

## EPIDEMIOLOGY

## Modifiable and non-modifiable disparity-related predictors of cognitive scores in a population-based cohort: the ELSI-Brazil

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## Abstract

**Background:** Social and health-related disparity factors are important predictors of brain health in low and middle-income countries (LMIC). Social predictors of cognition have a higher impact on brain health among LMICs than classic demographic factors, such as age and sex. This study aimed to evaluate the impact of modifiable and non-modifiable social and health-related factors on cognition in a Brazilian population-based cohort.

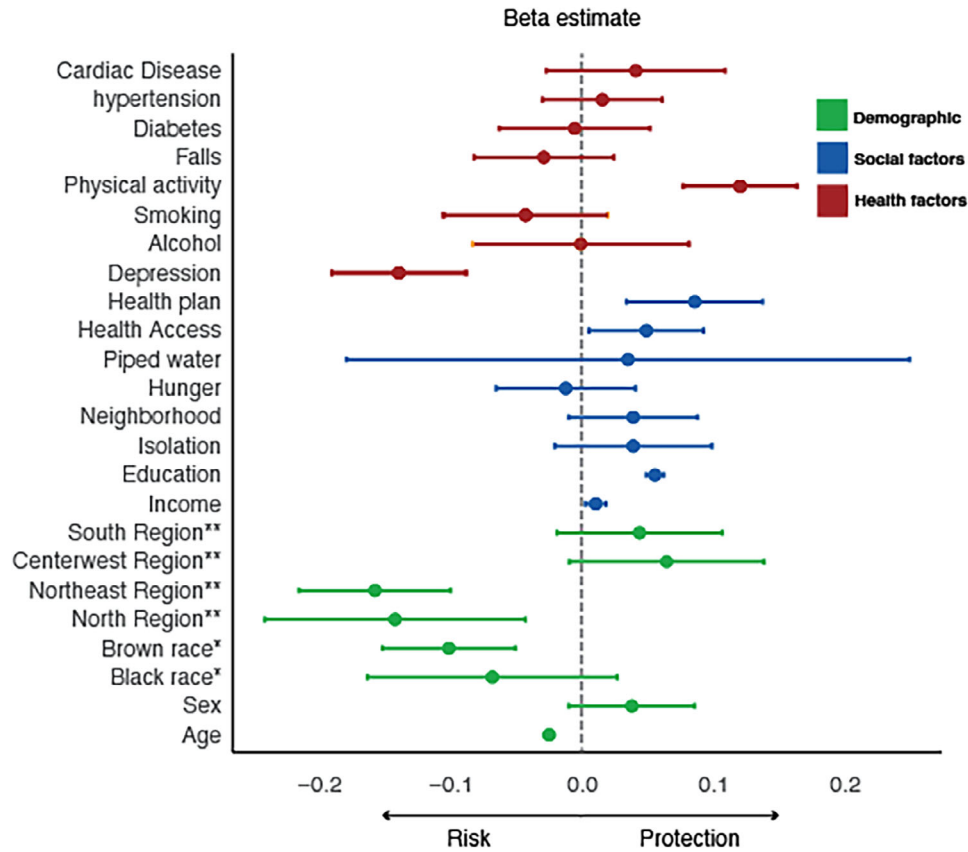
**Method:** We selected 9,412 individuals from the ELSI-Brazil cohort, which is a population-based study conducted with a similar design as the Health and Retirement Study. Complex sample design stratified and clustered distinct geographical regions according to their representation nationally. We included health-related disparity factors (hypertension, diabetes, cardiovascular disease, and falls), as well as social determinants of health (piped water, access to healthcare, private health coverage, income, food insecurity, and education). Non-modifiable factors were also retrieved (age, sex, race and region). We evaluated cognition using a global composite of orientation, animal fluency, and memory recall scores. A linear regression model was conducted to identify and stratify predictors of global cognitive scores ( $R^2$  adjusted = 0.336).

**Result:** We included 5,432 individuals above 60 years of age in this analysis (mean age  $70.3 \pm 7.97$  yo). The regression model identified that the most important modifiable predictor of cognition was depression ( $\beta = -0.14 \pm 0.06$ ,  $p < 0.001$ ), followed by physical activity ( $\beta = 0.12 \pm 0.03$ ,  $p < 0.001$ ), and private health coverage ( $\beta = 0.09 \pm 0.06$ ,  $p = 0.001$ ). Among non-modifiable predictors of cognition, northeast region dwelling was the most important predictor ( $\beta = -0.16 \pm 0.05$ ,  $p < 0.001$ ), following residing in the north region ( $\beta = -0.14 \pm 0.10$ ,  $p = 0.006$ ), and brown race ( $\beta = -0.1 \pm 0.05$ ,  $p < 0.001$ ). No health-related factor reached significance.

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**Conclusion:** Overall, modifiable and non-modifiable social-related disparity factors had a significant impact on cognition in this study. Modifiable factors should be addressed in public health policies, while non-modifiable risk factors may provide insights on compensatory strategies to overcome their negative effects on brain health. Further studies may expand this investigation to other LMIC.



\*White race used as reference  
\*\*Southeast region used as reference