

Low bone mineral density is a major contributor in the european health burden due to road traffic accidents in people aged 50 years and above

N Wilson¹, L Sanchez-Riera², D Prieto-Alhambra³, C Cooper⁴, K Dreinhöfer⁵, A Woolf⁶, L March¹, P Halbout⁷

1- Institute of Bone and Joint Research, University of Sydney, Sydney, Australia

2- University Hospital Bristol NHS Foundation Trust, Bristol

3- Oxford NIHR Musculoskeletal Biomedical Research Unit, University of Oxford, Oxford

4- MRC Lifecourse Epidemiology Unit, University of Southampton, Southampton, United Kingdom

5- Center for Musculoskeletal Surgery, Charité Universitätsmedizin, Berlin, Germany

6- Institute of Health Research, University of Exeter Medical School, Exeter, United Kingdom

7- International Osteoporosis Foundation, Nyon, Switzerland

Background

Road traffic accidents (RTAs) are the second leading injury health burden and cause of death in Europe, after falls (1). A significant but as yet unreported proportion of such burden is potentially due to low bone mineral density (BMD), especially among older people, through its relationship with fractures.

Objectives

To measure the percentage of deaths, disability-adjusted life years (DALYs) and years lived with disability (YLDs) due to RTA in people aged 50 years and above attributable to low BMD in the European population for the year 2015.

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 BMD (FNBMD) measured by Dual-X-Ray-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 non-Hispanic whites in 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). Attributable deaths due to RTA-related fractures were obtained through coded hospital data. 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

In the European population aged 50–69 and 70 years and above, 10.8% (95% CI: 8.9–12.4%) and 30.9% (29.1–32.4%) of RTA-related deaths, respectively, were attributable to low BMD. In the age group 50–69 this was the second most important risk factor following alcohol use and in those 70 years and above became the most important risk factor, with double the weight of alcohol use. This represents 2,537 and 5,460 absolute deaths in those aged 50–69 and 70 years and above, respectively. The percentage of health burden and disability caused by RTAs attributable to low BMD grew steadily from the ages of 50 and onwards.

Conclusions

This data shows the non-previously reported important role of low BMD as a preventable risk factor for European RTAs' health burden in population 50 years and over, which requires urgent attention.

References

1. Forouzanfar et al. Lancet 2016.
2. Johnell et al. JBMR 2005.

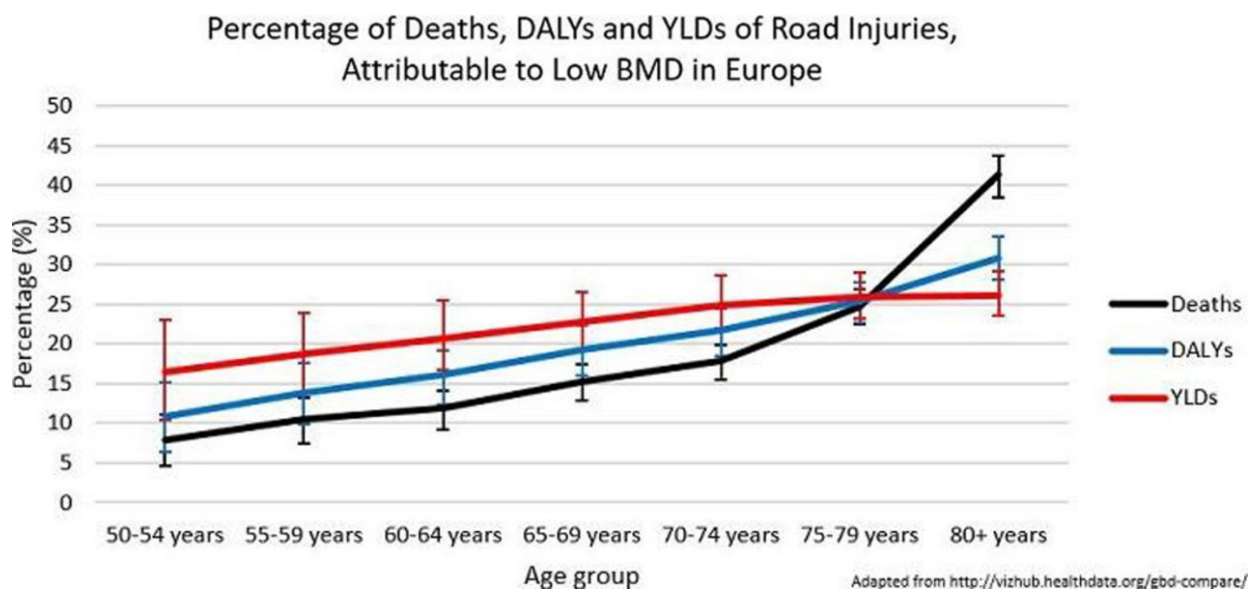


Figure 1