Reviewer's report

Title: Differential misclassification of confounders in comparative evaluation of hospital care quality: caesarean sections in Italy.

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Reviewer: Rossella Miglio

Reviewer's report:

The paper describes an interesting analysis that investigate misclassification of confounders in a comparative evaluation of hospital care with a focus on the appropriateness of Cesarian Sections in Italy. The paper is well organized, the method is applied correctly, and the results are presented appropriately.

Minor essential revision

The following are some comments that I hope may help improve presentation of the study:

Methods

The authors propose a two step procedure to select potential risk factors for CS deliveries. In the second step they adopt a modified Poisson regression model for prospective studies with binary data while for estimating the adjusted, hospital-specific, proportion of CS deliveries they use a multivariate logistic regression. I think that it could be useful to help the reader to understand this different model choice.

In the statistical analysis section the authors should explain more clearly that the Jenks natural breaks optimization it is used to choose the classes adopted for the geographical maps.

Results

The authors report in Table 1 the predictive model obtained using the standard definition of malposition and malpresentation of the fetus. It could be interesting for the reader to see also the results obtained with the other model that adopt a modified definition of this confounding variable in order to evaluate differences.

Figure 3 reports prevalence of HFH for individual Italian Local Health Units in 2010. Is it possible to report the same data with respect, for example, to another year like 2005? This is very helpful to the reader to see in more detail the change that have occurred in the coding of HFH globally. As an alternative it is of interest to report the change over time not only for one hospital but for all the 27 facilities with a HFH prevalence greater than the 95th percentile.

Moreover the two risk-adjustment models comparison is restricted to 27 maternity with HFH prevalence greater than the 95th percentile. It could be
interesting to see the same results for a subgroup of facilities that behaved in
virtuous manner. This could help to see the effects of a differencial misclassified
cofounder also in another situation. I expect that no difference should be
reported but it is interesting to see if unpredictable consequences with respect to
the magnitude and direction of bias in the adjusted estimate occur.

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