Reviewer's report

Title: Socioeconomic differences in childhood length/height trajectories in a middle-income country: a cohort study

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Reviewer: Man Ki Kwok

Reviewer's report:

Major Compulsory Revisions

This manuscript examines the prospective association of parental education (or occupation) with length/height trajectories from birth to 7 years using the large (n=12,463) cohort of Belarus breastfeeding promotion intervention. It is coherently written and has the potential for public health implications; however more comprehensive and explicit details on the justification of using linear spline multi-level models for generating growth trajectory, the application of addressing the identified research gap in improving population health, and the interpretation of findings within socio-historical context would be much appreciated. Moreover, the novelty and importance of the study should be convincingly presented given several previous studies from their team and others have addressed this issue.

Introduction

1. Paragraph 1. The authors stated that “it is unclear at what age these socioeconomic differences emerge; if the differences change with age; and the mechanisms involved, particularly in low- and middle-income settings.” I suggest the authors should highlight the importance and relevance of the study especially in terms of public health implications here. The hypotheses or reasons behind studying starting age and mechanisms particularly in low- and middle-income settings should also be further elaborated. Do they expect universal or context-specific findings and why?

Methods

2. Follow-up. Measurements were scheduled at 1, 2, 3, 6, 9, 12 months and then 6.5 years. I wonder if the data gap between 12 months and 6.5 years would affect the generation of growth trajectory.

3. Statistical methods – Justification for using linear spline multilevel model is lacking. Firstly, what are the strengths and weaknesses of using current method compared with other alternative growth modeling methods or generalized estimating equation (GEE) using height gain by growth phrase? Secondly, what are the assumptions of current method? Thirdly, given growth trajectory is data-driven, and the three knots identified at 3, 12 and 34 months do not necessarily represent the biologically defined growth phrase, can the authors comment on that? Finally, as the measurement was not taken at the exact same age, instead of calculating the internally standardized coefficients in later
associational analyses, why not using sex- and age-specific z-score (standard deviation score) relative to national or international growth reference? Is there any advantage for calculating the absolute difference in terms of standard deviation? Why gestational age was not adjusted for examining birth length?

Discussion
4. More thorough discussion on public health and/or clinical implications (e.g. growth monitoring, population-level measures in addressing socioeconomic differences or how and when to intervene) is expected in view of the 2 cm difference in height at 7 years by maternal education is of very modest magnitude.

Minor Essential Revisions
Introduction
1. Paragraph 3. Since parental education is the key indicator of socioeconomic position (SEP) used, more description on the education systems in Belarus, e.g., is there any free, universal education provision (if so, since when)? Would there be any factor affecting the opportunities of receiving education? In addition, it is interesting that Belarus has low income inequality but high adult mortality rates. Would the authors like to comment on this because it is opposite to the findings of higher mortality is associated with greater income gap in Western populations. This might have some insights for interpreting the results – how should the association of parental education in a setting with lower income gap with child height (is height associated with mortality in Belarus or other middle-income countries) be interpreted?

Methods
2. Study design. Given the inclusion criteria for infants into the original trial, it would be helpful to provide comparisons (i) between children included and the target population, and (ii) between children included and those excluded with discussion of any possibility of selection bias.

3. Statistical methods – Could the authors explicitly state the factors (trial arms, maternal smoking, and number of older siblings) adjusted in model 2 are mediators or confounders? Using directed acyclic graph (DAG) would help clarify, and if overall effect of parental education is the interest, mediators should not be adjusted.

Results
4. Paragraph 2. Could the calculation for the following statements shown in appendix “The models were used to calculate the absolute height difference between the highest versus lowest categories of maternal education at age 7 years; for model 2, this was 1.87 cm (95% CI: 1.43 to 2.32) among girls and 1.78 cm (95% CI: 1.36 to 2.21) among boys. Height difference at age 7 years attenuated by 40% after controlling for mid-parental height in model 3 to 1.11 cm (95% CI: 0.69 to 1.53) among girls and 1.08 cm (95% CI: 0.68 to 1.47) among boys.”, it would be useful to know how to derive it from the presented Tables 2
and 3.

Discretionary Revisions

Methods

1. Statistical methods – since there is no sex interaction for the association between maternal education and length/height growth trajectory, I suggest presenting the overall association as the main results and the sex-stratified results as the appendix would be better, such that the results section of the abstract could provide the overall association rather than findings for boys only.

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Acceptable

Statistical review: Yes, and I have assessed the statistics in my report.

Declaration of competing interests:

I declare that I have no competing interests.