CALCIUM SUPPLEMENTATION IN FEMALES AGED 13-17: A PILOT STUDY

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Several lines of evidence suggest that calcium intake may have an important influence on bone accretion in adolescence. A major Australian dietary survey indicated that a high proportion of schoolgirls consume less than 70% of the recommended dietary intake for calcium (English et al. 1989). This study was designed to assess the feasibility of calcium supplementation and methods of measuring diet and lifestyle factors in females aged 13-17. This would assist in planning a three year study in female twins of this age, investigating the effect on bone mass of genetic and environmental factors and calcium supplementation (as a model for a high calcium diet).

The four week study consisted of a baseline phase of two weeks and a calcium supplementation phase of two weeks with fortnightly visits. Of 21 subjects recruited, 17 (81 %) completed the protocol. They completed health and diet questionnaires at the start and end of the study and kept four day food records once in each fortnight together with two overnight urine collections weekly. Urinary calcium rose significantly from 3.45±0.58 mmol/L at baseline (mean ± 1 SD) to 4.66 ± 0.62 mmol/day at intervention (Paired t-test, $P<0.01$). Individual mean urinary calcium excretion ranged from 1.2 to 10.9 mmol/L. Reported mean dietary intakes from two four day food records were: energy, 7.5 ± 1.5 MJ/day; fat, 76 ± 19 g/day; % energy from fat, 29.6 ± 5.9 % and sodium 104 ± 27.9 mmol/day. Food record calcium was less than the recommended daily intake, being 737 ± 270 mg at baseline; this did not change during intervention (574 ± 384 mg, $P=0.052$). Calcium intake estimated from a food frequency questionnaire (FFQ) was 1090 ± 767 mg at week one and did not change when repeated at week four (1024 ± 651 mg). There was a significant correlation between mean dietary calcium as assessed by two four day food records and by repeated FFQ (Pearson's $r=0.5$ $P=0.029$). From 11 anonymous evaluation forms returned, four subjects reported side effects during intervention, but there were no dropouts from the study during intervention.

The study had a high retention rate of adolescent volunteers. These subjects were shown to have a low calcium intake. The reported sodium intake and percentage energy intake from fat were moderate. Calcium supplements were well tolerated in the short term despite some side effects.

ENGLISH, R., CASHEL, K., LEWIS, J., WATERS, A. and BENNET, S. (1989). 'National Dietary Survey of Schoolchildren (Aged 10-15 Years):1985' (Australian Government Publishing Service: Canberra).

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