Leukocyte telomere length across age, life course socioeconomic position, and social mobility in the ELSA-Brasil cohort

Amanda Machado

Universidade Federal de Minas Gerais, Brazil

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BACKGROUND

- Telomere length is a biomarker of biological aging commonly used to verify the incorporation of individual social context;
- Incipient investigation of such a hypothesis in Brazil, a society strongly marked by social inequities;
- We evaluated the transversal association of leukocyte telomere length (LTL) with age, life course socioeconomic position (SEP), and intergeneration social mobility.

METHODS

Study type: cross-sectional study;

Population: 2,000 Brazilian adults;

Response variable: LTL measured using real-time PCR at baseline;

Explanatory variables:

- Life course SEP indicators (SEP in childhood, youth, and adulthood);
- Occupational and education intergeneration social mobility;

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METHODS

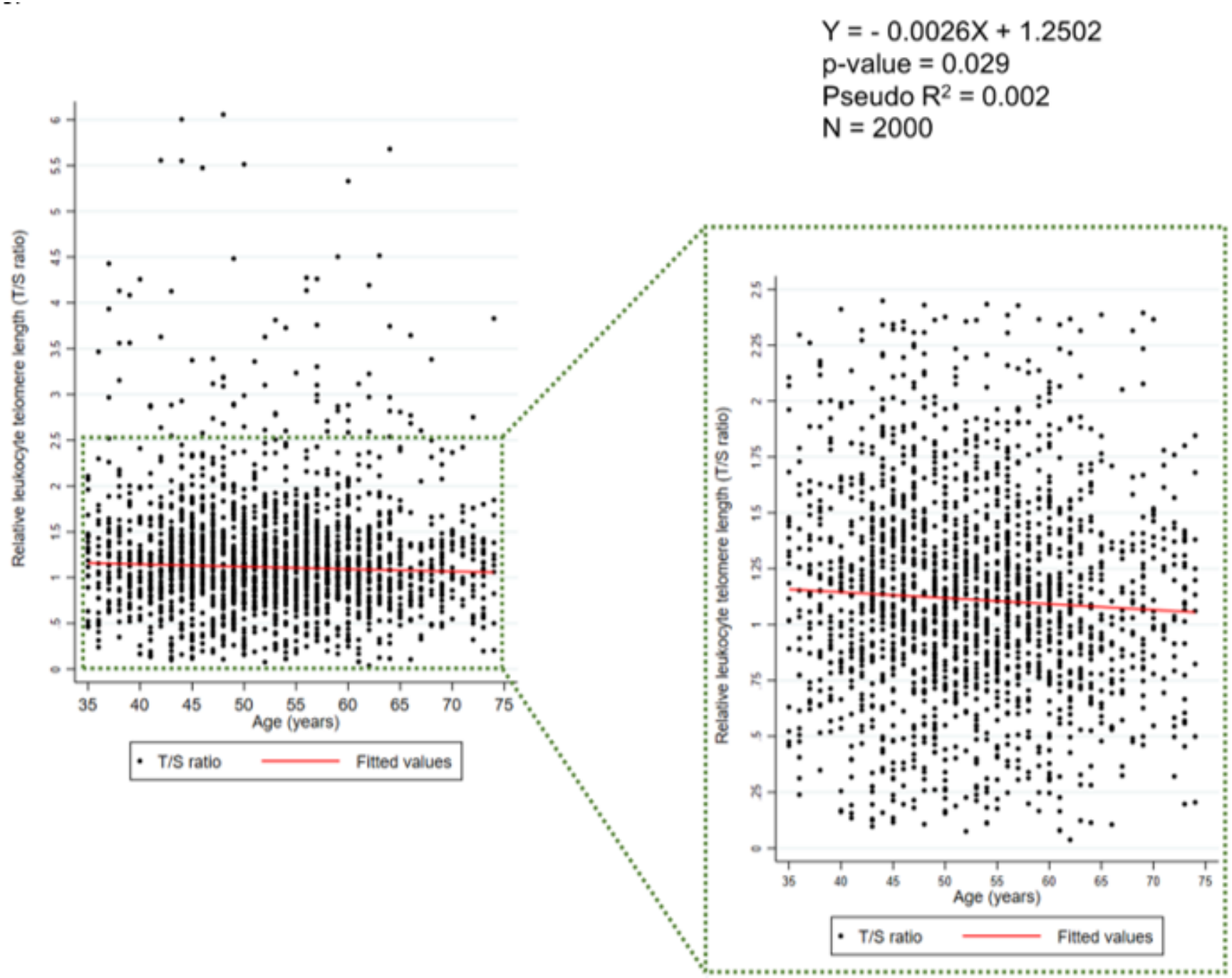
Covariables: age, sex, and race/color;

