Reviewer's report

Title: The disparities in prevalence of neural tube defects and its subtypes at any gestational age in 2006-2008 of China: a study on the hospital-based birth defects surveillance system

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Reviewer: Babak Khoshnood

Reviewer's report:

This article provides an update and additional information on the prevalence of neural tube defects (NTD) in China. It can make a useful contribution to the literature on the subject in that the authors have included all NTD cases, in particular by including those that were Terminations of Pregnancy for Fetal Anomaly (TOPFA) prior to 28 weeks of gestation. Below, I have made comments and suggestions that I hope the authors will find useful in revising their manuscript.

It would be helpful if the authors used the usual term in the field of congenital anomalies, total prevalence, when referring to their data on prevalence of NTD. For example, the title “...prevalence of neural tube defects and its subtypes at any gestational age” is a bit cryptic, at least on first reading. The authors could use the term total prevalence or even simply prevalence in the title and then explain in the text that in this paper they provide data on total prevalence of NTD in that they include all cases and not just those after 28 weeks of gestation, as previously reported.

It would also be clearer to speak of live births, still births and TOPFA instead of “…malformation that are born or induced” (cf. second paragraph in the Methods section).

In the Introduction, the authors note that “the monitoring subjects of most birth defects surveillance system in the world does not include cases less than 20 weeks”. However, the EUROCAT network of European Registries of Congenital Anomalies provides data on prevalence of NTD including TOPFA regardless of gestational age (see Greenlees et al, Birth Defects Research 2011 and the EUROCAT website: http://www.eurocat-network.eu/). Total prevalence of NTD is also one of the public health indicators for congenital anomalies proposed by EUROCAT (Khoshnood et al, Birth Defects Research 2011).

I think the study / paper would benefit from a simpler statistical analysis. It seems to be that this is a case of “more is less”. The authors tested several two-way interactions between maternal age, rural/urban, south/north, and time which complicates both the analysis and presentation of results; especially since given the large sample size, it is not hard to find significant interactions.

At times, it also seems that the way they presented the results was not quite right
– for example presenting the intercept (beta0) as the “basic risk of NTDs” is not quite right – the intercept in fact represents (can be used to calculate) the prevalence rate for the reference group. The authors also seem to report “main effects” in the presence of significant interactions, which is not standard practice.

In any case, I am not really sure that the interactions add much to the paper. They are indeed statistically significant but I don’t really think that from a public health point of view, they are very helpful for informing policy interventions. Perhaps the only one worth keeping is the rural-region one, in order to underscore the particularly high prevalence of NTD in the rural North region.

Table 2 is hard to read and needs to be revised (to be honest it actually reads more like an output file from a statistical software package than a table for readers of a journal). There is no need to give both the coefficients (betas) and their exponentiated values (exp (b)). The former can be omitted and the latter presented as prevalence rate ratios (PRR) in the table. The chi-square values are also not really needed. Instead, a confidence interval for the PRR would be more helpful. The list of variables can also be made more explicit (e.g., year instead of “t” or region instead of “Rg”).

The manuscript needs quite a bit of editing to clarify certain statements and correct typographical or other errors. A few examples of statements that need to be re-phrased or otherwise revised are:

Abstract
“The association between PR of different subtypes and maternal age was different after removing the impact of region and rural-urban”.

Introduction
“… and nutritional factors have been found to develop the measures for the prevention of NTDs.”
“It seems to be that it does not be the most serious problem.”
“The study will show the prevalence of NTDs at any gestational weeks by removing the impact of prenatal diagnosis…”

Methods
“..the monitoring subjects of most birth defects surveillance system in the world does not include cases less than 20 weeks”

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

Quality of written English: Not suitable for publication unless extensively edited

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

Declaration of competing interests:
I declare I have no competing interests.