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Vitamin B-12 status is associated with bone mineral content and bone mineral density in frail elderly women but not in men.

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Subclinical vitamin B-12 deficiency is common in the elderly. Encouraged by early indications, we investigated the plasma vitamin B-12 status in association with bone mineral content (BMC) and bone mineral density (BMD) in frail elderly people. Data of 194 free-living Dutch frail elderly (143 women and 51 men) were available. BMC and BMD were measured by dual energy X-ray analysis. Biochemical analyses were performed on plasma or serum including vitamin B-12, methylmalonic acid, homocysteine, 25-hydroxy vitamin D and parathyroid hormone. Women had higher plasma vitamin B-12 (288 and 238 pmol/L, respectively) and lower plasma homocysteine levels (15.8 and 21.3 micro mol/L, respectively) than men. Of the total explained variance of BMC and BMD in women (46 and 22%, respectively), 1.3-3.1% was explained by plasma vitamin B-12, in addition to weight and height or energy intake. In men, the variance of BMC and BMD was explained by weight, smoking and/or height (total R(2) was 53 and 25%, respectively), but not by plasma vitamin B-12. Osteoporosis occurred more often among women whose vitamin B-12 status was considered marginal or deficient than in women with a normal status, i.e., the prevalence odds ratios (after adjustment for weight, age and calcium intake) (95% confidence intervals) were 4.5 (0.8;24.8) and 6.9 (1.2;39.4), respectively. These results suggest that vitamin B-12 status is associated with bone health in elderly women. Future studies on bone health should take into account a possible role of vitamin B-12 status in different populations.

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