Reviewer's report

Title: Associations of maternal prepregnancy obesity and excess pregnancy weight gains with adverse pregnancy outcomes and length of hospital stay

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Reviewer: Sabu Padmadas

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Associations of maternal prepregnancy obesity and excess pregnancy weight gains with adverse pregnancy outcomes and length of hospital stay

This paper used a population based cohort data of 6632 women to determine whether pre-pregnancy obesity and excess gestational weight gain (GWG) are associated with a number of delivery conditions and outcomes (CS delivery, pregnancy complications, preterm delivery, birth and placental weight) as well as the increased length of stay.

The authors present a number of interesting findings and provide evidence that pre-pregnancy obesity and GWG are associated with greater risks of poorer reproductive outcomes. They report that GWG has independent effect on the length of postnatal stay and further claim that this association may still be relevant in contemporary populations.

The topic is interesting although the findings refer to an old cohort of women who gave birth in the early 1980s. On the other hand, there is an overall increase in obesity risks across different geographical regions and increasingly among young females of reproductive ages. In this case, the findings reported in this paper have implications for policy and medical interventions. There are a few structural and methodological issues that need to be addressed before publication. I recommend this paper for publication subject to a few clarifications and amendments as indicated below.

1. The paper would benefit considerably by keeping a focus on the association between GWG and postnatal stay – given that there is already existing evidence showing positive association between obesity and delivery outcomes. Indeed, the outcomes specified in the analyses could be potential confounders determining the length of postnatal stay.

2. The analysis considered self-reported prepregnancy weight at baseline which might be subject to reporting bias – as women generally tend to underreport their weight even in clinical settings. This is a major weakness of this study and should be discussed. Did the study measure women’s weight at the time of first antenatal examination?

3. I could not follow the logic of estimating the mean difference in birth weight. Mean difference of which groups? The results discussing the mean difference
should be clarified and where appropriate the methodology should be discussed.

4. The difference in mean postnatal stay for different GWG classifications is not large, except for the obese category. The results are not significant (based on the 95% CIs across groups, as shown in Table 3). This is an important finding and should be made explicit in the paper.

5. The finding that the odds of a preterm birth are lower for prepregnancy obesity and excess weight gain at delivery is bit tricky. Any further explanations?

6. Table 1 predicting the odds of delivery outcomes include IOM, prepregnancy BMI and GWG. However, GWG is the difference between prepregnancy BMI and IOM. If this is the case, then the statistical modelling should be revisited, also taking into account of potential multicollinearity problems.

7. The average days stayed at the hospital is 4.3 days – how did this vary between a normal vaginal and a caesarean section delivery?

8. Parity is an important variable missing in the list of confounders – why?

9. Overall CS rate of 11.8% is not high. Has this changed recently? This should be discussed in the concluding section.

10. Abstract: I could not follow the birth weight data reported in grams. It seems incorrect (birth weight of 206.45 grams?) It is probably the difference in birth weight.

11. Page 8: Explain the IOM categories in the text (reference 26).

12. The language and grammar needs attention throughout the manuscript.

**Level of interest:** An article of importance in its field

**Quality of written English:** Needs some language corrections before being published

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

**Declaration of competing interests:**

I declare that I have no competing interests.