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

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av

Nguyen Thi Thanh Huong
MD, MA

Huvudhandledare:
Prof. Angelica Lindén Hirschberg
Karolinska Institutet
Institutionen för kvinnors och barns hälsa

Bihandledare:
Prof.em Bo von Schoultz
Karolinska Institutet
Institutionen för kvinnors och barns hälsa

Pham Thi Minh Duc
Hanoi Medical University
Department of Physiology

Prof. Nguyen Van Tuan
Garvan Institute of Medical Research
Bone and Mineral Research Program

Stockholm 2012

Fakultetsopponent:
Prof. Tord Naessén
Uppsala Universitet
Institutionen för kvinnors och barns hälsa

Betygsnämnd: 
Prof. Claes Göran Östenson
Karolinska Institutet
Institutionen för molekylär medicin och kirurgi

Ass. Prof. Lena Marions
Karolinska Institutet
Institutionen för kvinnors och barns hälsa

Ass. Prof. Elisabeth Darj
Uppsala Universitet
Institutionen för kvinnors och barns hälsa
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 absorptiometry. 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.