Reviewer's report

Title: Biological, mental and cognitive outcomes at four years of age of preterm and early term babies of three birth cohorts in Southern Brazil

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Reviewer: Carlos Duran

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Barrios et al present data based on three long running population based birth cohorts from the city of Pelotas in Brazil. This is purely a descriptive study based on these cohorts. The three specific cohort studies are well described and reported in the literature. The details are noted in these, including the formulation of the study and the data collection protocols.

It is of particular note that the authors’ main interest appears to be that of “evaluating the risk of children born with 37 and 38 weeks gestation…” yet they describe much more than this in their study. They also describe the infant mortality of various groups defined by their gestational age.

The data collection methods and data analysis are appropriate and well described. This is partially described in the article, but more specifically described in the individual cohort study presentations. There are clearly some difficulties with the data collection that are mentioned but not specifically described as possible limiting factors in the discussion or conclusions. Regarding potential confounding factors, there is no discussion of breast feeding. This is something that the authors can adjust for, since they do have this data available.

These particular long-term cohort studies continue to yield data, including long term follow up data, and we look forward to ongoing description of these data by the authors. The overall low loss to follow up in the most recent cohort speaks to the focus and dedication of the researchers involved. The conclusion regarding the higher mortality of children born at 37 weeks gestation, compared to those born at 39-41 weeks gestation, re-iterates the findings noted in studies from Europe and USA. What is particularly interesting in this study is that these three cohorts are still being followed, and we anticipate additional information in this regard. This clearly shows that the problems associated with deliveries at 37 weeks gestation are not only noted in the industrialized countries, but also noted in a “middle income country” as the authors describe it. This is very helpful to Public Health as it clearly helps to determine the types of activities needed to help decrease mortality rates in the 37 week “term” infant.

There is a significant loss to follow up in the first cohort study, double that of the 2004 cohort, yet there is no analysis of the possible effects this may have on the overall data. Is this loss associated with a certain group of patients, or does it reflect the broad group?
At the same time, the authors clearly state that morbidity data as well as cognitive assessments are only available for the 2004 cohort study; yet, the title of their manuscript implies that “mental and cognitive outcomes” will be presented for all birth cohorts. The same can be said of the presented objective and methods noted in the abstract.

As already mentioned, their main purpose also appears to be different than what is reflected by their title and what is the focus of their conclusion. It seems that this manuscript could be better represented either as “Biological, mental and cognitive outcomes at four years of age of preterm and early term babies of” the 2004 birth cohort in Pelotas, Southern Brazil, or as a study of Neonatal and Infant mortality of the three described birth cohorts in Pelotas, or some other title to accurately represent the study.

Clearly the data is robust as presented, and can stand on its own, however the authors do not clearly state in their discussion and conclusions the limitation of having different data available only for certain cohorts, and appear to discuss the data as if it was available for all the cohorts. At the same time, although they mention that there has been a significant increase in prematurity over the three cohort periods, and how this could possibly be attributed to the increase in cesarean births; there is no specific note of the improvement in overall neonatal mortality in Pelotas. It is clear that the infant mortality in Pelotas has decreased by almost 50% from 1982 to 2004. At the same time, the cesarean section rate has increased from 28% to 45%. It would be fascinating to see how, or if these factors have affected mortality in the late preterm and the 37 week gestation infant.

In summary, this study presents clear detailed data of their cohort children, but the title needs to be changed to more accurately reflect the plan as well as data presented in this study by the authors involved in this long term study.

1- Major Compulsory Revision: I believe the title needs to be changed to more appropriately describe the purpose as well as data presented in the manuscript, and then the discussion and conclusions can be adjusted and would more accurately reflect the title.

2- Minor essential revisions: It would be of significant interest to have breast feeding adjustment when assessing both morbidity and mortality in the various outcomes by gestational age.

**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 interest.