

ethnicity-related groups. Comparisons were done for: i) 1-year before; ii) 1-year after iii) years 2-11; iv) years 12-21 and v) years 22+ after an AD/ADRD diagnosis. We found significant race/ethnicity-related differences in costs and survival both before and after propensity score matching.

INCIDENCE OF MILD COGNITIVE IMPAIRMENT, CONVERSION TO PROBABLE DEMENTIA, AND MORTALITY

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Background: Few studies have jointly estimated incidence of MCI, conversion to probable dementia, and mortality. **Methods:** We used data from six waves of the National Health and Aging Trends Study (2011-2016). Multivariable-adjusted multi-state survival models (MSMs) were used to model incidence upon accounting for misclassification. **Results:** A total of 6,078 eligible NHATS participants 65 years of age and older were included (average age: 77.49 ± 7.79 years; 58.42% females; 68.99% non-Hispanic White). Incidence of MCI was estimated to be 41.0 [35.5, 47.3]/1,000 person-years (PY). Participants converted to probable dementia at a high rate of 241.3 [189.6, 307.0]/1,000 PY, though a small number also reverted from MCI to cognitively normal. Education was associated with lower incidence of MCI and probable dementia, but increased mortality in those with MCI. There were also substantial racial and ethnic disparities in the incidence of MCI and dementia. **Conclusions:** Our results underscore the relatively common incidence of and conversions between MCI and dementia in community-dwelling older Americans and uncover the beneficial impact of education to withstand cognitive impairment before death.

MACHINE LEARNING-BASED PREDICTIVE MODELS OF BEHAVIORAL AND PSYCHOLOGICAL SYMPTOMS OF DEMENTIA

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Models predicting the occurrence of specific types of behavioral and psychological symptoms of dementia (BPSD) can be highly beneficial for its early intervention and individualized care planning. Using a machine learning approach, this study developed and validated predictive models of the occurrence of BPSD, categorized into seven subsyndromes, among community-dwelling older adults with dementia in South Korea. BPSD diary was used to measure BPSD and the state of unmet needs daily. We measured sleep and activity levels using actigraphy, and stress and fatigue using a portable heart rate variability analyzer. We developed predictive models and

conducted cross-validation using training data that consisted of the first two wave dataset, and then validated the models using wave 3 test data. To deal with imbalanced datasets, we used Synthetic Minority Oversampling Technique (SMOTE), an over-sampling method. Categorical variables were pre-processed using target encoding. We then compared the machine-learning models with logistic regression. The area under the receiver operating characteristic curve (AUC) scores of the support vector machine (SVM) models for the wave 3 test data showed a similar or greater value than logistic regression models across all BPSD subsyndromes. The SVM model (AUC = 0.899) had an AUC value greater than that of the logistic regression model (AUC = 0.717), particularly for hyperactivity symptoms. Machine learning algorithms, especially SVM models, can be used to develop BPSD prediction models to help identify at-risk individuals and implement symptom-targeted individualized interventions.

MODIFIABLE RISK FACTORS OF BEHAVIORAL AND PSYCHOLOGICAL SYMPTOMS IN PEOPLE WITH DEMENTIA

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Over ninety percent of people with dementia (PWD) experience behavioral and psychological symptoms, known to increase burden on care providers and healthcare systems. The purpose of this integrative review was to examine the modifiable risk factors of behavioral and psychological symptoms of dementia (BPSD) at the individual, caregiver, and environmental levels. An electronic database search was performed using PubMed, CINAHL[EBSCO], Web of Science, and PsycINFO from 2010-2020. Search terms included “dementia” AND (“Behavioral” OR “Behavioural” OR “Psychological” OR “Neuropsychiatric”) AND “symptoms” AND (“Independent Living” OR “Community Dwelling” OR “Community Living” OR “Living at Home” OR “Ageing in Place.” The search yielded 1,121 articles, and 14 articles were included in this review. Among the 14 articles, there were 11 modifiable risk factors presented across the individual, caregiver, and environmental levels. Individual-level factors included the presence of affective disorder, low quality of life, and leisure dysfunction. The modifiable caregiver-level factors included relationship with PWD, frequency of contact, caregiver burden, distress, frustration level, caregiver as a resource for PWD, and quality of dyadic relationship. One environmental factor, the presence of pandemic disease (e.g., COVID 19), was identified. This review presents the modifiable factors that contribute to the varied symptoms and multi domains of BPSD. Further research is necessary to determine whether, and to what degree, interventions targeting individual, caregiver, or environmental risk factors may reduce BPSD for PWD, caregivers, and providers within the community setting.

MUSIC INTERVENTIONS FOR EARLY-STAGE COGNITIVE DECLINE: A SYSTEMATIC REVIEW AND META-ANALYSIS

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