Reviewer's report

Title: Utility and feasibility of integrating pulse oximetry into the routine assessment of young infants at first-level clinics in Karachi, Pakistan: a cross-sectional study

Version: 2
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Reviewer: Shamim A Qazi

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Specific Comments – Minor essential revisions

1. In several places the authors have used the term WHO/UNICEF IMNCI. WHO-UNICEF use the term Integrated Management of Childhood Illness (IMCI) and not ‘IMNCI’, which is occasionally used in some country adaptations. It would be good to give an appropriate reference of IMCI in the manuscript. Authors refer to reference 3 and 12 when alluding to IMCI, but these are not appropriate references for IMCI.

2. Authors use interchangeably various terms such as ‘primary care’, ‘primary health care’, ‘first-level clinics’, ‘first-level health facility’, ‘primary health clinic’, or ‘primary care clinics’. It would be better to use one term instead of using so many different terms, because it confuses the reader. In different countries the perception of these terms may be different. I suggest that they should exactly define the facility that was used and then use that specific term throughout the manuscript.

3. Similarly, authors also use interchangeably various terms such as ‘first-level health care providers’, ‘first-level workers’, or ‘first-level personnel (i.e., community health workers)’. It would be better to use one term instead of using so many different terms, because it confuses the reader. In different countries the perception of these workers may be different. First, training of community health workers (CHW) may vary from 5 days up to two years depending upon the country/region. Second, the placement of CHW may vary from a small hamlet, a village to a static health post covering a population of around 5000 – 6000 or a clinic setting described in this study. Third, the education level may vary from illiterate to 6-10 grades of education. Finally, a CHW remuneration may vary from a volunteer with some form of incentive to a fixed salary. I suggest that they should exactly define the type of CHW (training, placement, education, salaried/volunteer etc.) and then use that specific term throughout the manuscript.

4. Procedures: line 134: Do the authors mean LHV here instead of LHW, which may mean a lay health worker of a lady health worker?

5. Procedures: line 139: Specify here the worker who conducted the IMCI assessment. Was it CHW or LHV?

6. Procedures: line 155-157: Is this statement correct? Later authors mention
referring to the physician based in this study clinic (line 164-166).

7. Outcome measures: line 210-215: There is no need to give this explanation as it was neither done, nor was it the primary outcome.

8. Outcome measures: line 215-218: No reference is given for the statement in parenthesis. WHO recommends the use of <90% SpO2 for defining hypoxemia (reference 12). If the clinical assessment is being conducted using WHO-UNICEF IMCI tool the for consistency sake the authors should use <90% cut-off recommended in reference 12. Please also see a statement using this cut-off of <90% SpO2 (reference 18) in discussion (line 337-340). It is suggested that table 4 should be revised accordingly.

9. Results: line 253-256: A difference is alluded to between first and second visits but figure 1 shows only cumulative data.

10. Discussion: line 355-360: This statement based on an anecdotal account is not suitable here and should be removed, particularly in light of the study results.

11. Discussion: line 360-364: IMCI is not generally used by CHWs, who use integrated community case management (iCCM), which currently does not contain management of sick young infants. Are the authors referring to IMCI or iCCM because they used CHWs in this study?

12. Discussion: line 400: What program?

13. Discussion: line 408-413: In light of the above mentioned comment 3, this statement be revised and made more specific to the study setting, which may not be generalizable to most CHWs settings.

14. Discussion: line 413-420: Is it really expected in routine practice in low resource settings that plethysmographic waveforms be evaluated?

15. Discussion: line 420-424: Is this clinically relevant? The text from 413-424 is a rather an academic argument, which is not relevant for this kind of setting.

16. Discussion: line 435-437: This issue is mentioned only as ‘suggested to be’ linked to a reference, whereas it is a reality in most low resource settings. Within this study what was the cost of equipment, maintenance and disposable sensors even though it was done in a research setting? This is a more realistic limitation in this low resource than the two limitations mentioned above in comments 13 and 14.

17. Authors make a point of ‘statistical difference’ between the two study sites (Table 1 and Table 2), and conducted a stratified analysis, but I could not find any discussion about why the two sites were so different? What could be potential reasons?

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