

Abstract

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Maternal micronutrient supplementation with zinc and β -carotene affects morbidity and immune function of infants during the first 6 months of life.

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BACKGROUND/OBJECTIVES: Micronutrient deficiencies are prevalent worldwide, and a major cause of infant death. Supplementation with multiple micronutrients during pregnancy might improve micronutrient status of the newborn, thereby reducing morbidity and death. Moreover, maternal supplementation might affect the newborn's immune development. Therefore, this study investigated the effects of maternal zinc and β -carotene supplementation on the infant's morbidity and immune function during the first 6 months of life.

SUBJECTS/METHODS: Mothers were supplemented during pregnancy with β -carotene and/or zinc, in addition to iron and folic acid, in a randomized, double-blind controlled trial. Newborn infants (n=136) were followed up for 6 months.

RESULTS: Infants born from mothers receiving zinc during pregnancy had significantly fewer episodes of diarrhoea than infants born from mothers not receiving zinc (0.2 and 0.4, respectively), but more episodes of cough (1.3 and 0.9 respectively) during the first 6 months. Maternal β -carotene supplementation had no effect on infants' morbidity. Cytokine production in the newborns was affected by maternal zinc and β -carotene supplementation, with zinc supplementation giving higher interleukin-6 production (16% higher), and β -carotene supplementation leading to lower interferon- γ production (36% lower).

CONCLUSIONS: This study shows that maternal supplementation with zinc and β -carotene affected the newborn's immune development in specific ways, but only maternal zinc supplementation significantly affected morbidity in the infants. Addition of zinc to routine iron and folic acid supplements for pregnant women could be an effective way to reduce diarrhoeal disease during the first 6 months of life, albeit at the expense of more episodes of cough.

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