

Longitudinal Associations of Depression and Diabetes with Alzheimer's Disease and Related Dementias Risk among American Indian and Alaska Native Peoples

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BACKGROUND

- Number of older American Indian and Alaska Native people (AI/ANs) is growing rapidly (ACL, 2020).
- Alzheimer's disease and related disorders (ADRD) research worldwide indicate that it is more common in Indigenous than in non-Indigenous populations (Warren et al., 2015).
- Among Kaiser Permanente members, AI/ANs aged ≥60 years experienced greater ADRD inequities with AI/ANs having second highest dementia incidence (Mayeda et al., 2016) and the second shortest median survival compared to all other race and ethnic groups (Mayeda et al., 2017).
- Among Veterans Health Administration patients, age-adjusted incidence of dementia per 1000 person-years was 14.2 for AI/ANs vs. 11.5 for Whites (Kornblith et al., 2022).
- Increased risk of ADRD among AI/ANs might be partially due to their high rates of multiple modifiable risk factors, such as depression and diabetes.
- Compared to Whites, AI/ANs are
 - 60% more likely to report feeling everything is an effort, all or most of the time (CDC, 2021) and
 - twice as likely to have diabetes and two and half times more likely to die from diabetes (Arias et al. 2021).
- Co-occurring depression and diabetes is well-known with depression being twice as prevalent in people with diabetes compared with those without diabetes (Anderson et al., 2001) and people with depression have a 32% increased risk for diabetes (Yu et al., 2015).
- Due to the comorbidity of depression and diabetes and their independent associations with ADRD, research is emerging on their co-occurrence with ADRD risk. Yet, no research has yet examined the association of comorbid depression and diabetes with ADRD among AI/ANs.

STUDY OBJECTIVE

Examine the longitudinal association of depression and diabetes, independently and together, with incident ADRD in AI/ANs

METHODS

Data. Our study extracted data from the Indian Health Service Improving Health Care Delivery Data Project that houses health status, service use, and treatment cost information for >640,000 AI/ANs.

Study Population. AI/ANs who were aged ≥45 years in FY2007, used Indian Health Service or Tribal health services at least 1x/year between FY07-09, and free of ADRD at baseline. Follow-up period was FY10-13 and individuals with baseline records only were excluded from the analyses. The final analytic sample was 65,801.

Measures.

- **ADRD:** Individuals who had at least one qualifying ICD-9-CM diagnostic code for all-cause ADRD in their service use records during FY10-13. Qualifying codes included those for Alzheimer's disease as well as vascular, Lewy body, frontotemporal, alcohol-induced, and other dementia types (Goodman et al., 2017)
- **Depression:** Individuals who had depression at baseline based on ≥1 qualifying ICD-9-CM diagnostic code (2962, 29621, 29622, 29623, 29624, 29625, 29626, 2963, 29631, 29632, 29633, 29634, 29635, 29636, 311; Katon et al., 2015)
- **Diabetes:** Individuals if they had 1 inpatient diagnosis code or a combination of 2 of the following events occurring within 24 months of each other: 1) HbA1c ≥ 6.5%
2) outpatient diabetes diagnosis code;
3) any antihyperglycemic Rx filled

Statistical Analysis. Cox proportional hazard models estimated the associations between ADRD risk and depression and diabetes at baseline. All analysis were conducted in SAS version 9.4.

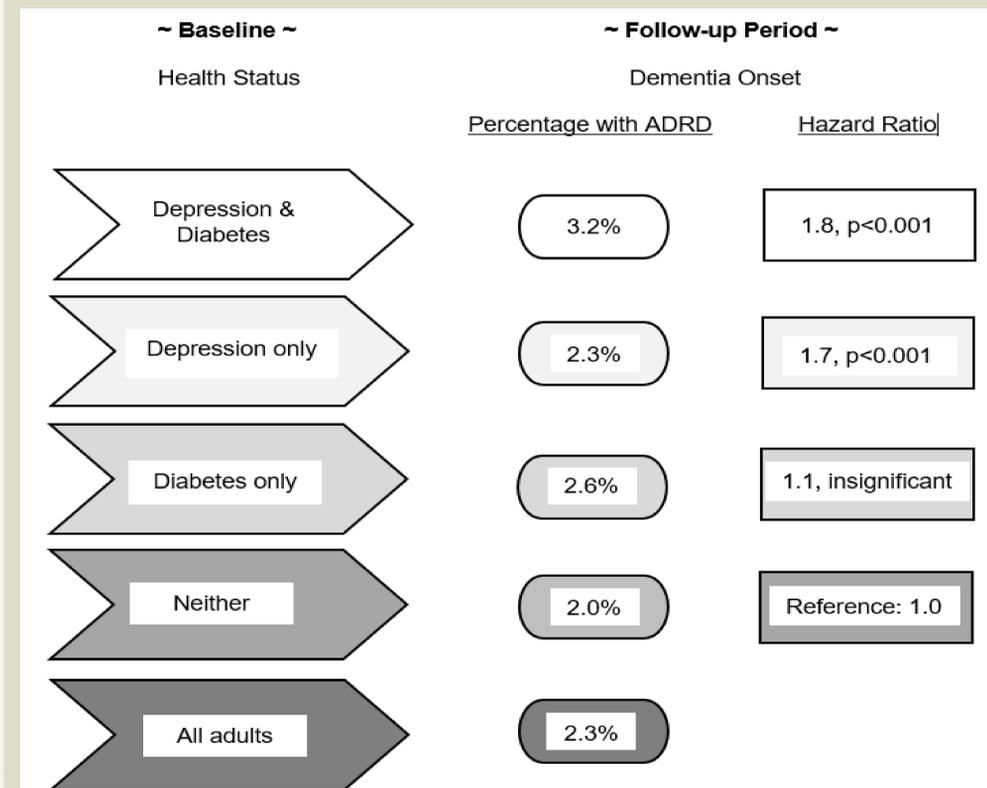
RESULTS

Among the 65,801 AI/ANs aged ≥45 years, 12.7% (8,381) had depression only, 28.4% (18,688) had diabetes only, and 9.3% had both (6,142).

During FY10-13, 2.3% (1,512) received a ADRD diagnosis. Of these individuals who received a ADRD diagnosis, 12.6% had depression only, 31.7% had diabetes only, and 13.0% had both.

Adjusted regressions indicated:

- No association between diabetes alone and ADRD risk
- Depression alone was associated with a higher ADRD risk
- Depression co-occurring with diabetes was associated with a higher ADRD risk



Percentage with ADRD: Unadjusted; Hazard Ratio: Adjusted

DISCUSSION

Our adjusted analyses indicated that only having depression as well as having both depression and diabetes were associated with increased risk of ADRD. In the future, ensuring clinical and behavioral services for AI/ANs include regular mental health screening and depression treatment may help reduce ADRD risk. Recently, there has been important and positive efforts, including increased funding to address ADRD needs of Indian Health Service patients and a formal collaboration between the Alzheimer's Association and the Indian Health Service.

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