

Association Of Stroke With Dementia And Cognitive Performance Across Multiple Domains Among Brazilian Older Adults: Elsi-brazil Study

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Stroke history was robustly associated with dementia and poorer overall cognitive performance, as well as with relevant cognitive dysfunctions across multiple cognitive domains in older adults

INTRODUCTION

Stroke is a major risk factor for cognitive impairment and dementia, yet population-based evidence from Latin America remains scarce^{1,2}. Hence, we investigated the association between stroke history and both dementia and cognitive performance across multiple domains in a nationally representative sample of Brazilian older adults³, and examined whether these associations were modified by sex, age, or educational attainment.

METHODS

This secondary analysis included 9,399 adults aged ≥ 50 years from the Brazilian Longitudinal Study of Aging (ELSI-Brazil), of whom 8,864 (56.7% female) were stroke-free, and 535 (52.5% female) had a history of stroke. Survey-weighted generalized linear models accounting for the complex sampling design were implemented to estimate associations between self-reported stroke history and dementia (logistic regression) and cognitive performance (linear regression). Cognitive outcomes included a global cognitive composite score and domain-specific indices of immediate word recall, delayed word recall, and semantic fluency. All models were adjusted for time since stroke, multimorbidity, sex, age, and education.

RESULTS

Table. Unweighted characteristics of the included participants by stroke status group				
Variable ¹	Overall (n = 9,399)	Cerebrovascular Event		p-value ²
		No History of Stroke (n = 8,864)	History of Stroke (n = 535)	
Cerebrovascular Status				< .001
No Dementia	8,881 (95.0%)	8,527 (96.2%)	400 (88.2%)	
Dementia	418 (4.4%)	337 (3.8%)	81 (15.0%)	
Race				.003
White	5,386 (57.4%)	5,044 (56.9%)	170 (31.7%)	
Non-White	3,974 (42.6%)	3,820 (43.1%)	361 (68.3%)	
Missing	341	317	24	
Sex				.001
Male	4,892 (52.1%)	3,838 (43.3%)	224 (41.9%)	
Female	4,507 (47.9%)	5,026 (56.7%)	281 (52.1%)	
Age in years				< .001
Mean (SD)	65.4 (10.1)	65.3 (10.0)	66.3 (10.6)	
Median (Q1, Q3)	62.0 (53.0, 70.0)	61.0 (50.0, 70.0)	67.0 (60.0, 74.0)	
Education in years				< .001
Mean (SD)	5.4 (4.0)	5.5 (4.0)	4.0 (4.0)	
Median (Q1, Q3)	4.0 (2.0, 5.0)	4.0 (2.0, 5.0)	3.0 (0.0, 5.0)	
Time elapsed since stroke				< .001
Mean (SD)	0.6 (0.6)	—	8.8 (8.7)	
Median (Q1, Q3)	0.0 (0.0, 0.0)	—	4.0 (0.0, 14.0)	
Multimorbidity³				< .001
Mean (SD)	2.1 (1.0)	2.0 (1.0)	4.6 (2.1)	
Median (Q1, Q3)	2.0 (1.0, 3.0)	2.0 (1.0, 3.0)	4.0 (2.0, 6.0)	
Global Cognitive Score⁴				< .001
Mean (SD)	0.0 (0.0)	0.0 (0.0)	-0.3 (0.6)	
Median (Q1, Q3)	0.0 (-0.4, 0.4)	0.0 (-0.4, 0.4)	-0.3 (-0.7, 0.2)	
Immediate Word Recall⁵				< .001
Mean (SD)	42.0 (7.7)	43.0 (8.0)	34.0 (6.0)	
Median (Q1, Q3)	40.0 (35.0, 45.0)	41.0 (35.0, 45.0)	34.0 (30.0, 38.0)	
Delayed Word Recall⁵				< .001
Mean (SD)	2.0 (1.0)	2.0 (1.0)	2.0 (1.0)	
Median (Q1, Q3)	1.0 (0.4, 4.0)	1.0 (0.4, 4.0)	2.0 (0.0, 3.0)	
Semantic Fluency⁵				< .001
Mean (SD)	11.0 (4.0)	11.0 (4.0)	10.0 (4.0)	
Median (Q1, Q3)	10.0 (6.0, 14.0)	10.0 (6.0, 14.0)	10.0 (6.0, 14.0)	

¹Abbreviations: SD, standard deviation; Q1 = first quartile; Q3 = third quartile.
²Continuous outcomes were presented as means and standard deviations, as well as medians with interquartile ranges (IQRs).
³P-values refer to the Wilcoxon rank-sum test for continuous outcomes and the Pearson's Chi-squared test for categorical variables.
⁴Values missing data on cognitive outcomes, the analytic sample sizes for the global cognitive composite, immediate and delayed word recall, and semantic fluency were as follows: overall (n = 9,357), no history of stroke (n = 8,800), and history of stroke (n = 489).

Figure 1. Forest plot displaying statistically significant associations between self-reported stroke history and cognitive outcomes

Outcome	Beta Coefficient (β)	95% CI	p-value
Global Cognitive Score	-0.283	[-0.365, -0.201]	p < 0.001
Immediate Word Recall	-0.365	[-0.506, -0.225]	p < 0.001
Delayed Word Recall	-0.279	[-0.399, -0.159]	p < 0.001
Semantic Fluency	-0.341	[-0.465, -0.216]	p < 0.001

Data source: ELSI-Brazil | Survey-weighted generalized linear regression

CONCLUSIONS

In this study, stroke history was robustly associated with dementia and poorer overall cognitive performance, as well as with relevant cognitive dysfunctions across multiple cognitive domains in older adults, with no strong evidence that longer time elapsed since the cerebrovascular event was associated with better cognitive outcomes. These findings underscore the enduring cognitive burden of stroke and highlight the pressing need for systematic cognitive screening and targeted rehabilitation strategies for stroke survivors, particularly in low- and middle-income countries.

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