ARTICLE DETAILS

TITLE (PROVISIONAL)	Social inequalities in low birth weight outcomes in Sri Lanka: evidence from the Demographic and Health Survey 2016
AUTHORS	Abeywickrama, Gayathri; Padmadas, sabu; Hinde, Andrew

VERSION 1 - REVIEW

REVIEWER	Jeff Dennis Texas Tech University Health Sciences Center, USA
REVIEW RETURNED	11-Feb-2020

GENERAL COMMENTS	This study seeks to explore LBW in Sri Lanka relating to a variety of social characteristics. The study appears to be relatively novel in its geographic coverage and is a useful descriptive piece. It finds expected dynamics found globally of lower SES mothers having greater odds of LBW. The Indian Tamil population differs substantially from other groups, and addressing such a disparity would likely take substantial efforts, but this study better illuminates the disparity at hand. Page 8 - The Statistical Analysis section has the same paragraph, more or less twice in the section, with one in present tense and the second in past tense.

REVIEWER	Sarah Seaton University of Leicester
REVIEW RETURNED	18-Feb-2020

GENERAL COMMENTS	Thank you for the opportunity to review this paper, it was interesting to read about research I am familiar with (issues of birthweight) in a context which I am less familiar with (Sri Lanka). I hope my comments will help. ABSTRACT The phrase "maternal depletion" was new to me and I wondered if there was something easier to put in the abstract as there is not the space to explain it like there is in the main body of the paper. INTRODUCTION Paragraph 3 refers to South Asia having 48% of LBW babies, is this across the whole world? Or do you mean that 48% of SA babies are

LBW?

METHODS

SAMPLE

How many mothers were the 8,104 babies born to? Can you distinguish between multiple births (e.g. twins) and multiple pregnancies of the same woman in the time window?

OUTCOME

Why did you exclude multiple births? These are known to be at high risk of LBW and it could have been accounted for in the analysis?

The births are referred to as full-term, but elsewhere (final paragraph) the authors say they don't have info on gestational age. Birthweight is extremely related to gestational age and so this needs a little clarity and probably deserves a little discussion elsewhere.

EXPLANATORY VARIABLES

Is the consumption of folic acid and iron recommended for pregnant women in Sri Lanka?

Is "closely spaced pregnancies" worked out by the authors or is it recorded in the data?

How is the "household wealth index" calculated? Is it divided into equally sized groups by the authors?

Are the "urban, rural or estate" physical locations and if so is there a reference to how these are defined?

STATISTICAL ANALYSIS

How many mothers had multiple children (thus contributing to the hierarchy and need for this additional analysis?)?

The second paragraph is a repeat of the first paragraph.

RESULTS

Throughout, please refer to the table you are discussing. E.g. "The association between LBW and the number of antenatal visits is marginal" - what table is this? I suspect Table 1, but the phrase 'association' made me think Table 2.

CONCENTRATION CURVES

What does it mean when the curve crosses the 45 degree line (e.g. Figure 2b)? Does this mean we are unsure about the direction of the relationship?

REGRESSION ANALYSIS

The authors mention that the models can't be directly compared (I agree) but can they explain why (non-nested?)?

When discussing odds ratios please refer to the baseline group. In

	Table 2 please indicate the baseline group clearly (I am unsure if using 1.00 is clear at the moment).
	In model 3 some variables are removed as they are no longer statistical significant, but do they remain clinically significant?
	DISCUSSION
	I am uneasy with the phrase "poor and destitute" but defer to the authors about the appropriateness of this language.
	Much of the discussion is focused on nutrition which I understand given the clear trend with BMI but I expected a little more discussion about the importance of antenatal care as one of the few factors that could also be impacted on.
	When currency is referred to perhaps provide an American (?) equivalent?
	Consider a seperate heading for the strengths and weakness to add a little structure to the discussion
	Are there many home births in Sri Lanka? If so, what does this mean for the recording of birthweight?
	In the limitations it refers to not having gestational age (see my earlier comment).
	Consider adding a final heading of 'conclusion' to sum up the paper
	AUTHOR CONTRIBUTIONS
	Please explain who did what (i.e. who provided clinical interpretation, who did the analysis?)

