Reviewer’s report

Title: Iron status and risk factors of iron deficiency among pregnant women in Singapore: A cross-sectional study

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Reviewer: Marloes Dekker Nitert

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PUBH-D_18-04077 Iron status and risk factors of iron deficiency among pregnant women in Singapore: A cross-sectional study.

This manuscript presents an analysis of iron depletion in the third trimester of pregnancy in a well-characterised cohort of pregnant women from Singapore. The great majority of women were found to be modestly iron depleted and a number of factors were related to iron depletion. This data is interesting but a number of issues need to be addressed to enable proper interpretation of the presented data.

Major comments:

1. What is the proportion of anaemia in non-pregnant women of obstetric age in Singapore? Is there a difference in the infant iron stores between women who are anaemic before pregnancy started and those who are not? Please add this information to the introduction.
2. In the introduction, please include information on the extent to which iron transport to the fetus is protected from lower maternal iron stores?
3. From table 1, it can be derived that a majority of the women already had low Hb levels in early pregnancy. What were their ferritin levels in early pregnancy? What were their Hb levels in early third trimester?
4. Given that the great majority of women would be iron-depleted e.g. 74% but only 7% are severely iron depleted, are the cut-offs used in this study misleading? Are the cut-offs specific for the population used?
5. Dietary intake of iron through consumption of meat could be another factor that could determine iron status: what information is available on dietary iron intake? Could this potentially explain the higher proportion of women with modest iron deficiency that were of Indian/Malay ethnicity?
6. Have Hb levels in early pregnancy been correlated with ferritin levels at 26-28 weeks gestation to see if there is a linear relationship between these two factors? Even if the majority of women with known anaemia in early pregnancy is "only" 20%, the levels indicate that there are quite a few women who are hovering just over the threshold and it would thus be interesting to see if there is a continuous relationship between the two parameters.
7. If only the women were included with severe iron deficiency, were the same factors still significantly associated with iron depletion?
8. The inclusion of smoking status in the logistic regression, which is based on 24 women and n=2 in the severe iron depletion and n= 8 in the iron sufficient women, needs to be discussed in terms of how reliable that data is based on the small sample size of that analysis. It is unclear why this factor, which was not significant in the univariate analysis, was included in the multivariate analysis.

9. Similarly, it is not clear why other factors that were not significant in the univariate analysis including BMI and history of anaemia were included in the multivariate analysis. It is common to only include significant factors in the multivariate model.

10. Lastly, why was the multivariate model not further refined: if stepwise backward or forward analysis would have been performed, it would be clear which factor is the most important determinant of circulating ferritin levels. This needs to be done to finalise the analysis presented in this manuscript.

Minor Comments
1. Abstract line 130, three-quarter should read three-quarters.
2. Please define ID as iron deficiency when used for the first time in line 158.
3. In table 1, the actual median/mean BMI (and the spread around the median/mean) of the women in the different categories should be included.

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

No

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

Yes

Are the conclusions drawn adequately supported by the data shown?
If not, please explain in your comments to the authors.

Yes

Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

I am able to assess the statistics

Quality of written English
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