EPH39

A Targeted Literature Review (TLR) of Clinical, Humanistic, and Economic Burden of Alzheimer's Disease in the United States (US)

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Background

Alzheimer's disease (AD), a neurodegenerative disease, is projected to affect 13.8 million individuals in the US by 2060. In AD, patients may advance from the onset of mild cognitive impairment (MCI), to subsequent stages of mild, moderate, and severe AD, with a mean time of MCI to AD conversion of about 3.3 years[1].

Objectives

To characterize contemporary estimates of the clinical, humanistic and economic burden of mild-to-moderate AD, including MCI. This Included:

- Patient characteristics
- Prognosis
- Risk factors for greater severity and/or disease progression
- Key factors influencing patient and caregiver quality of life (QoL)
- Health care resource use (HCRU)

Methods

Database
Embase via Ovid, Aug 2023

Keywords
AD, MCI, prognostic, QoL, Caregiver Burden, HCRU

Inclusion
English language, past 5 years

65 studies selected

Key Findings

Patient Burden

- All studies assessing both activities in daily living (ADL) and QoL consistently report an impairment of ADL with AD and associated reduction in QoL
- Cardiometabolic conditions and depression are common comorbidities among patients with MCI and AD
  - Faster decline in ADLs is seen among cohorts with comorbid depression
- Persistence with acetylcholinesterase inhibitor use decreased over time

Caregiver Burden

- Caregivers of MCI and AD patients exhibited lower ZBI, EQ-5D scores, higher anxiety and depression than non-caregivers
- Factors associated with higher caregiver burden included: higher disease severity of patient, lower income, and urban setting

Economic Burden

- AD patients exhibited higher HCRU (inpatient, outpatient, and emergency department visits, and longer lengths of stay) compared to non-AD patients[2]

