

Age-Matching Reveals Higher Dementia-Related Outcomes Among Neurodivergent Women: A Federated EMR Analysis

Sephora Sabrina Candido Almeida¹, Ana Carolina Gomes²

¹ Neurology, Irmandade Santa Casa de Misericórdia de São Paulo, São Paulo, Brazil

² São Paulo, Brazil

INTRODUCTION

Dementia-related outcomes are increasingly studied across psychiatric and neurodevelopmental populations, but observational comparisons between neurodivergent and non-neurodivergent women are highly prone to confounding by age. Large federated electronic medical record (EMR) networks now allow these associations to be tested at scale.

Our objective is to compare dementia-related outcomes in women with versus without neurodivergence, before and after age-based propensity-score matching, using real-world data from the TriNetX Global Research Network.

METHODS

Compare Outcomes analysis on the TriNetX global federated EMR network, including adult females with (cohort B: ICD-10 F90, F90–F98, F84.0) versus without (cohort A) neurodivergence. The composite outcome combined dementia diagnoses (F01–F03, G30–G31.0) and speech assessment (UMLS F00) recorded ≥ 180 days after index. Analyses were run before and after age-based propensity-score matching; Kaplan–Meier survival and risk measures were extracted from both reports.

RESULTS

After age-based propensity-score matching (1,211,916 women per cohort), mean follow-up was longer in neurodivergent women (1,620 vs. 1,258 days). In the unadjusted analysis, composite dementia-related outcomes were more frequent among non-neurodivergent women (RR 1.55, 95% CI 1.39–1.73; HR 1.85, 95% CI 1.66–2.06; $p < 0.001$). This apparent protective effect was an artefact of age confounding, as neurodivergent women are younger on average and had accrued fewer events.

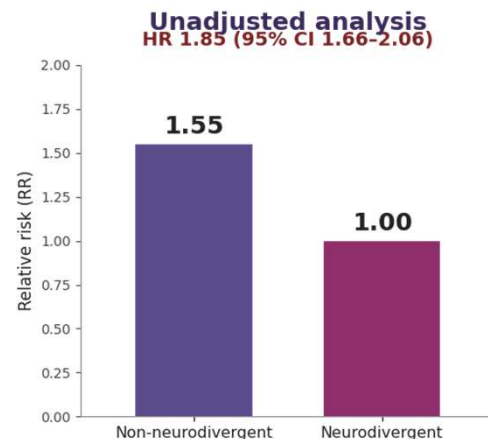


Figure 1. Unadjusted analysis. Relative risk of dementia-related outcomes by neurodivergence status (non-neurodivergent as reference). Higher crude risk in non-neurodivergent women; HR 1.85 (95% CI 1.66–2.06); estimate confounded by age.

After age matching, the association reversed: neurodivergent women showed a 3.8-fold higher risk of dementia-related outcomes (RR 0.27, 95% CI 0.21–0.34; HR 0.35, 95% CI 0.28–0.45; $p < 0.001$).

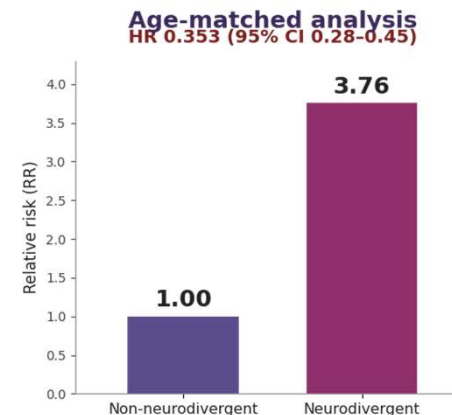


Figure 2. Age-matched analysis. Relative risk after propensity-score matching (1,211,916 per cohort). Neurodivergence independently associated with higher risk: HR 0.353 (95% CI 0.28–0.45).

CONCLUSIONS

After age adjustment, neurodivergent women showed a nearly fourfold (3.8-fold) higher risk than non-neurodivergent women. These findings show that the apparent protective association of neurodivergence was fully explained by age confounding.

After age control, neurodivergent women demonstrated a significantly higher rate of dementia-related outcomes, with a 3.8-fold higher relative risk. Further studies incorporating psychiatric and vascular covariates are warranted to clarify this association. The reversal of the crude estimate after age matching underscores the importance of accounting for current age in observational research, and the value of large real-world federated databases such as TriNetX for studying sex-specific dementia risk.

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CONTACT

Sephora Sabrina Candido Almeida, M.D.

sephora.s.c.almeida@gmail.com

+55 11 98315-1019