

# Abstract

Eur J Clin Nutr. 2010 May;64(5):461-7.

## Associations between abdominal fat and body mass index on vitamin D status in a group of Spanish schoolchildren.

Rodríguez-Rodríguez E, Navia-Lombán B, López-Sobaler AM, Ortega RM.

Departamento de Nutrición, Facultad de Farmacia, Universidad Complutense, Madrid, Spain.

**BACKGROUND/OBJECTIVES:** To analyze the association between different anthropometric variables and vitamin D status in a group of Spanish schoolchildren.

**SUBJECTS/METHODS:** Study subjects were 102 children aged 9-13 years. Records were made of their height, body weight, body mass index (BMI), waist and hip measurements (to determine the quantity of visceral or abdominal fat), and the thickness of the tricipital and bicipital skinfold (to determine the quantity of subcutaneous fat). Diets were analyzed using a 3-day weighed food record and vitamin D intakes compared with those recommended. Serum 25-hydroxyvitamin D (25(OH)D) concentrations were measured using chemiluminescent assay.

**RESULTS:** The mean serum 25(OH)D concentration was 49.6±15.9 nmol/l. The mean serum 25(OH)D in the ID subjects (that is, those with insufficient vitamin D levels, 25(OH)D of <70 nmol/l) was 46.6±13.4 nmol/l and in the AD subjects (that is, those with adequate vitamin D levels, 25(OH)D of ≥70 nmol/l) was 77.5±8.4 nmol/l (P<0.001). No significant difference was observed between both groups in vitamin D intake. However, the ID subjects had higher body weight, BMI, waist measurement and waist/height ratio than the AD subjects. Using a multiple linear regression analysis, only weight and BMI were found to independently influence 25(OH)D values. Children with a body weight, BMI, bicipital skinfold thickness, waist measurement and waist/height ratio above the 50th percentile for each variable were at a greater risk of having a low serum 25(OH)D concentration (<70 nmol/l).

**CONCLUSIONS:** BMI and abdominal obesity influence the appearance of vitamin D insufficiency in children.

PMID: 20216565