VERSION 1 – AUTHOR RESPONSE

Comments from Reviewer 1

C2.   Page 8 - The Statistical Analysis section has the same paragraph, more or less twice in the section, with one in present tense and the second in past tense.

R2.   Thank you for the comment. We have deleted the paragraph to avoid repetition.

Comments from Reviewer 2

C3.   ABSTRACT
The phrase "maternal depletion" was new to me and I wondered if there was something easier to put in the abstract as there is not the space to explain it like there is in the main body of the paper.

R3.   Thank you for the comment. We have replaced the term 'maternal depletion' by maternal biological variables (please see revised version, Page 2, Results section).

C4.   INTRODUCTION

Paragraph 3 refers to South Asia having 48% of LBW babies, is this across the whole world? Or do you mean that 48% of SA babies are LBW?

R4.   Thank you for raising this point. We agree that the sentence is misleading, and apologies for the inconvenience. We have revised the text as "South Asia has the largest share of LBW babies, constituting 48% of all LBW babies globally, with the highest rates…" (please see revision, Page 4, third paragraph, second sentence).

C5.   METHODS
SAMPLE: How many mothers were the 8,104 babies born to? Can you distinguish between multiple births (e.g. twins) and multiple pregnancies of the same woman in the time window?

OUTCOME: Why did you exclude multiple births? These are known to be at high risk of LBW and it could have been accounted for in the analysis?

The births are referred to as full-term, but elsewhere (final paragraph) the authors say they don't have info on gestational age. Birthweight is extremely related to gestational age and so this needs a little clarity and probably deserves a little discussion elsewhere.

R5.   Thank you for the comments. We have made it clear in the revision. The analysis considered 7,072 mothers of reproductive ages (15-49 years) who had at least one birth in the five years preceding the survey: 6,069 had one birth, 1,003 had two births and 29 mothers had three or four children. The total number of births to 7,072 mothers was 8,104. Of these, 7,964 were singleton (98.3%) and 140 (1.7%) were multiple births. For 251 singleton births, either the birth weight data were missing or the reported birth weight was extreme beyond 6,500 grams (0.36%).

For the remaining 7,713 births, the mean birth weight was 2,917 grams (95% CI:[2,906, 2,927]) and the median was 2,920 grams. For 140 multiple births, the mean birth weight was 2,135 grams (95% CI: [2,050, 2,214]) and the median was 2,175 grams. We excluded multiple births in the further analysis, since 81% of multiple births had very low birth weight. We found no statistical difference in the distribution of socioeconomic factors between singleton and multiple births. The adjusted odds ratios were also inflated for multiple births (results not shown separately).

Please see revised version, Page 6, first two paragraphs, highlighted text.

The survey asked mothers to report their gestational age in months. However, we did not use this information since the reported gestational data (in months) could be inaccurate and grossly underestimated. Please see revised version, Page 7, first paragraph, last sentence.

C6.   EXPLANATORY VARIABLES

R6.   Please see the responses below.

Is the consumption of folic acid and iron recommended for pregnant women in Sri Lanka?
Yes. In addition, micronutrients supplementation and Thriposha are recommended by the government and are given free for pregnant and lactation mothers in Sri Lanka. (please see revised version, Page 7, first paragraph)

Is "closely spaced pregnancies" worked out by the authors or is it recorded in the data?
This is based on the literature. For the analysis, we used the variable preceding birth interval, available in the DHS dataset, defined as the number of months elapsed between index birth and the last birth.

How is the "household wealth index" calculated? Is it divided into equally sized groups by the authors?

Household wealth index quintile is a standard composite measure of household ownership of assets, materials and access to basic sanitation. DHS estimates household wealth index using Principal Component Analysis (PCA) separately for urban, rural and sector areas (please see highlighted text, revised version, Page 7, second paragraph)

Are the "urban, rural or estate" physical locations and if so is there a reference to how these are defined?

