

# The Link Between Oral Health And Cognition: A Large-scale Longitudinal Analysis Of The Elsi-brazil Cohort

Priscilla Vendramini Borelli, MSc<sup>1</sup>, Daniel Arnold, MSc<sup>1</sup>, Fabiana de Melo, PhD<sup>1</sup>, Eduardo Zimmer, PhD<sup>1,3,4</sup>, Wyllians Borelli, MD, PhD<sup>1,2</sup>.  
<sup>1</sup>UFRGS, Porto Alegre, Brazil, <sup>2</sup>Memory Center, Hospital Moinhos de Vento, Porto Alegre, RS, Brazil, <sup>3</sup>Brain Institute of Rio Grande do Sul (InsCer), PUCRS, Porto Alegre, RS, Brazil, <sup>4</sup>McGill Centre for Studies in Aging, Montreal, QC, Canada.

P108-17

Edentulism was associated with lower cognitive performance and poorer functional independence in older adults.

## INTRODUCTION

Oral health factors are increasingly associated with brain health. However, its association with functional independence is yet unclear.

Table 1. Sociodemographic Characteristics by Dentition Status

|                            | Not edentulous (n = 2.879) | Edentulous (n = 2.357) | p-value  |
|----------------------------|----------------------------|------------------------|----------|
| Age, mean years (SD)       | 68.4 (±6.9)                | 72.7 (±8.5)            | < 0.0001 |
| Female sex, n (%)          | 1.557 (54.1%)              | 1.601 (67.9%)          | < 0.0001 |
| Education, mean years (SD) | 5.6 (±4.5)                 | 3.1 (±3.3)             | < 0.0001 |
| Family income, mean (SD)   | 5.1 (±3.8)                 | 4.0 (±2.4)             | < 0.0001 |
| Region                     |                            |                        | 0.44     |
| Central-west               | 268 (9.3%)                 | 251 (10.6%)            |          |
| North                      | 226 (7.8%)                 | 169 (7.2%)             |          |
| Northeast                  | 782 (27.2%)                | 639 (27.1%)            |          |
| South                      | 404 (14.0%)                | 312 (13.2%)            |          |
| Southeast                  | 1.199 (41.6%)              | 986 (41.8%)            |          |
| Marital status             |                            |                        | < 0.0001 |
| Divorced                   | 351 (12.2%)                | 233 (9.9%)             |          |
| Married                    | 1.630 (56.6%)              | 1.063 (45.1%)          |          |
| Single                     | 274 (9.5%)                 | 207 (8.8%)             |          |
| Widowed                    | 624 (21.7%)                | 854 (36.2%)            |          |
| Race                       |                            |                        | 0.04     |
| Asian                      | 25 (0.9%)                  | 33 (1.5%)              |          |
| Black                      | 284 (10.2%)                | 214 (9.6%)             |          |
| Brown                      | 1.223 (43.7%)              | 1.035 (46.6%)          |          |
| Indigenous                 | 69 (2.5%)                  | 41 (1.8%)              |          |
| White                      | 1.196 (42.8%)              | 898 (40.4%)            |          |

Of 5,236 participants, 45% were edentulous — significantly older, less educated, and lower income than non-edentulous peers (all  $p < 0.0001$ ).

## METHODS

- **Sample:** 5,236 older adults.
- **Design:** Cross-sectional\*.
- **Oral health measures:** Oral Health Impact Profile (OHIP, subjective) and total number of teeth (objective).
- **Cognitive outcome:** Global cognitive composite z-score (spatial/temporal orientation, animal fluency, immediate and delayed memory recall).
- **Functional outcome:** Lawton Instrumental Activities of Daily Living scale.
- **Analysis:** Linear regression models adjusted for sociodemographic covariates; subgroup analyses by dentition status, age, sex, education, income, region, marital status, and race.

\* Cross-sectional data 1,2 and 3 wave

## RESULTS

Edentulism was associated with lower cognitive performance and poorer functional autonomy. Associations remained significant after adjustment for sociodemographic factors.