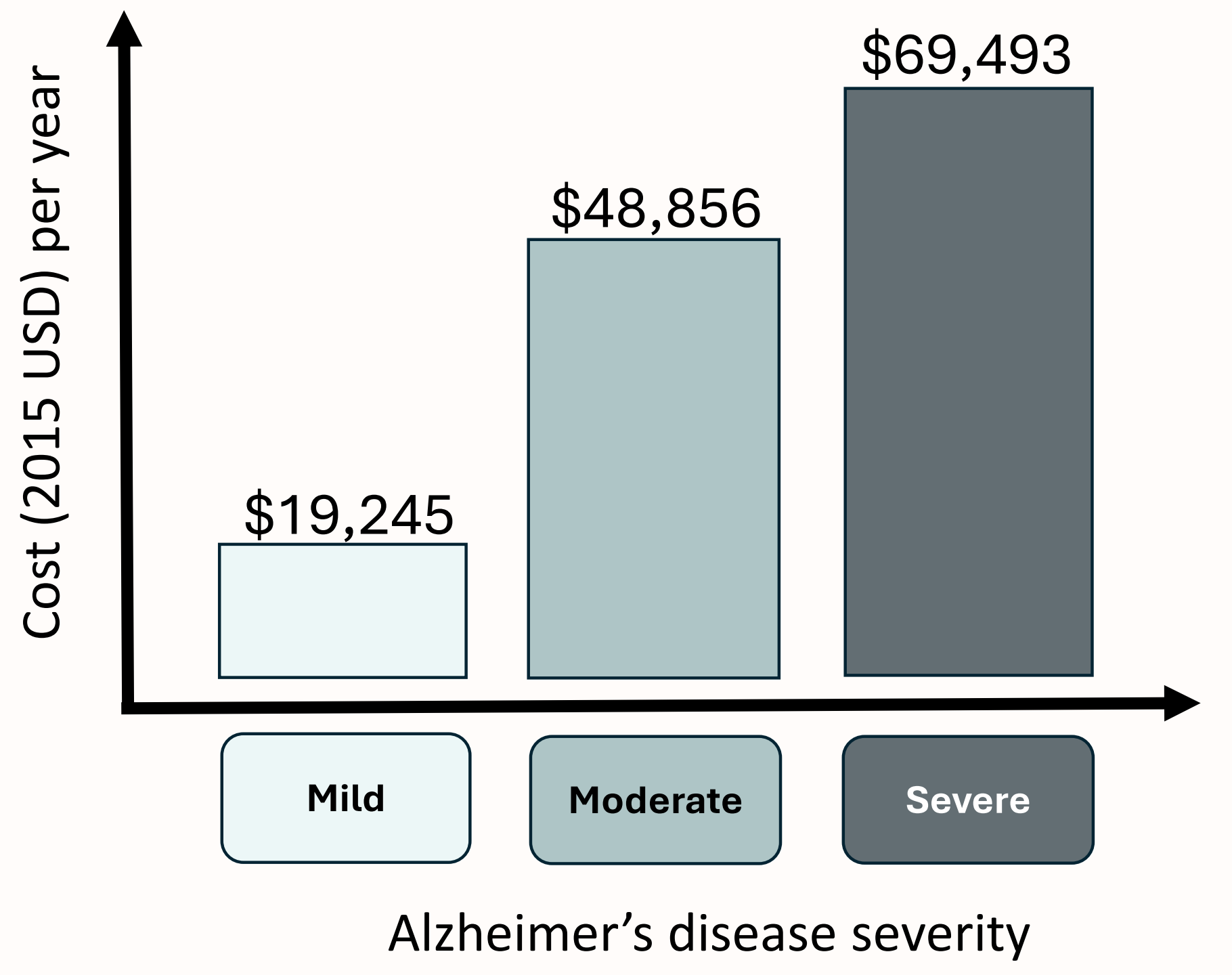
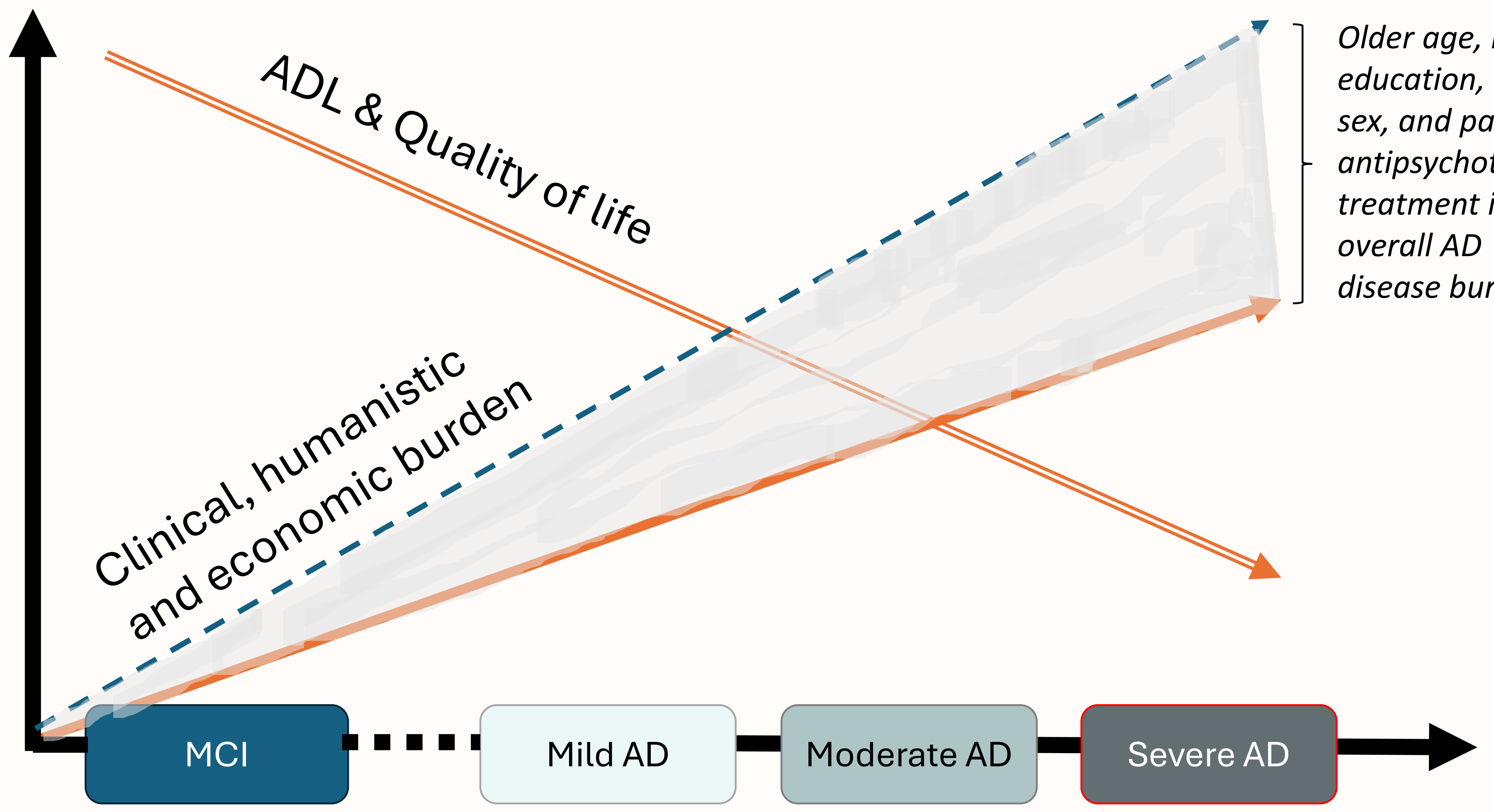


