladesh

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Objective: Evaluate and compare the efficacy of vitamin A and/or zinc supplementation on the clinical course of persistent diarrhoea in Bangladeshi children.

Methodology: A double-blind randomized, controlled trial was carried out with 96 moderately malnourished children (60%-75% of wt./age of 50th centile of NCHS standard) aged 6 months to 3 years with diarrhoea for more than 14 days. Children were randomly allocated in 4 groups. Each group (n=24) received either zinc (20 mg elemental zinc in two divided doses per day), or vitamin A (total 200,000 IU in twice daily doses over 7 days) or both (zinc plus vitamin A in a multivitamin syrup); and the control group received only multivitamins (except vitamin A) equal to that of the treatment groups for 7 days. Clinical data were collected by a physician, and stool output, consistency, and frequency were recorded by using metabolic balance for 7 days.

Results: The baseline characteristics of the 4 study groups were comparable. The total diarrhoeal stool output among the 4 groups over 7 days was significantly different ($p < 0.02$). Cumulative stool weight reduced significantly ($p < 0.0001$) from day 2 to day 7 in the children receiving zinc compared to the control group and also significantly reduced ($p < 0.02$) from day 5 to day 7 in the children receiving vitamin A compared to the control group. Differences between zinc and vitamin A or zinc vs. zinc plus vitamin A were not significant ($p = 0.5$, $p = 0.7$ respectively). The cumulative stool frequency significantly reduced from day 4 to day 7 in the zinc group compared to the control group ($p < 0.001$). No significant differences were found between any other pairs. The net gain in the body weight over the 7-day study period was significant only in the children receiving zinc compared to the control group (+100 g vs. -40 g, $p < 0.04$). The percentage of children who had clinical recovery (passage of soft stool was taken as recovery) within 7 days was significantly greater in the zinc group

(86%) compared to the control group (48%, $p=0.007$) or vitamin A (48%, $p=0.007$), but not with zinc plus vitamin A (68%, $p=0.14$).

Conclusion: The results indicate that zinc supplementation in persistent diarrhoea reduces stool output along with frequency, and promotes earlier recovery; and strongly suggest that zinc supplementation is a standard management for undernourished children with persistent diarrhoea.

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Zinc and Rehabilitation from Severe Protein-Energy Malnutrition: Higher Dosage Regime Associated with Increased Mortality

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Objective: Investigate the catch-up growth of children in severe protein-energy malnutrition, with particular reference to linear growth and the effect of zinc supplementation.

Methodology: One hundred forty-one children aged 6 months to 3 years were recruited after admission to a Nutritional Rehabilitation Unit in the Dhaka Shishu Hospital. They were randomized to receive either per oral 1.5 mg/kg for 15 days, 6 mg/kg for 15 days, or 6 mg/kg for 30 days of elemental zinc and followed up for 90 days.

Results: Anthropometric outcome variables included change in height-for-age (z-score), change in knee/heel length as measured by knemometer, change in weight-for-age and weight-for-height (z scores) and change in mid-upper arm circumference (MUAC), as well as change in skin-fold subscapular/triceps thickness. No anthropometric variable indicated significant improvement with increased zinc dosage, and in addition, mortality rates increased significantly in those exposed to high-dose zinc (6 mg/kg) as opposed to those exposed to low-dose zinc supplementation (1.5 mg/kg) with a Yates-corrected chi-square p value of 0.033 and a risk ratio of 4.55 (95% confidence limits: 1.09 <RR<18.8).

Conclusion: The study suggests that there is no extra benefit of higher-dose zinc supplementation. On the contrary, it seems to contribute to increased mortality in the severely malnourished children.

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