

## **Children who avoid drinking cow milk have low dietary calcium intakes and poor bone health<sup>1,2,3</sup>**

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**Background:** Information concerning the adequacy of bone mineralization in children who customarily avoid drinking cow milk is sparse.

**Objective:** The objective was to evaluate dietary calcium intakes, anthropometric measures, and bone health in prepubertal children with a history of long-term milk avoidance.

**Design:** We recruited 50 milk avoiders (30 girls, 20 boys) aged 3–10 y by advertisement. We measured current dietary calcium intakes with a food-frequency questionnaire and body composition and bone mineral density with dual-energy X-ray absorptiometry and compared the results with those of 200 milk-drinking control children.

**Results:** The reasons for milk avoidance were intolerance (40%), bad taste (42%), and lifestyle choice (18%). Dietary calcium intakes were low ( $443 \pm 230$  mg Ca/d), and few children consumed substitute calcium-rich drinks or mineral supplements. Although 9 children (18%) were obese, the milk avoiders were shorter ( $P < 0.01$ ), had smaller skeletons ( $P < 0.01$ ), had a lower total-body bone mineral content ( $P < 0.01$ ), and had lower z scores ( $P < 0.05$ ) for areal bone mineral density at the femoral neck, hip trochanter, lumbar spine, ultradistal radius, and 33% radius than did control children of the same age and sex from the same community. The z scores for volumetric (size-adjusted) bone mineral density ( $\text{g}/\text{cm}^3$ ) were  $-0.72 \pm 1.17$  for the lumbar spine and  $-0.72 \pm 1.35$  for the 33% radius ( $P < 0.001$ ). Twelve children (24%) had previously broken bones.

**Conclusions:** In growing children, long-term avoidance of cow milk is associated with small stature and poor bone health. This is a major concern that warrants further study.

**Key Words:** Dietary calcium • bone density • milk avoidance • children • obesity • fractures • cow milk allergy • New Zealand