

## ABSTRACT

Adolescence is a critical period for lifetime bone health as they accumulate 37% of their total bone mass during the pubertal growth spurt. During this time, most adolescents consume a diet that is deficient in calcium. Studies on calcium intake, bone mineral density (BMD) and bone mineral content (BMC) are lacking in Sri Lanka. Therefore, this study was carried out with the objectives of determining the relationship between calcium intake and BMD, BMC of adolescent girls, identifying behavioural and socio-demographic factors affecting calcium intake and determining the relationship between lifestyle factors and BMD, BMC. A total of 688 girls, aged from 10-16 years who were residing within the Colombo city and suburbs were selected from four schools located within the Colombo Municipal Council. Anthropometry was measured and BMD, BMC were determined using Dual Energy X-ray Absorptiometer. A food frequency questionnaire and a 3 day diet diary were used to determine food and nutrient intakes. A 3 day physical activity record was used to assess physical activities. Data from 150 subjects were considered in dietary and physical activity analysis. Nutrient intake was analyzed using Foodbase 2000. The mean daily calcium, protein and energy intakes of the population were  $606.78 \pm 201.13$  mg,  $49.35 \pm 13.75$  g and  $1656.3 \pm 467.20$  kcal respectively. Calcium intake of all age groups was significantly lower than the respective RDA. Further, approximately 95% of the adolescents did not meet the RDA of calcium. Energy intake and protein intake had a significant ( $P < 0.05$ ) and positive relationship with calcium intake while house-hold income and education level of parents had no association. BMD was positively associated with calcium intake ( $r = 0.155$ ,  $P = 0.057$ ), body mass index ( $r = 0.319$ ,  $P = 0.000$ ) and energy expenditure on physical activity ( $r = 0.164$ ,  $P = 0.043$ ). BMC was positively associated with calcium intake ( $r = 0.167$ ,  $P = 0.042$ ), body mass index ( $r = 0.276$ ,  $P = 0.001$ ) and energy expenditure on physical activity ( $r = 0.164$ ,  $P = 0.045$ ). In conclusion, school girls aged 12-16 years in Colombo city and suburbs as a group did not achieve the RDA of calcium. Calcium intake and BMC were significantly and positively associated.