Reviewer's report

Title: Prematurity, asphyxia and congenital malformations underrepresented among hospitalised neonates: an observational study of a tertiary pediatric hospital in Vietnam

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Reviewer: Riccardo Pfister

Reviewer's report:

This work compares severe neonatal conditions (prematurity, asphyxia and selected congenital malformations) that warrant level III neonatal care of a large Vietnamese with a Danish level III hospital. All conditions were very significantly less common in the level III centre in Vietnam.

1. Is the question posed by the authors well defined?
Discretionary Revisions:
The question is fairly good defined by ‘…we investigated the major causes of neonatal mortality, which have relatively well-defined diagnostic criteria…’. It might have been useful to state at a very early stage that only pathologies requiring usually (or in Denmark) a level III facility were considered.

However, the conclusion that this finding ‘indicates a gap between need for and access to specialized care’ is an answer to a question that was not clearly stated. As discussed below (point 5) this answer needs more pondering and would make more sense in form of a hypothesis than a conclusive statement.

2. Are the methods appropriate and well described?
Methods are appropriate and well described.
Discretionary revisions:
a. It is not very clear why the authors mention that ‘The sex ratio at birth … is considered unbalanced…’. This seems an odd statement in the Methods section and makes no point in the rest of the paper.
b. For the subgroup the number of cases could be stated in the Methods rather than in the Results section. The reader would not need to skim forward to search the order of magnitude of this subgroup.

3. Are the data sound?
The data presented are sufficiently large and sound (less than 1% missing). The quality of the data has been thoroughly analysed before comparison.

4. Does the manuscript adhere to the relevant standards for reporting and data deposition?
Yes
Discretionary revisions:

a. Characteristics: Is the birthday considered day 1 or day 0, independently on the daytime of birth?

5. Are the discussion and conclusions well balanced and adequately supported by the data?
Generally the discussion is correctly balanced, but one main point needs consideration in the final conclusion:

Major Compulsory Revisions:

The statement that this finding ‘indicates a gap between need for and access to specialized care’ seems a ‘big jump’ as the present research cannot or did not exclude that specialized, equivalent or appropriate care could have been given in lower level hospitals. An equivalent level of care in a lower level hospital may indeed be likely (although difficult to confirm), as the investigated PH1 has not all (Danish) treatments available either. Asphyxia treatment for instance, without controlled hypothermia, may not differ much between level III and II hospitals in Vietnam. Do level II hospitals ventilate, use surfactant and more? Although these arguments are somewhat discussed in the limitations, this is a major limitation that should also limit the final conclusion.

Discretionary revisions:

A more philosophical consideration concerning the word ‘need’ in the present work may at some stage be mentioned. The work itself bases on the comparison with an occidental reference, but do we know that families in Vietnam have a similar ‘need’ of medical care for their newborn with a severe pathology, diaphragmatic hernia for instance?

Instead of concluding on the large healthcare needs and difficulties to access it, which I blindly believe is the case, I would have preferred a focus on those patients that didn’t need PH1 and limited access for others that may have needed it (154% occupation).

6. Are limitations of the work clearly stated?
Most limitations are adequately dealt of, but two main difficulties of the study should stand out more clearly:

Major Compulsory Revisions:

a) It is unclear whether any of the explored pathologies would have been taken care off adequately in a lower level facility. In developing countries limitations in the regionalisation are often the result of complicated, long and dangerous neonatal transports, making a close by lower-level facility sometimes more appropriate than the higher-level facility (see also point 5).

b) The comparability of the two hospitals are at least to be questioned as the very large differences found may just indicate that they are not comparable in terms of population, regionalisation, transport, distance just to mention some.

As ‘According to current official recommendations, secondary general hospitals
in the provinces should provide specialised neonatal care [37].', it is difficult to argue what stands earlier in the same chapter, that ‘These results indicate a need for better access to specialised care.’. Indeed, this specialised care may already be given in lower-lever hospitals.

Minor Essential Revisions

a) In the Discussion section, for the diagnosis validity it is discussed, that the ICD-10 system ‘…has limitations [15-17].’ It is necessary here to detail more which limitations, as these limitations are very relevant to the paper.

Discretionary revisions:

b) In several sections the term ‘congenital heart disease’ is used, but no clear definition is given.

7. Do the authors clearly acknowledge any work upon which they are building, both published and unpublished?

The references are thorough and largely recent, without exceeding a reasonable number.

Discretionary revisions:

One place I really would have loved to see one or two references is, when in the Background Section it is stated: ‘….have similar incidence across the world.’ Much of the conclusions are indeed based on this statement.

8. Do the title and abstract accurately convey what has been found?

Discretionary revisions:

a) The title appears very long and its style may be improved by shortening without loosing essential content: ‘Prematurity, asphyxia and congenital malformations underrepresented among neonates in a tertiary pediatric hospital in Vietnam’.

b) The abstract accurately conveys the main information, however the conclusion that this finding ‘indicates a gap between need for and access to specialized care’ needs more pondering as discussed above.

c) In the Background of the Abstract ‘….our hospital’ is unclear as two hospitals are discussed.

d) In Results of the Abstract ‘…85% (286) …’ the number in brackets is unclear and probably unnecessary in the abstract.

9. Is the writing acceptable?

The writing is acceptable.

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

Quality of written English: Acceptable
Statistical review: No, the manuscript does not need to be seen by a statistician.

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