

Letter to the Editor

Dietary calcium intake and bone density

In the January issue of the *British Journal of Nutrition* Ramsdale *et al.* reported their study on bone density and calcium intake in fifty-six healthy pre-menopausal women. They showed that there was a correlation between calcium intake and bone density at all three femoral sites and at the spine.

In a study of young Chinese women, in whom calcium intake is known to be lower than in western societies, we observed that bone mineral density was higher in those with a calcium intake of 600 mg/day when compared with those with a calcium intake below 300 mg/day (Ho *et al.* 1994).

It is well known that calcium excretion is dependent on many other dietary factors such as sodium, protein and phosphorus. There is a direct relationship between sodium intake and calcium excretion (Chan *et al.* 1992). In an experimental model we have shown that a high-salt diet can cause a negative calcium balance and decreased bone mineral content (Chan *et al.* 1993; Chan & Swaminathan 1993). It has also been shown that a high protein intake causes an increase in calcium excretion (Breslau *et al.* 1988; Chan & Swaminathan 1994). Furthermore, it was shown that high animal-protein intake was significantly related to hip fracture incidence (Abelow *et al.* 1992). Therefore, we feel that any study of relationship between calcium intake and bone density should take into account the intakes of sodium, phosphorus and protein. In a recent study of thirty-eight young Caucasian women, Metz *et al.* (1993) showed that bone density was positively associated with calcium intake (using multiple regression analysis) and negatively associated with protein and phosphorus intakes. In our study we also found a relationship between calcium:protein ratio and bone mineral density (Ho *et al.* 1994).

It also should be stressed that any recommendation on calcium intake in pre- and post-menopausal women should also consider the intakes of other nutrients such as protein, phosphorus and sodium.

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