

# Abstract

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## Vitamin D deficiency and anthropometric indicators of adiposity in school-age children: a prospective study.

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**BACKGROUND:** Cross-sectional studies have indicated that vitamin D serostatus is inversely associated with adiposity. It is unknown whether vitamin D deficiency is a risk factor for the development of adiposity in children.

**OBJECTIVE:** We investigated the associations between vitamin D serostatus and changes in body mass index (BMI; in kg/m<sup>2</sup>), skinfold-thickness ratio (subscapular-to-triceps), waist circumference, and height in a longitudinal study in children from Bogota, Colombia.

**DESIGN:** We quantified plasma 25-hydroxyvitamin D [25(OH)D] concentrations in baseline samples of a randomly selected group of 479 schoolchildren aged 5-12 y and classified vitamin D status as deficient [25(OH)D concentrations < 50 nmol/L], insufficient [25(OH)D concentrations ≥ 50 and < 75 nmol/L], or sufficient [25(OH)D concentrations ≥ 75 nmol/L]. We measured anthropometric variables annually for a median of 30 mo. We estimated the average change in each anthropometric indicator according to baseline vitamin D status by using multivariate mixed linear regression models.

**RESULTS:** Vitamin D-deficient children had an adjusted 0.1/y greater change in BMI than did vitamin D-sufficient children (*P* for trend = 0.05). Similarly, vitamin D-deficient children had a 0.03/y (95% CI: 0.01, 0.05/y) greater change in subscapular-to-triceps skinfold-thickness ratio and a 0.8 cm/y (95% CI: 0.1, 1.6 cm/y) greater change in waist circumference than did vitamin D-sufficient children. Vitamin D deficiency was related to slower linear growth in girls (-0.6 cm/y, *P* = 0.04) but not in boys (0.3 cm/y, *P* = 0.34); however, an interaction with sex was not statistically significant.

**CONCLUSION:** Vitamin D serostatus was inversely associated with the development of adiposity in school-age children.

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