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Osteoporosis, a major health problem in Vietnam - Lifestyle factors and determinants of bone mass

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ABSTRACT

While the prevalence of osteoporosis and risk factors for low bone mineral density (BMD) has been well documented in Caucasian populations, there is a lack of data from Asia. This work was designed to clarify to what extent osteoporosis could be regarded as a major public health problem in Vietnam. Furthermore, to elucidate the prevalence of certain risk factors, such as vitamin D deficiency and other determinants of bone mass as a basis to indentify high-risk individuals among the Vietnamese women and men.

The **clinical studies** were designed as cross-sectional investigations using a multistage sampling scheme. Within the setting of northern Vietnam (latitude 21°N), districts were selected to represent urban and rural areas. In total 612 healthy women and 222 men aged 13-83 years were investigated. BMD was measured at the lumbar spine, femoral neck and total hip in all qualified subjects with dual energy X-ray absortiometry. Serum concentrations of 25(OH)D, parathyroid hormone, estrogen and testosterone were quantified by electrochemiluminescence immunoassay. Data on clinical history and lifestyle were collected by individual face-to-face interviews.

Reference values for peak BMD were defined. These data allowed the calculation of T-scores and thus for the first time, an accurate identification of osteoporosis in a Vietnamese population. As determined at the femoral neck, the **prevalence of osteoporosis** was 17-23% in women and 9% in men. The results clearly suggest that osteoporosis is an important public health problem. Postmenopausal women living in **urban** areas experienced osteoporosis more than **rural** residents. Serum levels of 25(OH)D and estrogen were significantly associated with bone mass in both women and men. The **prevalence of vitamin D deficiency** (<20 ng/mL) was very high, 30% in women and 16% in men.

An **experimental study** on the isoflavone content of different soymilk preparations was performed by HPLC (high pressure liquid chromatography). Values of isoflavones were very low, around 60-80 mg/L, and there were only 10-20% of *bioactive aglycones*. This is far below the reported threshold levels to exert significant effects on bone.

In the future these data will be useful as a valuable reference base to diagnose osteoporosis and for the clinical management of its consequences. The high prevalence of vitamin D deficiency should raise the awareness of potentially important health issues such as osteoporosis but also about other serious diseases within the Vietnamese society.

Key words: Vietnamese men and women, peak bone mineral density, osteoporosis, vitamin D deficiency, estrogen, testosterone, soymilk, aglycone content.

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