

Iron Deficiency is Associated with Higher Fat Mass in Cambodian Infants: The WinFood Project

Introduction.

Nutritional status in early childhood might predispose to a higher risk for non-communicable diseases through metabolic alterations which are not fully understood. Rapid growth during the first years of life and fat mass at 2 yrs of age are strong predictors for later obesity. High quality fortified complementary foods (FCF) play an important role in preventing childhood malnutrition, but may have long-term health benefits also. The WinFood project investigated the role of FCF and iron status on body composition in Cambodian infants.

Methods.

In a double-blinded intervention trial, Cambodian infants (n=419) were randomized to one of four FCF products. Infants received FCF daily from 6 months of age onwards for 9 months. Body composition (deuterium dilution), anthropometry and iron status (total body iron, TBI, calculated from ferritin and sTfR concentrations) were measured at 6 and 15 months of age. Zinc and vitamin A status was determined too at both time-points

Results.

Overall there was no significant difference in body composition among the FCF groups. Body fat decreased from 21.7% to 14.9% over the study period ($P<0.001$). Iron status at 6 and 15 months of age was significantly associated with body composition, with infants with negative values for TBI at endpoint having higher fat mass (14.0% vs 15.5%, $P=0.02$). Infants who had sufficient iron stores throughout the study had on average 286 g less fat than infants with insufficient TBI at baseline and endpoint ($P=0.015$). Neither zinc nor vitamin A status was related to body composition.

Conclusion.

Iron status in early childhood is a significant determinant of body composition. FCF aimed at improving iron status may have long term health benefits by reducing the risk for obesity in later life.

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