Blood glucose, BMI and telomere length in a cohort of Colombian schoolchildren

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Introduction: A few studies have reported that mean telomere length (TL) is associated with obesity and blood glucose in children of European or Arab origin. The present study was designed to assess whether BMI or blood glucose is associated with TL in school-age children of South American origin.

Materials and Methods: Relative telomere length ratios were determined in 375 subjects (age 9-14 years). Subjects were recruited within the ACFIES (Association between Cardiorespiratory Fitness, Muscular Strength and Body Composition with Metabolic Risk Factors in Colombian Children) study. Phenotypes were determined using standard tests and an extensive questionnaire. Statistical analysis was carried out using SPSSv25 (IBM Inc., USA).

Results: Partial correlation analysis, controlling for the effects of age, gender, PCR plate and BMI demonstrates a robust negative correlation between TL and blood glucose (r= -0.14, p=0.008). Using a univariate linear model analytical approach, blood glucose is also significantly associated with telomere length (p=0.011) with the same variables in the model. No significant association with BMI was detected.

Conclusions: TL is a potential biomarker: blood glucose is negatively associated with TL in this cohort of Colombian schoolchildren and this effect does not appear to be related to obesity. The lack of association with BMI may be due to the difference in ethnicity or because previous studies have had higher than normal proportions of children with early-onset obesity. Further work to investigate this relationship in larger cohorts may yield insights into the relationship of telomere attrition with pathological processes in pre-clinical diabetes.