Data analysis:

- Robust regression models (continuous LTL);
  - Presence of influential points
- Logistic Regression Models (dichotomic LTL);
- STATA 17

RESULTS

Figure 1 – The relative leukocyte telomere length (T/S ratio) is presented by age in years at blood sampling. The results of the robust linear regression are shown in the equation and depicted by the red line. N represents the number of participants. The Brazilian Longitudinal Study of Adult Health (ELSA-Brasil), 2008-2010.



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RESULTS

Table 1 – Association between social mobility and relative leukocyte telomere length (T/S ratio) in women from the Brazilian Longitudinal Study of Adult Health (ELSA-Brasil), 2008-2010.

Variables	Women		
	N (%)	**Robust linear model adjusted by age and race β (95%CI)[1]**	**Logistic model adjusted by age and race OR (95%CI)[2]**
Education social mobility			
Immobility at the top of the hierarchy	311 (30.5)	Ref	Ref
Upward	298 (29.2)	0.029 (-0.103; 0.046)	0.79 (0.43; 1.46)
Downward	93 (9.12)	0.042 (-0.165; 0.080)	3.13 (0.56; 17.55)
Immobility at the base of the hierarchy	318 (31.2)	0.003 (-0.078; 0.083)	1.31 (0.69; 2.44)
Occupation social mobility			
Immobility at the top of the hierarchy	332 (33.2)	Ref	Ref
Upward	276 (27.6)	0.015 (-0.066; 0.096)	0.98 (0.57; 1.69)
Downward	110 (11.0)	0.008 (-0.127; 0.143)	1.21 (0.56; 2.62)
Immobility at the base of the hierarchy	281 (28.1)	-0.000 (-0.074; 0.074)	0.68 (0.37; 1.28)

[1] Regression coefficients β represent the difference in the mean of relative leukocyte telomere length according to explicative variables. Bold values denote statistical significance at the $p < 0.05$ level.

[2] OR = odds ratio. Bold values denote statistical significance at the $p < 0.05$ level.

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RESULTS

Table 2 – Association between social mobility and relative leukocyte telomere length (T/S ratio) in men from the Brazilian Longitudinal Study of Adult Health (ELSA-Brasil), 2008-2010.

Variables	Men		
	N (%)	**Robust linear model adjusted by age and race β (95%CI)[1]**	**Logistic model adjusted by age and race OR (95%CI)[2]**
Education social mobility			
Immobility at the top of the hierarchy	353 (37.1)	Ref	Ref
Upward	223 (23.4)	0.070 (-0.014; 0.153)	0.76 (0.42; 1.39)
Downward	78 (8.2)	-0.067 (-0.228; 0.094)	**2.19 (1.10; 4.35)**
Immobility at the base of the hierarchy	298 (31.3)	-0.017 (-0.103; 0.068)	1.24 (0.72; 2.14)
Occupation social mobility			
Immobility at the top of the hierarchy	354 (37.7)	Ref	Ref
Upward	271 (28.8)	0.004 (-0.076; 0.085)	0.93 (0.53; 1.62)
Downward	46 (4.9)	**-0.208 (-0.375; - 0.041)**	**3.40 (1.59; 7.28)**
Immobility at the base of the hierarchy	269 (28.6)	-0.027 (-0.119; 0.063)	1.35 (0.77; 2.36)

[1] Regression coefficients β represent the difference in the mean of relative leukocyte telomere length according to explicative variables. Bold values denote statistical significance at the $p < 0.05$ level.
[2] OR = odds ratio. Bold values denote statistical significance at the $p < 0.05$ level.

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CONCLUSION

- The weak association between LTL and age could be related to the low age amplitude of ELSA-Brasil cohort (35-74 years), as the correlation between age and LTL increases directly with age range, being greater in studies that include children;

- We found that downward intergenerational social mobility may contribute to premature aging;

- Preventing downward social mobility could reduce the burden of morbidity and mortality of age-related disease in men.