

## **Trabecular bone score and bone mineral density reference data for women aged 20-70 years and the effect of local reference data on the prevalence of postmenopausal osteoporosis: A cross-sectional study from Sri Lanka**

Hasanga Rathnayake<sup>1</sup>, Sarath Lekamwasam<sup>2,3</sup>, Chandima Wickramatilake<sup>1</sup>, Janaka Lenora<sup>4</sup>

<sup>1</sup>*Department of Biochemistry, Faculty of Medicine, University of Ruhunas, Galle, Sri Lanka.*

<sup>2</sup>*Department of Medicine, Faculty of Medicine, University of Ruhuna, Galle, Sri Lanka.  
slekamwasam@gmail.com.*

<sup>3</sup>*Faculty of Medicine, Department of Medicine, Population Health Research Center, Galle, Sri Lanka.  
slekamwasam@gmail.com.*

<sup>4</sup>*Department of Physiology, Faculty of Medicine, University of Ruhuna, Galle, Sri Lanka.*

### **Abstract**

This paper describes age-specific BMD and TBS data of Sri Lankan women aged 20-70 years. No significant change of TBS and BMDs were seen between 20 and 50 years but a rapid decline was seen between 50 and 70 years. Prevalence of osteoporosis showed a marked difference when local reference data were used instead of manufacture provided data.

**Introduction:** It is recommended that country-specific reference data are used when estimating diagnostic and therapeutic thresholds in osteoporosis. This study estimated normative BMD and TBS reference data for women aged 20-70 in Sri Lanka and the effect of local reference data on the diagnosis of osteoporosis among postmenopausal women.

**Methodology:** A group of healthy community-dwelling women (n = 355) aged 20-70 was recruited from Galle district in the Southern province in Sri Lanka using stratified random sampling method. They underwent DXA adhering to the manufacturer's protocol and regional BMDs and TBS of the lumbar spine were measured.

**Results:** The highest mean BMD in the spine ( $0.928 \text{ g/cm}^2$ ) was seen in 20-29 age group while there was a delay in achieving the peak BMD in the femoral neck ( $0.818 \text{ g/cm}^2$ ) and total hip ( $0.962 \text{ g/cm}^2$ ) regions(40-49 years). BMDs showed only a mild change between 20 and 49 years but a rapid decline was seen after 50 years (spine  $0.013$ , femoral neck  $0.012$ , and total hip  $0.011 \text{ g/cm}^2$  per year). The highest TBS was seen in 20-29 age group (1.371) and TBS trend with age was parallel to spine BMD. When the reference data provided by the manufacturer was used, 37% of postmenopausal women were found to have osteoporosis but this value changed to 17.6% when the local reference data were used.

**Conclusion:** We found a significant difference in the prevalence of osteoporosis when the local reference values were used instead of data provided by the manufacturer. However, representative data from more centers and fracture data are required before a recommendation to use local instead of international reference data can be stated.

**Keywords:** BMD; Reference data; Sri Lanka; Trabecular bone score.