Reference bone mineral density values can be used to evaluate the degree of osteoporosis, at least in the Norwegian population

The WHO definition of osteoporosis raises the problem of its application to populations other than that used to establish this definition, i.e. a population of Caucasian women. Apart from the optimal site for measurement of bone mineral density (BMD), there is also the problem of the use of these reference measurements in male populations. European centers currently use the databases of manufacturers of bone densitometers or databases specific to each country or “zone” of research.

No reference exists in Norway where the prevalence of osteoporotic fractures is one of the highest, and mean BMD one of the lowest, in the world. The first aim of this cross-sectional study was to compare the bone density of middle-aged and older Norwegian men and women with values provided by manufacturers of bone densitometers, so as to determine whether this database was applicable to the study population. The second aim was to measure the prevalence of osteoporosis and of osteopenia in a Norwegian population.

The study was conducted from 1997 to 2000 in Bergen (west of Norway). The birth dates of the participants fell between 1925 and 1927 and between 1950 and 1951. Hip and whole-body bone densities were measured in 5408 persons using a Lunar dual-energy X-ray absorptiometer. In all, 5215 whole-body measurements and 5338 femoral neck measurements were performed. The manufacturer’s reference data included 1783 whole-body measurements and 9224 femoral neck measurements in women between 40 and 79 years of age, and respectively 800 and 2867 measurements in men of the same age.

The difference between the measured and expected values did not in general exceed 4%. Approximately 2.6% of the middle-aged men and 0.9% of the middle-aged women were classified as osteoporotic on the basis of the femoral BMD measurement. The authors conclude that the differences between the observed and theoretical values do not justify rejection of the use of the database supplied by the manufacturer of bone densitometers in Norway.

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