ABSTRACT

This study was designed to examine age related trends in bone mineral density (BMD), indices of hip structure, prevalence of osteoporosis and presence of osteoporosis related risk factors, among a sample of women selected from the Community Study Area of the Faculty of Medicine, Galle.

Materials and methods: - An age stratified sample of 450 healthy women, aged over 30 years was selected randomly from the Faculty Study area and invited to participate in the study. Socio-economic status, calcium nutrition, reproductive history, current and past medical history and the degree of sun exposure were determined using a pre-designed questionnaire. BMDs of the lumbar spine and the proximal femur were measured using dual energy x-ray absorptiometry. Hip structural analysis (HAS) was performed on DXA images. Height, weight, skin fold thickness, respiratory function, and the length of the right foot were measured in all subjects. Number of teeth lost was also recorded.

Results: 328 women (72.9 %) participated in the study (30-39 years n=39, 40-49 years n=66, 50-59 years n=75, 60-69 years n=88, over 70 years n=60). The age of the women ranged from 30 to 98 years (mean 57, SD=13 years). Mean BMD (SD) of the spine, femoral neck and trochanter were 0.785 (0.187), 0.694 (0.148), and 0.563 (0.120) g/cm^2 respectively. After 50 years there was a steady decline in BMD at all sites. In the whole cohort, BMD showed a negative correlation with age ($r=-0.70$ at spine and -0.62 at trochanter, $p<0.001$ for both). BMDs of all sites decreased by 0.01 g/cm^2 for each advancing year. Of the anthropometric measures examined, weight was the strongest predictor, which explained 30-40 % of the variation in BMD. The indices of hip geometry showed changes that paralleled BMD trends.

The number of women with osteoporosis was 155 (47.3 %) when Asian reference database was used.

The women who had delivered 1 to 4 children had higher BMD than both nulliparous women and women who had delivered more than 5 children. This association was independent of age, weight and the period of breast-feeding and was seen at all skeletal sites. Breast-feeding too had a positive association with BMD where women who never breast-fed had lower BMD than women who breast-fed. However, the positive effect of breast-feeding was not seen in mothers who breast-fed more than 96 months. The level of education had a significant positive effect on BMD where women of higher educated groups had higher BMD than less educated women.

The level of calcium nutrition and the degree of sun exposure were not significantly associated with BMD. Similarly the number of teeth lost, skin fold thickness, respiratory function, systemic blood pressure and the length of the foot had no consistent associations with BMD.

Conclusions: -

This study revealed age related changes in BMD and the indices of hip geometry in a sample of women randomly selected from Southern Sri Lanka. Study revealed a high prevalence of osteoporosis in this group of women while certain indices of anthropometry, socio-economic states, nutrition and reproductive health showed significant positive and negative associations with BMD. Some associations observed in this study were different from what has already been reported from other communities and may help in understanding the pathophysiology of BMD changes in this population of women.