Reviewer's report

Title: Feasibility and accuracy of point-of-care pocket-size ultrasonography performed by medical students

Version: 1
Date: 14 April 2014

Reviewer: Somashekar Nimbalkar

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Specific Points:
1. Sentence 2 and 3 are not well supported by recent references.
2. References number 1 and 2 are almost three decades old. They do show that clinical skills are deficient. It is possible that they have improved in the meantime rather than decreased. Inappropriate references.
3. Reference 3 is a comparison of three English speaking countries. It does show that there is a reduction of skills but does not show it over a period of time.
4. Reference number 4 – is not relevant. It describes a comparison of emergency medicine residents and internal medicine residents. Paper is published in 1995 and thus does not provide support to decline in clinical skills with evolution of medicine.
5. Reference number 6 – is not well quoted. It refers to a Lancet article which is a review on autopsies. The reference to 30% missed diagnosis is a cross-reference in the review article and hence is this reference is not correct.
6. Reference number 7 – quotes a misdiagnosis of about 10-12% and the era is from 1960 to 1990. Hence this reference is not contextual as the rates have not changed and the current paper is almost 25 years since this study was conducted.
7. In introduction there are many references used for two statements. 10-18 and 19-25 references are one too many for two lines. They have not been utilized in discussion except for 14 and 10-13, 16 and 18. Here again the references are used for support to a single statement.
8. Study Population:- lack of consent cannot be an exclusion criteria. Minor Compulsory Revision
9. 3 evenings – Scientific documents require that numbers 1-9 be written in words preferably. Mention of hours is sufficient. Evenings or mornings is not moot for this paper. Minor Compulsory Revision
10. Methods - more details on the training process and what assessment methods were used to ensure that their training was of same quality. The study is about medical students achieving the ability to use PSID. Hence more details on the process of selection and the quality of students needs to be given.
11. Results – “They were able to correctly acquire and interpret these
bedside-ultrasound images in 74-88% and 93% of cases, respectively” – missing systems. Minor Compulsory Revision. The characteristics of the students that participated and did not participate needs to be shown as this has the capability of letting the reader know which students are more likely to more use PSID. This would allow the reader to understand the various biases that may be prevalent. It is possible that the 21 students that ultimately used PSID were more techno savvy and the remaining 9 were less so. Since the students had volunteered it may be helpful to know why they volunteered. Major Compulsory Revision

12. Discussion is very poor, almost nonexistent. The last two lines in discussion cannot be derived from the study. The study does not show increasing proficiency with increasing use. Neither does the study make a case for starting PSID use early. What the study shows is that PSID can be used by medical students.

1. Is the question posed by the authors well defined?
There can be a better introduction with lesser references. The introduction can be more crisper which lands smoothly on the hypothesis. The hypothesis is well defined. However the case for action is weak. Major Compulsory Revision

2. Are the methods appropriate and well described?
The methods are more focused on technology rather than the students. This is a research looking at how students can acquire newer competencies. There are no cognitive competences that are defined and what should be the essential skill requirements for students is not stated. Elaborating on this will allow others to replicate this study. Major Compulsory Revision

3. Are the data sound?
Data related to students is lacking entirely. Data related to technology is well shown. Major Compulsory Revision

4. Does the manuscript adhere to the relevant standards for reporting and data deposition?
Data are well reported. The graphs are fair.

5. Are the discussion and conclusions well balanced and adequately supported by the data?
Discussion as written above is poor. The focus is more on the technology in the methods and the results while the focus needs to be on the students and their skill acquisition. For a paper being submitted to a journal focused on medical education these are glaring deficiencies. The conclusions in the last two lines of discussions are not based on the study findings. Major Compulsory Revision

6. Are limitations of the work clearly stated?
These are well stated. However data related to limitations could have been obtained and presented.

7. Do the authors clearly acknowledge any work upon which they are building, both published and unpublished?
No

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

9. Is the writing acceptable?
   Can be improved

Summary: It appears that the study has been conducted rigorously but not much effort has been made in the writing of the manuscript. References have been used up to pad up the introduction. It seems that the references have not been read as they are not in context of the statements of the manuscript. The heart of any manuscript is the discussion section and this is extremely poor.

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

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

**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