Figure 1. Mean total healthcare costs in US per patient*



Older age, lower education, male sex, and patients on antipsychotic treatment increase overall AD disease burden

Figure 2. Progression of Alzheimer's Disease (AD)

- A significant proportion of patients progress from MCI to AD, ranging from 23% to 79% (over 18 months to 6 years of follow-up)
- Clinical, Humanistic and Economic Burden of Disease all significantly increase with increasing severity of AD
- More severe disease is associated with a lower quality of life of both patient and caregiver

Conclusion

As consistently reported, the burden of MCI and AD for patients, caregivers, and the healthcare system is substantial and increases with disease severity, comorbid conditions and demographics. This leaves a significant unmet medical need for safe, effective and convenient therapies.

Implications

The number of US people aged 65 and older is projected to increase by 47% between 2022 and 2050[3]. Likewise, the burden of Alzheimer's disease will increase tremendously due to the currently limited treatment options.

Contemporary research stresses the need for disease modifying therapies that:

- Can significantly delay MCI and AD disease progression
- Ensure a low treatment burden (characterized by minimal invasiveness, minimal monitoring, and high safety)
- Preserve optimal QoL for patients and caregivers longer
- Have lower economic burden to the healthcare system
- Have broad patient access

ZBI, Zarit Burden Interview; **EQ-5D,** EuroQol 5 Dimension; **QoL,** Quality of Life; **HCRU,** Health Care Resource Utilization; **ADL,** Activities of Daily Living

[1] Katabathula, S., Davis, P. B., & Xu, R. (2023). Sex-Specific Heterogeneity of Mild Cognitive Impairment Identified Based on Multi-Modal Data Analysis. *Journal of Alzheimer's Disease, 91(1)*, 233-243.

[2] Nair, R., Haynes, V. S., Siadaty, M., Patel, N. C., Fleisher, A. S., Van Amerongen, D., . . . Ball, D. E. (2018). Retrospective assessment of patient characteristics and healthcare costs prior to a diagnosis of Alzheimer's disease in an administrative claims database. BMC geriatrics, 18(1), 243. doi:https://dx.doi.org/10.1186/s12877-018-0920-2

[3] Michaud, T. L., High, R., Charlton, M. E., & Murman, D. L. (2017). Dependence Stage and Pharmacoeconomic Outcomes in Patients With Alzheimer Disease. *Alzheimer Dis Assoc Disord, 31*(3), 209-217. doi:10.1097/wad.0000000000000198[3]U.S. Census Bureau, 2023 National Population Projections Tables: Main Series.

*Figure 1: Includes physician visits, hospitalisations, home health care, long-term care, medications

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