

Living in poverty is associated with accelerated biological aging

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ABSTRACT

Background and Objective:

Biological aging reflects a decline in the functions and integrity of the human body that is closely related to chronological aging, but it is also driven by many external factors. A variety of biomarkers have been found to predict biological age. Biological age higher than chronological age (biological age advancement) indicates an accelerated state of biological aging and a higher risk of premature morbidity and mortality. This study investigated how socioeconomic disadvantages influence biological aging.

Methods:

The data from the National Health and Nutrition Examination Survey (NHANES) IV, including 10 nationally representative cross-sectional surveys between 1999-2018, were used. The analytic sample was $N = 54,168$ (20-85 years). We used a total of 11 biomarkers for estimating the biological age. Our main outcome was biological age advancement (BAA), calculated as biological age minus the chronological age, where positive values indicate worse health. Poverty was measured as a ratio of family income to the poverty level (5 categories). The BAA was regressed on poverty levels, age, their interaction, education, sex, race, and a data collection wave. Sample weights were used to make the estimates representative of the US adult population.

Results:

The results showed that BAA was positively associated with poverty ($B = 0.16$ per 1 category, $p < .001$), above and beyond other covariates. The association between BAA and age was U-shaped. Importantly, the interaction of poverty and age was significant ($B = .017$ per year, $p < .001$), as the effect of poverty was the greatest in middle-aged categories, while limited in younger and elderly groups.

Conclusion: In a nationally representative US adult population, we showed that higher poverty enhances the acceleration of biological age, particularly in middle aged persons. It might be hypothesized that the social stressors accumulated at younger age can promote health inequalities later in life.