# Assessing Dementia: An analysis of cognitive scores, medical costs and medication adherence using unstructured and structured data

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### Objective

The analysis aims to evaluate Dementia severity using cognitive assessment tools (CAT) and its association with medical cost, medication adherence, and persistence using structured and unstructured data.

#### Methodology

- Optum's de-identified Market Clarity database which links EHR data with claims data, was used to identify patients aged >=65, who were diagnosed with dementia in the year 2018.
- Patients with >=1 inpatient or >=2 outpatient confirmed diagnosis of Dementia using ICD10 codes\* were considered for the analysis. Index event was the confirmed diagnosis of Dementia. Continuous medical, pharmacy eligibility and clinical activity of 12 months (pre- and post-index) were ensured.
- Patients with claims for dementia in the 12-month pre-index period were excluded from the analysis.
- Severity of dementia patients was extracted from unstructured data using Natural Language Processing (NLP).
- The mentions of CAT along with their respective scores were extracted from unstructured physician notes. These scores were used to categorize the patients into mild (21-24), moderate (13-20), and severe (0-12).
- CAT score was observed within 30 days from the index event.
- Based on the severity, we observed dementia-specific medical cost, gender distribution, medication adherence (PDC), persistence, and comorbidities in these patients.
- In this study, comorbidities were assessed using the Charlson Comorbidity Index (CCI), which is a widely used tool for measuring the burden of chronic medical conditions.
- Kruskal-Wallis statistical test was applied to compare the cost differences and Chi-Square test was applied to compare proportions.

\*ICD10 Codes: G30, F01, F02, F03, F1027, F1097, F1327, F1397, F1817, F1827, F1897, F1917, F1927, F1997, G3183, G310





- Of the 101,126 patients with Dementia, CAT scores were found in 9% of the population. There were 1,354, 2,039, and 1,462 patients in the mild, moderate, and severe category, respectively.
- An increase of 34% and 75% (P<0.001) in average annual medical cost was observed in moderate and severe disease respectively as compared to mild Dementia. (Fig. 2)
- Females were 27, 43, and 63 percentage points more affected as compared to males for mild, moderate, and severe dementia. (Fig. 1)
- Medication adherence was found to be higher (62%) for mild disease as compared to moderate (59%) and severe (56%) disease.
- A significant decrease in persistence over time was observed. The persistence was 8.2% for mild, 16.5% for moderate, and 14.9% for severe cases (Fig 4).



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- The CCI analysis showed that more than 75% of patients in all three severity categories had a CCI score greater than 1. (Fig.5)
- The top four comorbidities in dementia patients were diabetes with chronic complications (17%), cerebrovascular disease (15%), renal disease (14%), and peripheral vascular disease (13%).

#### Conclusion

- CAT is crucial for the early detection and management of Dementia, offering benefits such as improved planning, as well as measures to improve medication adherence.
- Timely assessment of medication adherence and persistence in Dementia patients is crucial for enhancing health outcomes and minimizing medication-related issues.

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