

Osteoporosis

Introduction

Osteoporosis is a skeletal disorder in which bones weaken and risk of fracture is increased. While any fracture is a serious occurrence, hip fractures are of greatest public health concern because the consequences are often devastating. For example, those who experience hip fractures have an increased risk of death during the first 12 months after the fracture. Among those who survive, many experience loss of mobility and may have to enter long-term care facilities. Finally, hip fractures cost more to repair than any other type of osteoporotic fracture.

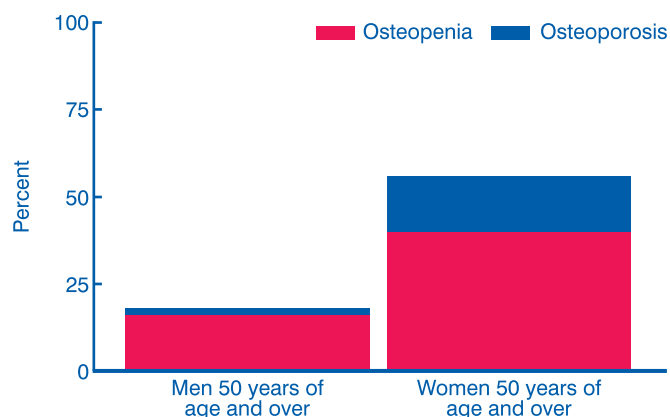
Defining osteoporosis

Bone strength is determined by the amount of bone mass or bone mineral density (BMD) and its quality and microarchitecture. The latter two qualities are not easy to measure, but methods to accurately assess BMD, such as dual-energy x-ray absorptiometry (DXA), are available. In 1994, an expert panel convened by the World Health Organization (WHO) developed diagnostic criteria for osteoporosis and reduced bone density in white women. These definitions are based on a comparison of the individual's BMD value with those of a young adult reference group. Two levels of reduced BMD were defined: osteopenia, which is a mild reduction in BMD, and osteoporosis, which is a more severe reduction.

National data on prevalence of osteoporosis

The first nationally representative data on bone mineral density of the hip were collected in the third National Health and Nutrition Examination Survey (NHANES III, 1988–94). The BMD data were collected using DXA. Estimates of the

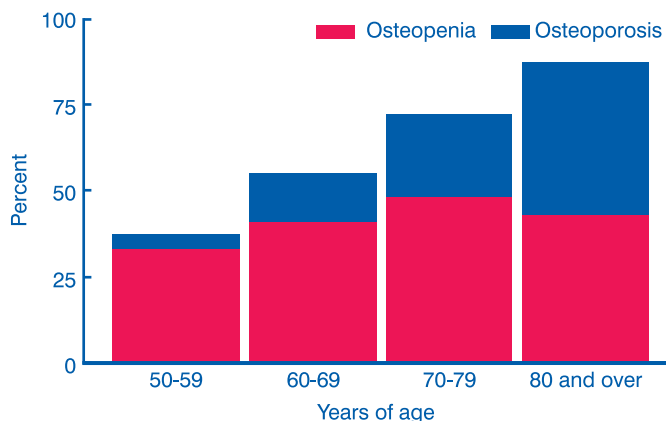
Figure 1. Prevalence of low femur bone density: United States 1988–94



prevalence of low total femur BMD among older U.S. adults were calculated using the WHO definitions. For this analysis, BMD values of white women 50 years of age and older were compared with those of 20–29-year-old non-Hispanic white women. There is no consensus at this time concerning the definition of low bone density in groups other than white women; however, it is clear that osteoporosis is not solely a disease of white women. Thus, in order to provide estimates for all groups examined in NHANES III, BMD values for men and nonwhite women 50 years of age and older were also compared with values for 20–29-year-old non-Hispanic white women.

- The prevalence of reduced femur bone density (osteopenia and osteoporosis) in older U.S. adults by sex is shown in figure 1. In 1988–94, 56 percent of women 50 years of age and older had a reduced level of bone density; 16 percent of these had osteoporosis, the more severe

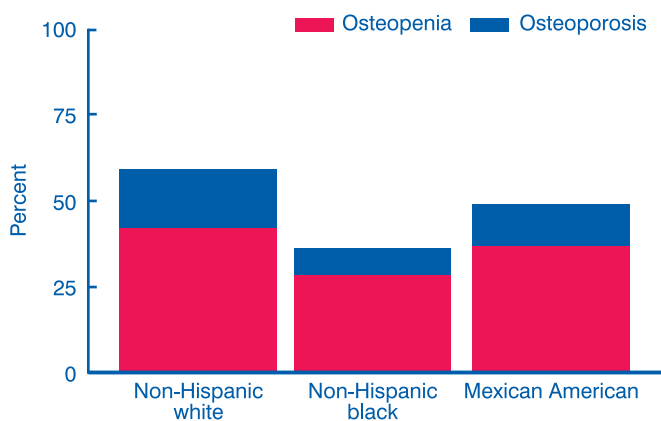
Figure 2. Prevalence of low femur bone density in older women: United States 1988–94



reduction. Among men, 18 percent had reduced bone density; most of these (16 percent) had osteopenia, the milder reduction.

- The prevalence of reduced bone density increases noticeably with age, as illustrated in figure 2 for women. Among women 50–59 years of age, the prevalence of reduced bone density is 37 percent, but this rises to 87 percent among women 80 years of age and older. The largest change in prevalence by age occurs with osteoporosis: the prevalence of osteoporosis among the oldest women (44 percent) is 10 times greater than the prevalence of osteoporosis in women 50–59 years of age (4 percent).
- Finally, the prevalence of reduced bone density varies by race and ethnicity (figure 3). Low bone density is most common among non-Hispanic white women (17 percent with osteoporosis and 42 percent with osteopenia),

Figure 3. Prevalence of low femur bone density in women 50 years of age and older: United States 1988–94



intermediate among Mexican American women (12 percent with osteoporosis and 37 percent with osteopenia), and least common in non-Hispanic black women (8 percent with osteoporosis and 28 percent with osteopenia).

Other facts about NHANES femur BMD data

- NHANES III was among the first studies ever to use DXA in a mobile environment instead of a fixed-site medical clinic.
- The NHANES III femur bone density data are currently used as the reference data when diagnosing osteoporosis and low bone density at the hip by physicians and health-care workers worldwide.

For more information about NHANES please visit our Web site: <http://www.cdc.gov/nchs/nhanes.htm>