Urban sector is comprised of areas administered by municipal and urban councils; the estate sector is predominantly concentrated in the tea plantation areas, while the rural sector comprises the areas not captured by the urban and estate sectors. This is clarified in the revision. Please see highlighted text, revised version, Page 7, second paragraph, last sentence.

C7.   STATISTICAL ANALYSIS

How many mothers had multiple children (thus contributing to the hierarchy and need for this additional analysis?)?

The second paragraph is a repeat of the first paragraph.

R7.   Please see responses R5 and R2. We have deleted the paragraph to avoid repetition.

C8.   RESULTS

Throughout, please refer to the table you are discussing. E.g. "The association between LBW and the number of antenatal visits is marginal" - what table is this? I suspect Table 1, but the phrase 'association' made me think Table 2.

R8.   Yes, this is Table 1 as well as further demonstrated in Table 2. We have added additional references to the tables at various points in the discussion.

C9.   CONCENTRATION CURVES

What does it mean when the curve crosses the 45 degree line (e.g. Figure 2b)? Does this mean we are unsure about the direction of the relationship?

R9.   When the concentration curve lies above 45 degree (line of equality), then the outcome is concentrated more among the poor SES individuals. We have made this clear in the revision (please see highlighted text, revised version, page 11 first and second paragraphs).

C10.   REGRESSION ANALYSIS

R10.   Please see the responses below.

The authors mention that the models can't be directly compared (I agree) but can they explain why (non-nested?)?

This is because of the degree of unobserved heterogeneity when interpreting the odds ratios of sequential models. We have added a sentence to make this clear. Please see highlighted text, page 12, last paragraph, second sentence.

When discussing odds ratios please refer to the baseline group. In Table 2 please indicate the baseline group clearly (I am unsure if using 1.00 is clear at the moment).

Thank you, we have revised the table and inserted Ref instead of 1.00. Please see revision, Table 2 and the accompanying text providing interpretation of regression results (highlighted text, pages 11-15).

In model 3 some variables are removed as they are no longer statistical significant, but do they remain clinically significant?
This relates to the iron and folic acid supplementation variable. LBW is more likely in babies born to mothers who have not received and consumed these supplements even though the effect is not statistically significant. We have stated this (see highlighted text, page 14).

C11.   DISCUSSION

R11.   Please see the responses below.

I am uneasy with the phrase "poor and destitute" but defer to the authors about the appropriateness of this language.
We understand the comment. We have deleted "poor and destitute" and replaced the phrase by "marginalised communities". Please see revision, page 17, highlighted text.

Much of the discussion is focused on nutrition which I understand given the clear trend with BMI but I expected a little more discussion about the importance of antenatal care as one of the few factors that could also be impacted on.
Thank you for the comment. We have expanded the discussion highlighting the relevance of antenatal care. Please see highlighted text, revised version, page 18, last paragraph.

When currency is referred to perhaps provide an American (?) equivalent?
This has been changed to American equivalent (please see Page 18, second paragraph, highlighted text)

Consider a seperate heading for the strengths and weakness to add a little structure to the discussion
Thank you. We have added a separate heading as suggested (please see revised version, Page 19)
Are there many home births in Sri Lanka? If so, what does this mean for the recording of birthweight?
Institutional births are universal in Sri Lanka (99%). This is highlighted under strengths and limitation section (revised version, Page 19). Birth weights are usually recorded by health workers (nurses, midwives or physicians) at the time of birth.

In the limitations it refers to not having gestational age (see my earlier comment).
Please see response R5.

Consider adding a final heading of 'conclusion' to sum up the paper
Thank you. We have added a separate heading and section as suggested (please see revised version, Page 19)

C12.   AUTHOR CONTRIBUTIONS
Please explain who did what (i.e. who provided clinical interpretation, who did the analysis?)

R12.   We have added a section on Author Contributions (please see revised version, Page 20)

VERSION 2 – REVIEW

REVIEWER	Sarah E Seaton
	University of Leicester, UK
REVIEW RETURNED	25-Mar-2020

GENERAL COMMENTS	The authors have addressed all the comments I raised in my previous review. Thank you and good luck in your future research!