Figure 1. Discrimination of edentulous percentages by (a) race, (b) region, (c) sex distribution

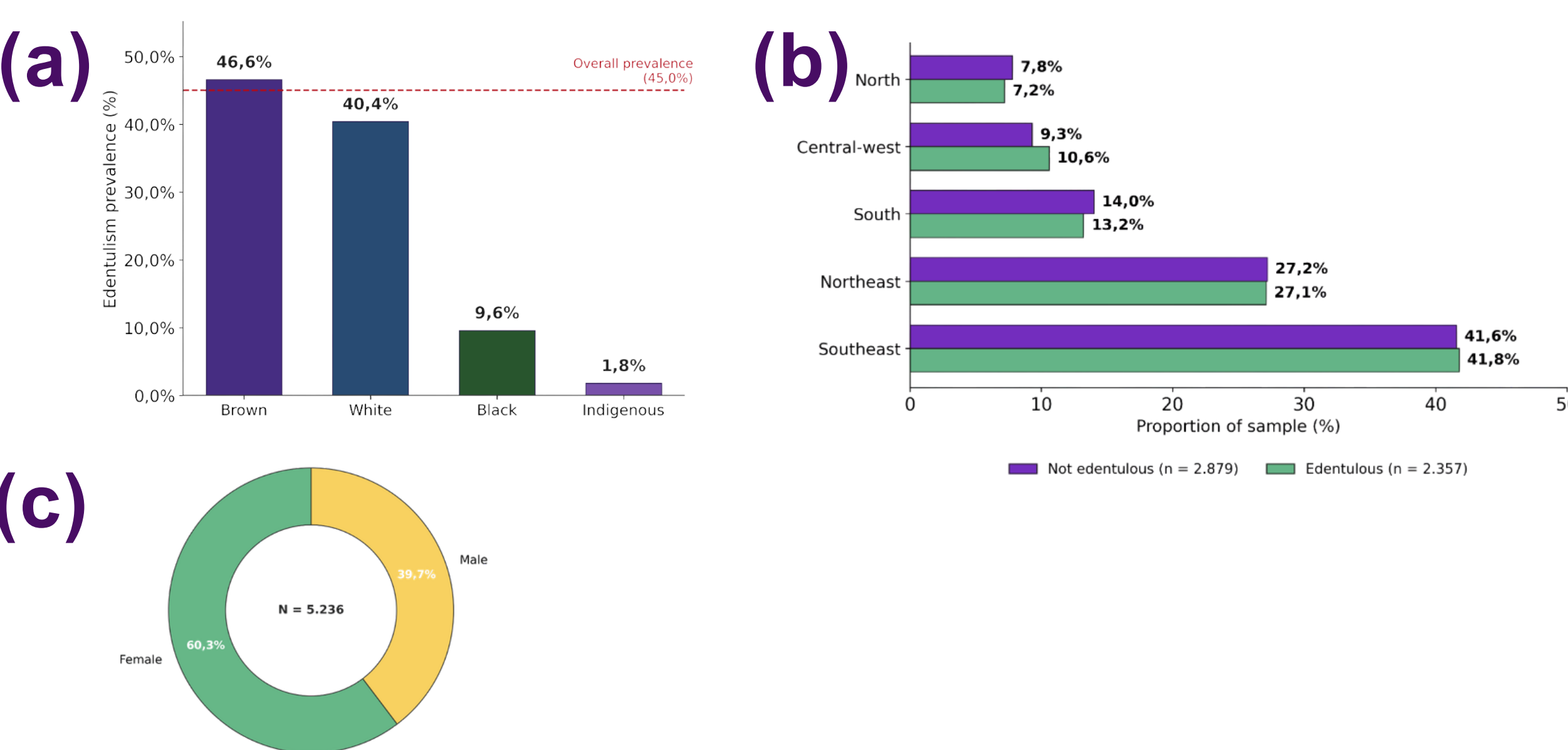
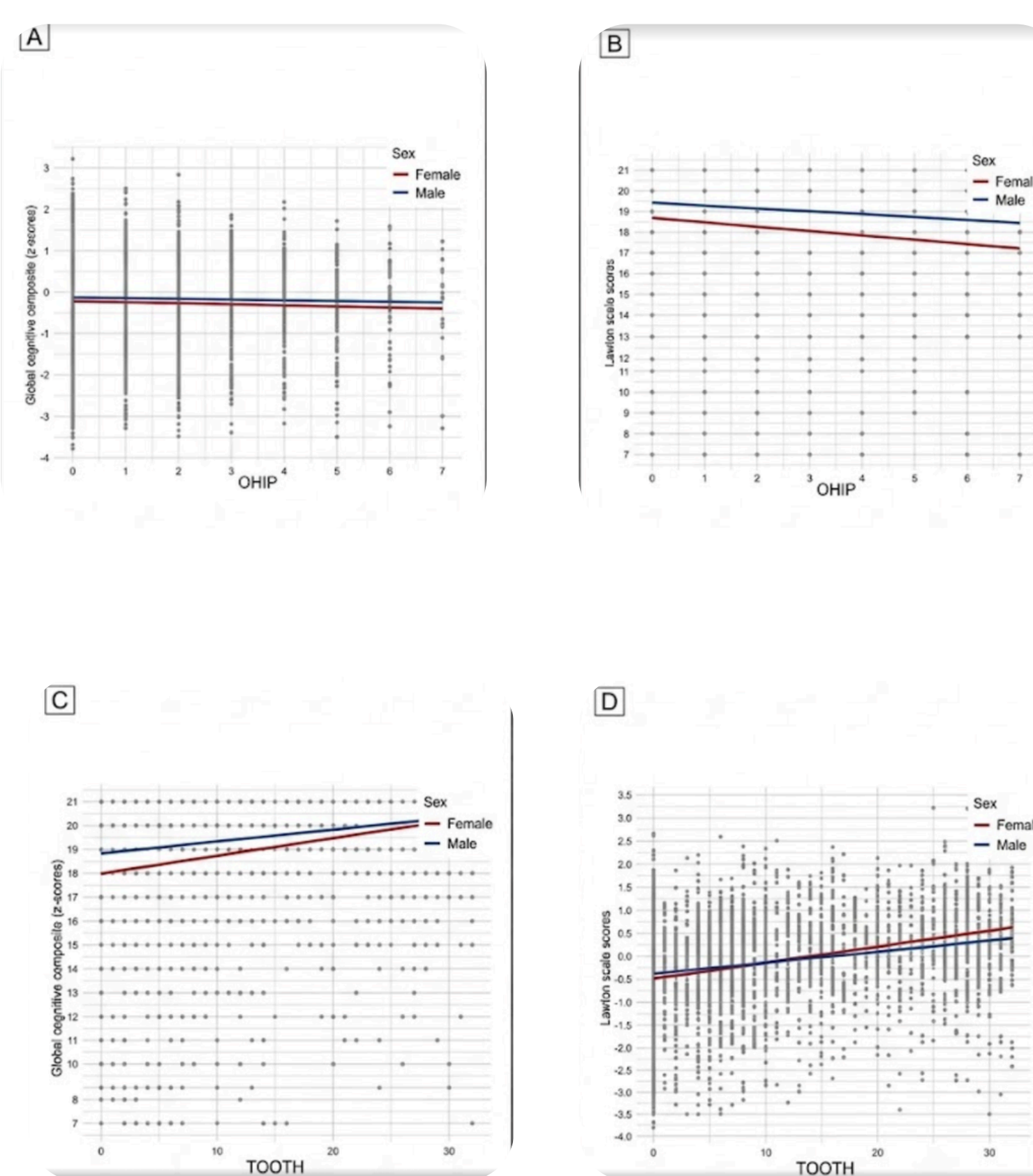


Figure 2. Multiple Linear Regression: Oral Health Predictors (OHIP/tooth) and Cognitive/Functional Outcomes (Global cognitive composite)

Linear regression models, adjusted for these sociodemographic disparities, showed that subjective oral health (OHIP) was inversely associated with cognitive performance (A) ( $\beta = -0.45$ ,  $p < 0.001$ ) and functional independence (B) ( $\beta = -0.32$ ,  $p < 0.001$ ). Conversely, a higher total number of teeth was a positive predictor for both cognition (C) ( $\beta = 0.005$ ,  $p < 0.001$ ) and functionality (D) ( $\beta = 0.016$ ,  $p < 0.001$ ).



## CONCLUSION

Our findings suggest poor oral health is significantly associated with cognitive decline and functional impairment in older adults. This highlights the need for integrated healthcare strategies addressing both oral and cognitive health.

## REFERENCES



## CONTACT

borellipv@gmail.com

