Reviewer’s report

Title: Neighbourhood deprivation and very preterm birth in an English and French cohort

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Reviewer: Catherine ARNAUD

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This paper aims to discuss firstly whether the risk of very preterm birth and secondly whether the maternal medical context of prematurity and short term health outcomes (including mortality) in very preterm infants varied according to socioeconomic characteristics (measured by four ecological indices) of the populations in two European regions.

The paper could also have benefitted from a better presentation in methods and results sections.

Major Compulsory Revisions

1. This aim is not clearly reported in the summary. The second part of the sentence is even false as the authors did not currently explore whether risks (which risks?) vary according to maternal and infant factors.

2. Regarding the methods the main point concerns the way the census data are presented. In both regions the census provided information about the socioeconomic characteristics in the very preterm population (MOSAIC study) and the general population (to be able to calculate the risk of very preterm birth by quartile of ecological indices of deprivation) and served as a “control” or “general population” group to calculate the risk of preterm birth. Those aims are mixed in the presentation and this does not help the reader in the comprehension of the paper. I would suggest to first present the Mosaic study in terms of population (inclusion criteria and recruitment), variables collected (pregnancy and infant outcomes) and acquisition of socioeconomic information; and then the need of a “control” group to be able to estimate the risk of very preterm birth in both regions. The latter point could eventually be put in the analysis section.

3. The rationale to adjust for gestational age, birth weight and gender where looking at the associations between neighborhood socioeconomic indices and maternal characteristics is not clear (table 3).

4. Finally, I would like to go back to the problematic opposite association found in the two regions between socioeconomic characteristics and hypertensive complications during pregnancy. Despite the arguments put forward in the discussion to try and explain the results the trend in the Trent region and the difference between the 4th quartile (most deprived) and the other 3 quartiles in the French region are too obvious to be convinced by the explanations. Were the results consistent when the other three socioeconomic indicators were utilized?
Minor Essential Revisions

1. In the methods section, the subheadings should more precisely inform the content of the paragraphs (at present there are only two subheadings: population and statistical analysis).

2. It is not clearly stated whether the census data are available according to multiplicity.

3. It is also not clear what the “census tract-level information” means.

4. In the results section, pregnancy complications did not all differ between regions as stated (first paragraph of the results and table 1).

5. In the second paragraph of the results, the second sentence refers only to singletons but it is not stated.

6. The figures reported in the text compared to the tables are not consistent, odds ratios ranging from 1.5 (and not 2.1) to 2.5 (if the table is OK).

7. The title of table 3 must indicate that the results concern singletons only.

8. The way pregnancy complications are reported differs according the tables. For example “antepartum haemorrhage without hypertension” (table 3) and “haemorrhage during pregnancy” (appendix 1); “breast milk at discharge” versus “any human milk at discharge”. A harmonization is compulsory.

9. Long term hospital stay is not reported in Appendix 1.

10. In the summary, the reporting of one result is false (OR between 1.5 and 2.5 in the least deprived versus the most deprived and not the other way round).

11. In the summary, the OR associated with breastfeeding should be reported with confidence intervals.

Discretionary Revisions

1. The table in appendix 1 is informative and should be included in the paper all the more one result was chosen to be reported in the summary.

2. A minor comment is to explicitly say that the words “deprivation quartiles” are considered as a general term to refer to the four neighborhood characteristics.

3. Information about Box 1 could be transferred to the methods.

Level of interest: An article of importance in its field

Quality of written English: Acceptable

Statistical review: Yes, and I have assessed the statistics in my report.

Declaration of competing interests:

I declare that I have no competing interests