Reviewer’s report

Title: Perinatal outcomes in a South Asian setting with high rates of low birth weight

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Reviewer: Archana N Shah

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This is an interesting paper which attempts to address the important issues of birthweight and perinatal outcomes. The state of Tamil Nadu in India where the Asian part of the data come from has seen dramatic improvements in maternal and child health during the last two decades. However, I have major concerns about this manuscript:

The authors have correctly listed several limitations for this study. The lack of accurate gestational age data and dependence on menstrual data alone in the Indian setting are worrisome, especially since one of the outcomes is small for gestational age (SGA). Secondly, birthweight may not be recorded in stillbirths and it is not clear how this affects the accuracy of information. Thirdly, I am concerned of the applicability of the Canadian birthweight standards to the Indian population. This has resulted in reporting very high SGA rates by the authors.

There are many other factors which determine the size of the baby at birth, which act through altering the rate of fetal growth and/or gestational age at delivery. As we know, some are physiological, e.g. birth order, sex of the fetus, and some are pathological e.g. pre-eclampsia. It is likely that there are differences over time in these factors. For example, Table (2) shows that the proportion of nulliparity has increased substantially in India. While no information on the trend analysis is available it is possible that the shift in mean parity may influence mean Birthweight. On the other hand, with improving overall living conditions, urbanization and other developments the general maternal health status may have improved, which in turn would also positively influence size at birth. Unfortunately, there is no mention of maternal height, other factors influencing the size of the baby, or for that matter what is the distribution of birthweight in the populations studied. This also influences the birthweight data and related outcomes. Also, twenty years may be too short a period to identify intergenerational changes in birthweight.

Perinatal survival also depends on the quality of care received. It is not clear from the paper what are those factors which may have influenced survival in a rapidly developing area of India. With improving perinatal survival in neonatal care units it is possible that pregnancy is terminated earlier than in the past. It is also not clear if women in this area seek care only at the study site or there are other options in the neighbourhood. Are all cases managed in Kaniyambadi at the study site? Do the women seeking care pay fees for services, and if any have
there been any attempts to overcome financial barriers.

Some of the policy recommendations have not been well thought out.
For example, making recommendations based on findings from a project site which has received intensive inputs over two decades cannot be automatically transferred programme and policy decision in a generalised manner. Without accurate information on the timing and Birthweight specific perinatal mortality rates recommending increase in caesarean sections to improve perinatal survival may not be adequately justified.

If perinatal mortality rates are high in a population which has high antenatal care coverage and high institutional delivery rates, the solution may not be to improve community based care as done in Gadcharoli by Bang A. et.al. but to invest on studying and further improving the quality of care provided.

Lastly, I am surprised that the authors have not referred to Birthweight standards for South Indian babies published from the same institution in India. The authors may also find there are more references to "ethnic variations" in Birthweight, Gestational at delivery and perinatal outcomes, including those from the same institution.

This paper could be substantially improved if the above issues are satisfactorily addressed.

**Level of interest:** An article whose findings are important to those with closely related research interests

**Quality of written English:** Acceptable

**Statistical review:** Yes, but I do not feel adequately qualified to assess the statistics.

**Declaration of competing interests:**

I declare that I have no competing interests.