

Trends And Disparities In Fracture-related Mortality In Alzheimer Disease Patients: A Retrospective Study

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This observational study of 44,902 deaths reveals stable fracture-related mortality in Alzheimer Disease patients overall, but with higher mortality observed in females and in rural areas.

INTRODUCTION	METHODS	RESULTS	CONCLUSIONS	REFERENCES
Alzheimer’s disease (AD) patients face a substantially increased risk of fractures, particularly hip fractures, with estimates suggesting a 2.1- to 3-fold higher hip-fracture risk compared to non-AD patients. This may be driven by reduced bone mineral density, increased fall frequency, and potential biologic effects of amyloid pathology on bone health. Fractures in this population are associated with poor outcomes, including increased mortality, functional decline, and institutionalization. Despite this, national trends and disparities in fracture-related mortality among AD-patients remain incompletely characterized.	U.S. mortality data from 1999-2020 using CDC-WONDER database was used to analyze fracture-related deaths among AD individuals, and age-adjusted mortality rates (AAMRs) per 100,000 were calculated. Trends were assessed using Joinpoint to estimate annual percent change (APC) and average annual percent change (AAPC). Stratifications were performed by sex, age, race/ethnicity, region, and urbanization status.	44,902 fracture-related deaths occurred among AD individuals. The overall AAMR was 0.604 (95% CI 0.598-0.609). AAMRs increased from 0.604 in 1999 to 0.653 in 2020, although the overall trend was not statistically significant (P=0.12). Joinpoint analysis demonstrated an early increase from 1999-2001, followed by a significant decline upto 2013, and a subsequent trend reversal after 2013. Females had higher mortality rates than males (AAMR 0.691 versus 0.458). Rural populations exhibited consistently higher mortality than urban populations (AAMR 0.842 versus 0.556). Regionally, the Midwest (AAMR 0.762) and West (0.775) had the highest mortality rates. The highest mortality was seen among Non-Hispanic (NH) Whites (AAMR 0.688), followed by NH American-Indians/Alaska-Natives (0.427). Deaths were heavily concentrated amongst the very elderly, particularly those aged ≥85 years (crude rate 25.8). Most deaths occurred in nursing-homes/long-term care facilities (54.96%), followed by inpatient settings (19.14%).	Fracture-related mortality in individuals with AD has remained relatively stable overall with pronounced disparities by sex, geography, and race. The high burden among the very elderly and long-term care residents highlights the need for targeted fall and fracture prevention strategies in these high-risk populations. Efforts to address rural and sex-based disparities may further improve outcomes.	National Center for Health Statistics. About multiple cause of death, 1999-2020. CDC WONDER. Accessed January 11, 2026. https://wonder.cdc.gov/mcd-icd10.html. Zhou BN, Zhang Q, Li M. Alzheimer’s disease and its associated risk of bone fractures: a narrative review. Frontiers in Endocrinology. 2023 Aug 9;14:1190762.
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