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Dietary calcium and body mass in Portuguese school children

Topic: B4. Pediatrics

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Introduction: Many epidemiologic studies have identified strong inverse correlations between adiposity and calcium intake, and dietary calcium is now well recognised to play an important role in the prevention and treatment of obesity. The objective of our study was to assess nutritional intake in school children (7 to 9 years old) and relate calcium intake to body mass index (BMI).

Material and Methods: The study was performed in a random sample of 7-9-y-old Portuguese school children. A total of 4297 were included (2184 girls and 2113 boys). The response rate was 70.6%. Height and weight were measured according international standards, and body mass index was calculated. Childrens' parents completed a self-administered questionnaire that provided information on general family background characteristics (parents education, etc.), and children's physical activity (sports, computer and video game use, TV/video watching, and time spending in reading and studying during weekdays and weekends). Children's dietary intake was measured using a 24-h dietary recall. Calcium intake was expressed as the calcium to protein ratio, both because this stratagem explicitly factors in the countervailing effects of the two nutrients and eliminates most of the portion size estimation error. Regression analysis was used to estimate the association between calcium intake and BMI, adjusting for confounders.

Results: The prevalence of children with calcium intake below the Dietary Reference Intake was significantly higher in girls (43.8% *versus* 39.4%, $p = 0.004$). After adjusting for age, energy intake, parental education and physical activity, mean calcium to protein ratio predict BMI only in girls ($\beta = -0.048$, $p = 0.011$, partial $\eta^2 = 0.004$).

Discussion: Analyses were conducted separately for girls and boys, and effects were adjusted for age, caloric intake and other confounders. In girls, we found an inverse relationship between calcium and BMI, although a comparable inverse relationship was not found in boys. These data support the need for clinical trials to assess the effects of supplemental calcium on body mass in each gender.

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