Reviewer’s report

Title: The association between pre pregnancy body mass index and risk of preeclampsia: a registry based study from Tanzania

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Reviewer: Mary Lou Thompson

Reviewer’s report:

This registry-based study draws on 13 years of birth records to assess the association between pre-pregnancy BMI and the risk of preeclampsia. The paper is well written and methods and results are mostly clearly presented. While the association of pre-pregnancy BMI with risk of preeclampsia is known, I would think there is value in confirming the association in a large African cohort, particularly with the increase in overweight and obesity in transitional African societies.

1. Women of gravida 1 or 2 with singleton pregnancies were included in the study, but I wasn't clear whether it was possible for women to be included in the study for more than one pregnancy. If so, how were repeated measures addressed in the analyses?

2. Was gravidity (1 vs 2) considered as a potential confounder?

Points 3-6 below relate to the role of variables other than pre-pregnancy BMI ("main exposure") and preeclampsia (outcome):

3. The stated aim of the study is assessing the association between the risk of preeclampsia and pre-pregnancy BMI, in which case the role of other variables is presumably only of concern if they are potentially confounders. In the adjusted analyses, it seems a variable selection approach was used for inclusion of predictors of preeclampsia other than BMI (lines 170-171). Ideally, confounders would specified a priori rather than being decided on by hypothesis testing. However, for an assessment of confounder selection strategies, see, e.g., Maldonado G, Greenland S. Simulation study of confounder-selection strategies. Am J Epidemiol. 1993;138:923-936.

4. In Tables 1 and 2 the association of other variables with BMI is assessed and Table 3 considers crude and adjusted association of other variables, in addition to BMI, with preeclampsia. Are these associations of interest in their own right (i.e. is assessment of these associations part of the study aims?). I would note that they receive little attention in the Discussion.

5. In addition to there being multiple comparisons in Tables 1-3, the large sample size means that differences of statistical, but not clinical, significance may be identified. I also wasn't clear what null hypothesis and test statistic were associated with the tests for trend in Table 1.
6. Line 256: I was not sure why the authors would be including mediating variables unless assessment of mediation effects is also a study aim.

7. The authors carry out separate analyses stratified by preterm vs term delivery. Did they consider a single analysis, with an interaction for term status, which would have allowed formal assessment of effect modification (as they did with height)?

8. Lines 148-149: the role of the height and weight cutoff points was not clear. Were they used for exclusion of subjects as with the BMI cutoffs?

9. In addition to the mean BMI provided in Tables 1 and 2, it might have been useful to include the SD or the range, to provide a sense of variability within each category. It would also be good to provide units for BMI (presumably kg/m2).

**Are the methods appropriate and well described?**
If not, please specify what is required in your comments to the authors.

Unable to assess

**Does the work include the necessary controls?**
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Yes

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Yes

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