Reviewer's report

Title: The Impact of Prenatal Care and Ethnicity on the Incidence of Preterm Birth in New Mexico

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Reviewer: Jason L Salemi

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Title: The Impact of Prenatal Care and Ethnicity on the Incidence of Preterm Birth in New Mexico
Authors: Kara M. Gwin et. al.

Major Compulsory Revisions:

- In general, the stated focus of this manuscript, “…to elucidate the maternal risk factors that contribute to PTB…” does not match the title, which focuses more intently on adequacy of prenatal care and maternal ethnicity. There has been a considerable amount of research done into risk factors for prenatal care and this study, as written, appears as an exploratory analysis, which then evolved into a title which implies a focus on specific factors, but only because those factors had a statistically significant association with risk of PTB in the analysis. The Background, Methods, Results, and Discussion all point towards this global investigation of risk factors, and without a stated focus on any factors in particular, the study does not add a great deal in substance. The paper would benefit from a considerable re-working; I offer comments below.

- Background: The background is extremely long, is heavily undercited, and lacks measures of association that offer a quantitative (as well as qualitative) assessment of the literature. For example, the authors state that “most research in the US has focused on the higher risk of PTB among black women as opposed to white women” and “there have been many studies that have shown that maternal age of less than 18 years increases the risk of PTB before…” and “Many studies have shown an association between socioeconomic status and the risk of either LBW or PTB.” None of these claims are supported or cited, and they should be backed by multiple citations. Although these are just a few examples, this is an issue throughout the introduction. I would advise that the authors review and offer a more substantive intro with appropriate citations. The background is also too long, in my opinion. There is an entire discussion of the causes of PTB; however, the reader seems to be thrown out facts without a real sense of carrying the reader forward to the purpose of the current study. Why are adequacy of PNC and ethnicity in the title? Were those the factors the authors were primarily interested in? If so, then a re-working with emphasis on these factors would benefit the paper considerably. Lastly, there are few numbers
offering a quantitative assessment of the literature. For example, “New Mexico is a Southwestern US border state with a premature birth rate that exceeds the national average”. In this case it would help the reader to express what those PTB rates are since “exceed” could mean many things.

- Methods: In general, the methods section is adequate; however, there are a few major issues that need to be clarified. First, this section states that the study is a retrospective cohort, whereas the abstract calls it a cross-sectional study design. The design of the study should be consistently expressed throughout. Second, although the study is restricted to singletons, the lengthy time frame for the study (15 years) makes it certain that the same mother may have several offspring in the dataset. The authors do not mention any steps that would limit the analysis to one record per unique woman. Did the analysis take into account the inherent clustering of the data, or was there reason to suspect this was not needed? Often, studies in which multiple outcomes for a given mother may be included in an analysis, a technique which accounts for the clustering (e.g. Generalized Estimating Equations) is used as opposed to multivariable logistic regression. Regardless of the modeling strategy performed, a description of how the adjusted model was built is certainly in order, especially considering the current tone of the paper, which is exploratory in nature. For example, was forward, backward, stepwise, or some other selection method used? Also, although Figure 2 and the supplementary table(s) allude to effect modification (by implying the joint effect of two factors [adequacy of PNC and pregnancy risk] on the risk of PTB. Since the title of the article implies a focus on adequacy of PNC, was an interaction term or some other statistical method used to assess effect modification? Lastly, did you consider alternative ways of determining/categorizing adequacy of prenatal care, such as the G-Index (Greg Alexander). Since this appears to be a focus of your study, I wonder if alternative classifications would have made a difference in the findings.

- Results: The results section seems to have haphazard/sporadic use of ORs and 95% CI intervals. There are sections that qualitatively describe associations found and the actual measure of association with a confidence interval would support this section better. Second, what method was used to detect for the trend referenced? Was it for a linear trend, nonlinear, etc? Third, why was a stratified analysis performed only for adequacy of prenatal care (stratified by pregnancy risk)? Why were stratified analyses NOT done for other variables? This need to be explained in the methods section. Did the adjusted model have an interaction term in it, or were separate analyses performed for high and low risk pregnancies?

- Discussion: Similar to the introduction, the discussion section needs to focus on important findings and do a better job of citing to back claims. It tries to cover all of the factors under study and does not provide a meaningful coverage of the literature and does not carry the reader forward to potential hypotheses or next steps.

