June 2, 2020

Dear Editor,

My co-authors and I are pleased to submit our manuscript entitled “Parity is not associated with multiple measures of biological age: Evidence from NHANES 1999-2010” to be considered for publication in *Scientific Reports*.

Individuals of the same chronological age differ in their rate of age-related physical and cognitive decline. Understanding the factors that contribute to this variation – referred to as ‘biological age’ – is a major public health concern. In women, number of pregnancies and live births have been linked to increased risks of cardiovascular disease, type II diabetes, reproductive cancers, and all-cause mortality2. Gravidity and parity have also been linked measures of cellular aging such as telomere length and epigenetic age3. It is unknown, however, whether widely used clinic-based measures of biological age can be used to study the impact of reproduction on biological aging in women.

Using a large (n = 2,669) nationally-representative sample of US women, we tested for associations between parity and three recently-validated, clinic-based measures of biological age (Levine Method, homeostatic dysregulation, and Klemera-Doubal Method biological age). These measures capture biological aging and decline across range of physiological processes and complement prior work on cellular aging. Controlling for important age-related covariates and looking at both pre- and post-menopausal women, we did not find any evidence for an association between parity for any of the measures of biological age. Associations between time since last birth and biological age were also not significant. Our results suggest that unlike cellular-based measures of biological age, validated clinic-based measures of biological age do not reflect either acute or chronic effects of parity.

We believe our findings will be of general scientific interest, and of interest to those whose work focuses on reproductive epidemiology, evolutionary biology, reproductive physiology, and geroscience. We further believe readers of *Scientific Reports* will find this research of interest because of recent papers published in the journal that served as the impetus for our study.

Thank you in advance for your consideration of our article, and we look forward to hearing from you.

Sincerely,

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