

PEER REVIEW HISTORY

BMJ Open publishes all reviews undertaken for accepted manuscripts. Reviewers are asked to complete a checklist review form (<http://bmjopen.bmj.com/site/about/resources/checklist.pdf>) and are provided with free text boxes to elaborate on their assessment. These free text comments are reproduced below.

ARTICLE DETAILS

TITLE (PROVISIONAL)	Effect of Pre-pregnancy maternal BMI on adverse pregnancy and neonatal outcomes: Results from a retrospective cohort study of a multi-ethnic population in Qatar
AUTHORS	Shaukat, Shazia; Nur, Ula

VERSION 1 - REVIEW

REVIEWER	Richard Derman USA
REVIEW RETURNED	07-Mar-2019

GENERAL COMMENTS	<p>This paper presents secondary analyses of data derived from patient's antenatal records among a defined low risk heterogeneous population of nulliparous women in Qatar. It is not surprising that overweight and obesity was associated with adverse maternal and neonatal outcomes, as this has been reported in multiple published papers. Unique to this study was the ability to capture a patient's pre-pregnancy weight (although the duration between weight capture and pregnancy is not fully described). Despite the ministry of Health of Qatar's definition of low risk, women who are overweight, especially those with a BMI equal to or greater than 35 are known to be at high risk. Even being nulliparous raises the risk of preeclampsia above the average inclusive of all pregnant patients.</p> <p>The rate reported of both morbid obesity and gestational diabetes as well as macrosomia are all very high as compared to data from other published trials.</p> <p>This population of overweight and obese women is at especially high risk for post-partum complications, especially sepsis and hypertensive disorders, but follow-up care of the women presented has not been described.</p> <p>Nonetheless, there is a paucity of published data and outcomes among Arabic women with elevated BMI. Thus if the editorial concerns could be addressed, this paper warrants publication.</p>
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REVIEWER	Ahmed Mohamed Abbas Assiut University, Faculty of Medicine, Egypt
REVIEW RETURNED	25-Mar-2019

GENERAL COMMENTS	Thanks for the authors for this nice work. Although the paper is well written and the statistical analysis of the results was clear, I could not find any merits for publishing it. The paper considered just repetition of what is published before in this topic especially there is one study also published from Qatar. No new conclusions added to that is already known
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REVIEWER	Silvia Pastorino University College London (UCL), United Kingdom
REVIEW RETURNED	21-May-2019

GENERAL COMMENTS	4. There is little explanation on how exposures, outcomes and confounders were measured in the population and at which stage. The procedure used to calculation of population attributable fraction (PAF) is not explained in details enough to be reproducible. A calculation should be provided 6. Please define: 1) how GDM was diagnosed (if available); 2) the cut offs used to diagnose macrosomia; 3) the reference used to calculate LGA and SGA 7. As mentioned above, PAF calculations should be explained in full 12. The authors could elaborate on the limitation of using a retrospective dataset, using OR to calculate PAF, the number of missing values
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VERSION 1 – AUTHOR RESPONSE

We thank the reviewers for their time and valuable comments that have helped us to improve our manuscript. We provide below responses to all reviewers' comments:

Reviewer 1:

1. It is not surprising that overweight and obesity was associated with adverse maternal and neonatal outcomes, as this has been reported in multiple published papers. Unique to this study was the ability to capture a patient's pre-pregnancy weight (although the duration between weight capture and pregnancy is not fully described).

We thank the reviewer for this comment. The manuscript has been updated to indicate that the pre-pregnancy BMI was captured using the last visit to the Primary Care Health Centers prior to the first Ante-natal care (ANC) visit. If the duration between the first ANC visit and the last Primary Care visit was greater than 12 weeks, the Pre-pregnancy BMI was treated as missing.

2. Despite the ministry of Health of Qatar's definition of low risk, women who are overweight, especially those with a BMI equal to or greater than 35 are known to be at high risk. Even being nulliparous raises the risk of preeclampsia above the average inclusive of all pregnant patients.

The state of Qatar use a cutoff of 40 for high risk BMI, the manuscript has now been modified to reflect this. Although the BMI obese Class II (BMI ≥ 35) and higher were excluded from our study, the

cutoff was incorrectly shown as that for Obese Class III (BMI ≥ 40). The typo mistake is has now been fixed in the methods sections of the manuscript.