- Figures/Tables: I would suggest either a table that provides a breakdown (frequencies and percentages) of demographic and perinatal characteristics by
Minor Essential Revisions:

- Figures/Tables: In general, titles of figures and tables should be able to “stand alone” in that they should be descriptive enough for a reader to understand even if not supplemented by the paper. For example, Figure 1 could be renamed to “Rate of Preterm Birth Among Singleton Deliveries in New Mexico, 1991-2005”. Table 1 should be something like, “Unadjusted and adjusted odds ratios and 95% confidence intervals from logistic regression analysis for risk of preterm birth by important demographic and perinatal characteristics, New Mexico, 1991–2005”

- There is overuse of the phrase “not surprisingly” and “elucidated”. Please consider removing the former and finding synonyms for the latter.

- The last sentence of the Background states that aim of the paper and includes “…and to discuss the wider implications of these findings with respect to PTB internationally”. I’m not certain this can truly be done considering this study; however, since it is stated here, it should be adequately covered in the Discussion section and currently it is not.

- Methods, 2nd paragraph: in the definition of PTB, what about a 22 week, zero day old baby? Is that included or excluded. That is, did you mean to say “…of less than 37 weeks zero days but greater than or equal to 22 weeks zero days”?

- Methods, 2nd paragraph: Please clarify what you mean by gestational age based on LMP being “inconsistent”. Please provide the specific case in which the clinical estimate was used and what you mean by “adjusted in the dataset”. I assume you just replace the age based on LMP to the age based on clinical estimate, but this is not clear.

- Methods: The paper would benefit from a clearer understanding of how many and what percentage of records were excluded for congenital anomaly outcomes and for multiple gestation.

- Methods: The table with maternal conditions considered high risk should be transformed into prose and inserted in the Methods section. A table is not needed.

- Discussion, 2nd paragraph: suggest changing “Women with missing…” to “Women with no…”. Missing means missing data to some and I believe you
mean to imply those with NO reported prenatal care.

- Discussion, 2nd paragraph: You interpret the finding, among high risk pregnancies, that intensive care decreases the risk for PTB. However, you do not discuss the finding that the exact opposite happens among normal-risk pregnancies. What does this mean to the authors?

- In the discussion, ORs are included by saying, for example, “…to an odds ratio of 0.89”. I suggest finding a more eloquent way of expressing the difference in odds of PTB among groups. For example, “Group A was found to have over twice the odds of PTB as group B.”

Discretionary Revisions:

- The word preterm birth and the acronym PTB are used interchangeably throughout. Please define the PTB acronym at first use and use it exclusively thereafter.

- Background, 1st paragraph: suggest removing “the US State of”

- Background, 2nd paragraph: suggest changing “linked to” to “attributed to”

- Background, 2nd paragraph: suggest changing “Premature infants have more” to “Premature infants have a higher prevalence of”

- Background, 4th paragraph: suggest changing “One of the strongest risk factors for is a” to “One of the strongest risk factors for PTB is a”

- Background, 5th paragraph: suggest changing “…and alcohol all confer risk” to “…and alcohol all confer increased risk”

- Background, last paragraph: suggest changing “…worldwide problems that predict for PTB” to “…worldwide problems that increase the risk for PTB”

- Methods, 1st paragraph: suggest changing “…audited by the Department of Health, the State of New Mexico” to “…audited by the New Mexico State Department of Health”

- Methods, 2nd paragraph: suggest removing text from “information collected before 1991…” up to and including the next sentence. This is not needed.

- Methods, 2nd paragraph: suggest removing the sentence beginning “We used maternal education level…”. If anything, this belongs in the discussion when the implications of the findings surrounding maternal education are discussed.

- Methods, 2nd paragraph: the two sentences on how maternal education was categorized should be combined into one. This seems repetitive.

- Methods, 2nd paragraph: suggest changing “…simple dichotomous variables” to “…dichotomous “yes/no” variables”

- Methods, 2nd paragraph: suggest moving the sentence beginning “A limitation
of this study…” to the discussion section.

- Methods, last paragraph: suggest changing “multivariate” to “multivariable”.

- Results, next-to-last paragraph: suggest changing “…regardless of the ethnic group evaluated” to “regardless of ethnicity”.

- Discussion, 2nd paragraph: What does “confirmatory studies” mean? Can the word confirmatory be removed here?

- Discussion, 4th paragraph: Suggest finding another word, other than “nadir”.

- Discussion, 4th paragraph: Please consider changing “…shown a positive correlation…” . This is actually a negative association between maternal age and PTB since PTB risk increases as maternal age decreases. This might confuse the reader. I would simply state, “…has shown an association between young maternal age and PTB”.

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

**Quality of written English:** Acceptable

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**

I declare that I have no competing interests