Reviewer’s report

Title: Determinants of cesarean delivery: a classification tree analysis.

Version: 1 Date: 28 March 2014

Reviewer: Maria Regina Torloni

Reviewer’s report:

Introduction:
1. I suggest that you modify this sentence: “...which combinations of 73 demographic, clinical and organizational variables best distinguish cesarean deliveries...” with “...which combinations of 73 demographic, clinical and organizational variables best predict which women are at higher risk for cesarean deliveries...” (Minor Essential Revision)

Methods
2. Why didn’t the authors include epidural rates and instrumental delivery rates in their model? These variables could potentially increase CD rates (see Joyce 2002), since women may prefer a CD in setting where epidural analgesia is not available 24h /day, 7 days/week. Similarly, the rates of CD would probably be higher in settings where operative vaginal deliveries (forceps, vacuum) are rare, because of staff lack of training or hospital policy. If these variables were not available in the forms used for this study, then point to this fact as a possible limitation of this study. (Major Compulsory Revision)

3. Line 87-89: clarify the meaning of all the codes mentioned. This could be added as a box or online annex (Discretionary Revision)

4. Line 93: review this statement, there is something missing : “Mothers discharged from hospitals without an operating room (Code? Procedure? Intervention?) and..” annex (Minor Essential Revision)

5. Line 109: exclude the last 3 words “premature rupture of membranes of the amnios,” (Minor Essential Revision)

6. Line 109: Please clarify what “other problems of the amnios” refers to, besides polihydramnios, oligohydramnios and premature rupture of the membranes. (Minor Essential Revision)

7. Line 112: Correct limits of birthweight categories to match those presented on Table 1. (Minor Essential Revision)

8. Lines 115-116: Clarify to which group a delivery at exactly 7 AM or 7 PM would belong. The current sentence states: “time of delivery (between 7 a.m. and 7 p.m. or between 7 p.m. and 7 a.m.)”. (Minor Essential Revision)

9. Line 118-119: Clarify to which group an infant weighing exactly 2500 g would
belong. The current sentence states: “…mean annual number of deliveries categorized as: <500, 501–799, 800–999, 1000–2499, >2500 deliveries per year…” (Minor Essential Revision)

Results,
Suggested modifications to improve Table 1 (all Minor Essential Revision)
10. -Add a first line with the overall rate of CS for the whole population
11. -Add “country” after High income and Low income
12. -Create a new heading (for example “Obstetrical conditions” under which you should group the list of conditions currently under “Comorbidities”, starting with Previous stillbirth/abortion. I suggest that you order the list of conditions under Comorbidities and Obstetrical conditions in ascending order of percentage of CD (last column).
13. -correct the text of Methods so that the categories for Birth weight match those presented on this table.
14. -Present parity as: nulliparas and multiparas (1 or more) with the corresponding CD percentage for each.
15. -Add a line for “Delivery on working days” with % of CD, to compare with current information on non-working days
16. -Add a line for day time deliveries with % of CD, to compare with current information on night-time deliveries.
17.-Figure 1: Emphasize (using bold characters or underlining) the numbers that represent the likelihood of CD in each of the 8 boxes. (ex. Node 1 93.%, Node 2: 22.4%, etc…) (Minor Essential Revision)
18. -Provide a clearer explanation why the 4 variables included in Fig 1 were the ones chosen for this tree (and not the others, such as for instance “Dystocia”). This explanation should be comprehensible for the average reader, without a statistical background. (Minor Essential Revision)
19. -On line 183 (referring to Fig 2, sensitivity analysis), the authors state that they excluded fetal distress and dystocia from the previous model. However, dystocia was not part of the previous model. Please clarify. (Minor Essential Revision)

Discussion
20. -line 198: I suggest that you modify “… best distinguish cesarean deliveries...” to “…best predict which women are at higher risk for cesarean deliveries...” (Minor essential revision).
21. -change “pluriparity” for “multiparity” throughout the manuscript. (Discretionary Revision)

Conclusion
22. The 2nd sentence is too long. Consider breaking it down into 2 smaller
sentences, for the sake of clarity. (Discretionary Revision)

References to include / modify:


**Level of interest:** An article of importance in its field

**Quality of written English:** Acceptable

**Statistical review:** Yes, but I do not feel adequately qualified to assess the statistics.

**Declaration of competing interests:**

I declare that I have no competing interests.