

NSA Poster Presentations: Friday 13 August 2004

Dairy products consumption and calcium intakes of Chinese urban adolescent girlsQ Zhang¹, GS Ma², K Zhu¹, CY Zhang², LH Foo¹, DR Fraser¹, H Greenfield¹¹Faculty of Veterinary Science, University of Sydney, NSW, 2006, Australia²Institute of Nutrition and Food Safety, Chinese Centre for Disease Control and Prevention, Beijing 100050 China

Background – In 1995 urban Beijing adolescent girls had very low calcium intakes (mean 388 mg/d) and low dairy products consumption (mean 83 g/d) (Du et al, 2002).¹

Objective –To estimate dairy products consumption and calcium intakes of Chinese urban adolescent girls in 2003.

Design –Subjects were 293 adolescent girls (14.0 ± 0.1y) who had participated in a milk intervention trial in 1999-2001 in urban Beijing, China. Food and beverages consumption were estimated by 1-year Food Frequency Questionnaires (FFQ) in face- to-face survey. Dietary intake information was also obtained by 3-day (two weekday and one weekend day) Food Records (FR).

Results –The mean calcium intake of Chinese urban girls was 619 ± 328 mg/d by FFQ and 513 ± 199 mg/d by FR, which was about 50-60% of the adequate calcium intake of 1000 mg/d defined by the Chinese Dietary Reference Intake for adolescents aged 11-17 years. Calcium intakes estimated by FFQ and FR were significantly correlated (r=0.368, P<0.001). Dairy products, soybean products, vegetables, and nuts provided 64%,12%,9% and 7% of the calcium intake, respectively.

The proportion of girls who drank milk, yogurt, cola, other soft drinks, tea and tea beverages, fruit juice, coffee were 93%, 91%, 79%, 46%, 73%, 65%, and 44%, respectively. Mean consumption was milk 246 ± 166 g/d, yogurt 102 ± 138 g/d. Controlled for intakes of yogurt, cola, other soft drinks, tea and tea beverages, fruit juice, coffee, milk consumption was significantly correlated with calcium intake (r=0.438, P<0.01). Milk consumption was significantly correlated with fruit juice consumption (r=0.173, P<0.05), but not with consumption of other beverages.

Conclusion – The calcium intakes of Chinese urban adolescent girls are still low. Dairy products consumption has increased greatly compared with seven years earlier and has become the dominant calcium source for Chinese urban adolescent girls.

1. Du, X et al. Milk consumption and bone mineral content in Chinese adolescent girls. *Bone*, 2002, 30: 521-8

Bone mineral accretion and growth in Chinese adolescent girls following the withdrawal of school milk intervention: preliminary results after two yearsK Zhu¹, H Greenfield¹, Q Zhang¹, G Ma², Z Zhang², X Hu², D R Fraser¹¹Faculty of Veterinary Science, University of Sydney, NSW 2006, Australia²Institute for Nutrition and Food Safety, Chinese Centre for Disease Control and Prevention, Beijing 100050, China

Background - A two-year school milk intervention study with 757 10-year-old Beijing girls showed that at end-trial, the two groups which had received vitamin D and/or calcium fortified milk supplement had increases greater than controls in total body BMD (3.2-5.3%), total body size-adjusted BMC (1.2-2.4%), and height (0.6-0.7%).¹

Objective - To evaluate whether the effects of school milk intervention on bone mineral accretion and growth are retained two years after discontinuation of supplementation.

Design - 294 subjects were recruited two years after discontinuation of supplementation (48 months), with 112 from calcium fortified milk group (Group 1), 113 from calcium and vitamin D fortified milk group (Group 2) and 69 from the control group (Group 3). Total body BMC and BMD were measured by DEXA (XR 36, Norland). Other measurements made included anthropometry, pubertal development, dietary intakes, and physical activity.

Results - Preliminary data analysis showed that two years after withdrawal of supplementation, there are no significant differences between Group 1, Group 2 and the control group in percentage changes (48 months minus baseline) in total body BMC (60.7 ± 1.6%, 60.5 ± 1.7% vs 58.9 ± 2.0%) and BMD (24.8 ± 0.8%, 25.9 ± 0.8% vs 24.6 ± 1.0%), and height (14.3 ± 0.3%, 13.5 ± 0.3% vs 13.4 ± 0.4%).

Conclusions - Follow-up data for 294 subjects showed that effects of school milk supplements on bone mineral accretion and growth had disappeared two years after discontinuation of supplementation in Chinese adolescent girls. The effects will be further evaluated when more complete data have been collected from a larger number of subjects three years after cessation of the supplementation.

1. Du X, Zhu K, Trube A, et al. School-milk intervention trial enhances growth and bone mineral accretion in Chinese girls aged 10-12 years in Beijing. *Br J Nutr* 2004; 91:1-11.