

Concurrent Session 1: Nutrition for Childhood and Adolescence

Bone turnover markers and calcitropic hormones in Chinese adolescent girls, 3 years after completion of a milk supplementation trial

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Background – There is little information about whether the effects of milk supplementation on bone turnover markers still persist, 3 years after supplements cease.

Objectives – To assay biochemical markers of bone turnover and also calcitropic hormones in blood, 3 years after the completion of a milk supplementation trial.

Design – A follow-up study of a two-year school milk intervention trial, in which 757 Beijing girls aged 10 years at baseline were assigned into Ca-fortified milk (Ca milk), Ca plus vitamin D-fortified milk (CaD milk) and control groups. Three years after the completion of intervention, fasting blood and urine samples were collected at the end of winter (March to April) from 504 girls. Using standard assay kits, the blood concentrations of osteocalcin (OC), bone alkaline phosphatase (BAP) and the urine deoxypyridinoline /creatinine (Dpd/Cr) ratio were used as bone biomarkers. Plasma calcium (PCa), parathyroid hormone (PTH) and insulin-like growth factor-I (IGF-I) were also measured.

Outcomes – Three years after milk supplement withdrawal, there were no significant differences in BAP, Dpd/Cr, PCa, PTH and IGF-I between groups after adjusting for baseline values, baseline pubertal stage and clustering by schools. However, the Ca milk group subjects had a significantly greater percentage increase in plasma OC concentration than controls over the 5 years from the pre-supplement baseline ($21.5 \pm 10.1\%$; $P=0.04$).

Conclusions – The effects of milk supplementation on biochemical markers of bone turnover and on calcitropic hormones were no longer present 3 years after the cessation of milk supplementation.

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What are the dietary patterns of Australian adolescents and are they associated with health?

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Background – Increasingly, measures of dietary patterns have been used to capture the complex nature of dietary intake and investigate their association with health. Healthy dietary patterns may be important in the prevention of chronic disease however there are few investigations in adolescents.

Objective – The objective of this study was to describe the dietary patterns of adolescents and their associations with socio-demographic factors and health outcomes.

Design – Analysis was conducted of data collected in the 1995 National Nutrition Survey on participants aged 12-18 years who completed a 108 item food frequency questionnaire (n=764). Dietary patterns were identified using factor analysis and pattern scores were calculated from the consumption of the food items in each dietary pattern.

Outcomes – Factor analysis revealed three dietary patterns labeled on the basis of the food items that loaded highly, that is, a *fruit, salad, fish and cereals* pattern, a *vegetables* pattern and a *high fat and sugar* pattern which explained 11.9%, 5.9% and 3.9% of the variation in food intakes, respectively. High consumers of the *high fat and sugar* pattern were more likely to be male ($p<0.001$), while high consumers of the *vegetable* pattern were more likely to be living in rural areas compared to metropolitan areas ($p=0.004$). There were no significant associations with age or area-level index of relative socio-economic disadvantage. The *fruit, salad, fish and cereals* pattern was significantly associated with diastolic blood pressure ($p=0.019$) with high consumers having lower blood pressure. In contrast, high consumers of the *high fat and sugar* pattern had significantly higher systolic blood pressure ($p=0.026$).

Conclusion – Diets characterised by healthier food items were associated with lower blood pressure while consumption of foods high in fat and sugar were associated with higher blood pressure. Specific dietary patterns are already evident in adolescence and may be associated with health.