

LOW BONE MINERAL DENSITY IS THE MAIN CONTRIBUTOR TO FALLS-RELATED HEALTH BURDEN IN THE ELDERLY

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Objectives: Falls are the leading injury type in population 70 years and above and a major health burden and cause of death globally. Most of such burden is due to bone fractures. In the Global Burden of Diseases (GBD) Initiative, the worldwide attributable burden of falls due to low bone mineral density (BMD) was analysed through its relationship with fractures.

Methods: The estimates followed the Counterfactual Risk Assessment Methodology used in the GBD study (1). Systematic review was performed seeking population-based studies with femoral neck (FNBMD) measured by Dual-XRay-Absorptiometry in people 50 years and over. Age- and sex- specific levels of mean $\pm$ SD FNBMD (g/cm²) were extracted from eligible studies, and this was used as the exposure variable. The age and sex-specific 99th percentile from nonHispanic whites in the National Health and Nutrition Examination Survey (NHANES) 2009-2010 was used as theoretical minimum risk factor exposure distribution, to estimate the potential impact fraction (PIF) of FNBMD for fractures. Relative risks of FNBMD for fractures were obtained from a previous meta-analysis (2). Coded hospital data was used to calculate the fraction of falls-related deaths due to fractures. Disability levels were established by applying disability weights to each type of fracture. Then, PIFs were applied to obtain attributable deaths and disability due to low BMD.

Results: The absolute global health burden for falls in the population 70 years and above almost doubled between 1990 and 2015. More than 50% of such burden was attributable to low BMD. Low BMD could explain more than three quarters of all deaths due to falls and two fifths of all falls related disability in this age group. Mortality and disability due to low BMD doubled during the 25-year period. Low BMD ranked 9th for contributions to worldwide disability among 79 preventable risks factors.

Conclusions: In those aged 70 and over the importance of low BMD as a preventable risk factor for falls health burden is a growing concern, given the global population trajectories, and requires urgent attention.

References:

1. Forouzanfar M et al, Lancet 2016
2. Johnell O et al, JBMR 2015