Reviewer's report

Title: Lower Vitamin D Levels in Saudi Pregnant Women are Associated with Higher Risk of Developing GDM

Version: 2 Date: 25 Jul 2017

Reviewer: Jennifer Woo

Reviewer's report:

Overall, a really important study and could provide important evidence to the literature related to vitamin D deficiency and gestational diabetes risk.

In the Background section, you discuss the extra-skeletal effects of vitamin D, but should focus on the extra-skeletal effects of vitamin D as it relates to pregnancy; Perhaps a brief review of the evidence in regards to vitamin D deficiency and its association with preterm birth, perinatal infections, preeclampsia etc. (Bruce Hollis and Carol Wagner's work)

"Despite several studies, the link between gestational diabetes and maternal vitamin D status is still not completely ascertained" - a better word would be conflicting. Perhaps 1-2 sentences related to the studies that have been published where there is and is not an association between vitamin D deficiency and gestational diabetes risk. Again, exploring the conflicts in the literature in regards to vitamin D deficiency and gestational diabetes risk, provides a great backdrop for your study since you have a significant sample size. I know you discuss this in your discussion section, so perhaps a 1-2 sentence summary of the conflicting evidence as it relates to vitamin D deficiency and gestational diabetes risk.

In regards to your Methods section, were the women supplemented for vitamin D deficiency after the first trimester? ** Important for me as a clinician to know if there was supplementation given to these pregnant women found to be vitamin D deficiency in the first trimester and if so, how much? If you did track the dietary/supplement use of vitamin D, then to add it to Table 1. Did you check vitamin D status again in the 2nd trimester with the blood draw for Oral Glucose Tolerance Test? If you did, then adding to Table 1 the vitamin D levels at visit 1 and then adding a second variable of vitamin D levels at visit 2 should be added.

In your results section there were some questions:

1) Why did you adjust for Pittsburgh Sleep Quality Index? There is no rationale given for this, was it significantly different between non gestational diabetic and gestational diabetic groups?
2) Also, since all of the obesity indices were significantly higher in the gestational diabetic group when compared to the non gestational diabetic group, why did you not control for all of the body mass indices? Since the data would tell you that there is already going to be a bias in the sampling since the gestational diabetic group was more obese and therefore more likely to be vitamin D deficient. It is hard to tell from your data, that the influence of the higher risk of gestational diabetes is due to vitamin D status vs. obesity status of the patient cohort who had gestational diabetes. You do include this in your discussion as a significant con founder, but I wonder if you could reanalyze the data running the logistic regression controlling for the 4 body mass related indices, and to see if vitamin D deficiency truly was associated with gestational diabetes risk. It would strengthen your paper and your argument.

3) Table 1 - Would include dietary or supplement use of vitamin D for both non gestational diabetic group and gestational diabetic groups, and the vitamin D levels at visit #2. Need to make it clear for the reader that vitamin D status determination was based on visit #2 blood draw or was it based on visit #1 blood draw.

In your discussion section, you state "Vitamin D deficiency is common in healthy Saudi adults and is more pronounced in females and especially in the younger age groups”, yet the next sentence after that is a study that showed vitamin D deficiency in pre and post menopausal women. It would be great to include a citation showing vitamin D deficiency being prevalent in younger female age groups in Saudi Arabia.

Conclusion: perhaps adding one sentence in regards to next steps based on your study and the importance of designing a robust randomized control trial to study the impact that adequate vitamin D supplementation has on improving risk of gestational diabetes.

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

Yes

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

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