Reviewer’s report

Title: Screening high-risk clusters for developing birth defects in mothers in Shanxi Province, China: application of latent class cluster analysis

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Reviewer: Colin Pritchard

Reviewer's report:

This is a very interesting paper but with the complexity of the topic- multiple clusters related birth defects as the authors acknowledge there are inevitable limitations.

It is well written, well argued but again raises other questions for example, might there have been different factors to consider in the cluster than they choice also the vitally important aspect of pollution which was never defined- also as the area was one of heavy coal mining, were there opportunities to consider a `control' area? Over-all I think it is a son d study, that would add to the literature, though the statistical argument stretched my competence to judge but for all the finding I wanted to ask other questions- nonetheless this remains a very interesting and useful paper.

Paradoxically because of the complexity, it might have been simpler to `follow the finding' i.e. the three big cluster related to `givens' i.e. maternal health, genetic background and maternal age-added onto by

The `environmental' factors - life style and then occupation. The high-risk group with 14% defect is notable and would merit in-depth follow-up if feasible- there were a number of `surprises' for a Western reader, maternal age at 28.3 but not the low education and income- no difference between rural and urban was surprising as China has a markedly different pattern of suicides fro most other countries (Pritchard 1994, Soc Psychiatry) in part because of the high accessibility to agricultural chemicals, but the biggest weakness, which hopefully can be resolved - can the authors explain more about what went into their definitions of maternal hazard, including occupation and possible geographic environmental pollution.

Finally, and the authors readily admit this, the births that did not go to term, might well have told us more about both the maternal and `environmental factors and how they interacted.
Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

Yes

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

Yes

Are the conclusions drawn adequately supported by the data shown?
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Yes

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