3. The rate reported of both morbid obesity and gestational diabetes as well as macrosomia are all very high as compared to data from other published trials.

We agree with the reviewer, the rates are very high for the study population due to the overall general population level prevalence of obesity in Qatar and the risks associated with that.

4. This population of overweight and obese women is at especially high risk for post-partum complications, especially sepsis and hypertensive disorders, but follow-up care of the women presented has not been described.

The follow-up care was outside the scope of this study since the data access and IRB approval was limited to the birth event (Birth Register). The follow up care for the mother and child fall initially under the tertiary care setting which may then refer back to the Primary Care facilities. However, the limitations of data access did not allow us to follow up that far.

5. Nonetheless, there is a paucity of published data and outcomes among Arabic women with elevated BMI. Thus if the editorial concerns could be addressed, this paper warrants publication.

We thank the reviewer for their valuable time, comments, and support. The manuscript has been updated and unclear points have been hashed out in detail.

Reviewer 2:

1. Although the paper is well written and the statistical analysis of the results was clear, I could not find any merits for publishing it. The paper considered just repetition of what is published before in this topic especially there is one study also published from Qatar. No new conclusions added to that is already known.

We thank the reviewer for their time and comments. This paper reports on a study that is uniquely different from the earlier reported works in the following aspects:

1. This study focuses on patients who were being managed nationwide in Qatar in a Primary Care Setting (considered low risk) up to the point of delivery. The earlier study in Qatar focused on a single tertiary care hospital without any risk distinction.

2. Obese women in the published study included all women who had a BMI of > 29 where as in our study we do not include obese Class II or higher and consider obese as only those with BMI up to 35 maintaining our focus on women who are not currently considered at risk. Therefore our findings are not similar to what have already been published.

3. We applied WHO recommended BMI cutoffs for Asian women, which has not been done before in Qatar or in studies elsewhere since most studies report on homogenous populations.

4. This study compares the risks for Arab and Non-Arab women in a multi-ethnic society which has not been done before in Qatar or elsewhere.

5. This study reports on the PAFs which has not been done before in any multiethnic populations in Qatar or elsewhere.

The above five points are presented for your kind consideration. The statistical analysis in the earlier study was limited and focused on a different population. The uniqueness of the study population we

analyzed and the use of different statistical techniques, methods allowed us to make assertions that are new and have not been reported in a similar setting.

Reviewer 3:

1. The procedure used to calculation of population attributable fraction (PAF) is not explained in details enough to be reproducible. A calculation should be provided

As has been mentioned in the Statistical Analysis section of the paper, the PAF were computed using a user-written procedure (punaf) in the stata software package. The details of the procedure which has been widely cited and used can be found in:

Newson RB. Attributable and unattributable risks and fractions and other scenario comparisons. *Stata J* 2013;13(4):672-98

2. Please define: 1) how GDM was diagnosed (if available);

Since this is a retrospective study, doctors' notes and medical records of the patients were used to identify if a diagnosis of GDM had been made. Actual procedures were not available

3. the cut offs used to diagnose macrosomia; 3) the reference used to calculate LGA and SGA

The manuscript has been updated to indicate that the cutoffs used for macrosomia, LGA, and SGA. The calculator available from the WHO website was based on algorithms published by Mikolajczyk et. al. This work has now been cited in the manuscript (References number 16 and 17).

16. WHO. Weight Percentiles Calculator: World Health Organization; 2017 [Available from: https://www.who.int/reproductivehealth/topics/best_practices/weight_percentiles_calculator.xls 2017.

17. Mikolajczyk RT, Zhang J, Betran AP, et al. A global reference for fetal-weight and birthweight percentiles. *Lancet* 2011;377(9780):1855-61. doi: 10.1016/s0140-6736(11)60364-4 [published Online First: 2011/05/31]

4. As mentioned above, PAF calculations should be explained in full 12.

Thanks, as we mentioned above details of the calculations for PAF can be found in:

Newson RB. Attributable and unattributable risks and fractions and other scenario comparisons. *Stata J* 2013;13(4):672-98

5. The authors could elaborate on the limitation of using a retrospective dataset, using OR to calculate PAF, the number of missing values

We thank the reviewer for the detailed observations and comments. A paragraph has been added to the discussion section addressing the limitation of the study.