Reviewer's report

Title: Clinical evaluation of error in saturation-readings taken through a skin-protective covering

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Reviewer: amir kugelman

Reviewer's report:

General
This article evaluates the accuracy of pulse oximetry readings taken through a skin protective gauze or micropore adhesive tape in newborns.
The authors suggest that because of limited budget, it is essential and economic to use adult probes in newborns in developing countries.
To avoid injury, they use protective measures and aim to show that the accuracy of the pulse oximeter is not impaired.
The revised study was performed on neonates, and the statistical methods were changed.
In general, this study might be of importance in developing countries, but it needs further substantial revision and clarifications.

Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)
1. Technical limitations: the authors did not use an arterial blood gas as a gold standard, and suggest that they replace an established method with another method. Yet, the reference for the use of an adult probe in a newborn is not clear. I would like to get their comment and references to show that this is an established method.
They did perform this study in neonates. I would suggest that they will give more information on the study population: age, weight, gender, healthy or sick, diagnoses.
2. It is still not clear what and if "means" were chosen for analysis, and why they did not choose to compare measurements simultaneously with same pulse oximeters. Measuring at intervals of 5 minutes, is combining or lamping errors of repeatability, physiological changes that occur in time (especially in sick infants), and the required measurements that compares 2 methods. I think the authors should clarify these issues.
3. It looks from the data that a wider range of oxygen saturation was performed, and I think that the authors should discuss the dependence of accuracy on the range of saturations evaluated. As to the arterial gas as a gold standard, again it would be preferred, as none of the methods used is an established method in newborns.
4. The statistical analysis was changed as suggested.
5. Throughout the manuscript, the authors take for granted that injury will be avoided by using protective covering. I would suggest that they will be careful and use the phrase: "may prevent injury", and if they have data from their experience they should share the information with the readers.

Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)
1. The title has to be changed to "pulse oximetry oxygen saturation" and not just "saturation errors".

2. Abstract: I suggest using oxygen saturation or oxygen pulse oximetry saturation and not just "saturation readings"....

3. Abstract: I suggest to add in methods information on the "study population" – Newborns? how many? Ages, weight and so on...

4. It is not clear that in Ref 1 they used this method: using an adult clip in a newborn.

5. Methods: I would suggest that the authors will give more information on the study population as mentioned above. There are patients with oxygen saturation of 83-85%. What kind of patients are those (diagnoses)? Where they kept steady on this saturation for 10-15 minutes? Were they cardiac patients? Did they get an informed written consent or only verbal, and did they get the approval of the "Helsinki" ethical committee of their center? Regarding measurements: did they use means of 3 measurements on each method? How did they choose a measurement in intervals of 5 minutes? Can one compare readings 10 or 15 minutes apart? Did they check accuracy comparing the pulse to a monitor? When describing first measurement and second measurement, what was the time interval between them? All these issues have to be clarified in the manuscript.

6. Results: the sequence of the figures has to be corrected. The figures have to be consistent methodologically and graphically (showing or not showing standard errors, size of points and so on). There are no p values given where appropriate. I would suggest an analysis for the low range of oxygen saturation.

7. Discussion: I would delete last sentence. I suggest that the authors will establish (like in Ref 5) the use of an adult probe in a newborn by data from published literature. If this will be done it can help in the argument of not using a blood gas as a standard on page 7 second paragraph. In the third paragraph I would use to simplify only US $.

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Discretionary Revisions (which the author can choose to ignore)

What next?: Unable to decide on acceptance or rejection until the authors have responded to the major compulsory revisions

Level of interest: An article of importance in its field

Quality of written English: Needs some language corrections before being published

Statistical review: No

Declaration of competing interests:

No competing interests