Reviewer's report

Title: Effect of a peer-educational intervention on provider knowledge and reported performance in family planning services: a cluster randomized trial

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Reviewer: Mark A Albanese

Reviewer's report:

1. Is the question posed by the authors well defined? Yes
2. Are the methods appropriate and well described? For the most part
3. Are the data sound? They appear to be so.
4. Does the manuscript adhere to the relevant standards for reporting and data deposition? There are some additional data that need to be reported.
5. Are the discussion and conclusions well balanced and adequately supported by the data? Need to add discussion of cultural factors that might have had an impact on the study.
6. Are limitations of the work clearly stated? Yes, well-done
7. Do the authors clearly acknowledge any work upon which they are building, both published and unpublished? Yes
8. Do the title and abstract accurately convey what has been found? Yes
9. Is the writing acceptable? Yes

This is an interesting study of the impact of essentially a train-the-trainer model in which the "incharges" are trained and then they go back to their facility, distribute 8 pages of reading material and lead a 2 hour peer educational session. 74 facilities were randomly assigned to intervention and control groups (37 each). The intervention had in-charges attend a separate one day session where they were instructed in leading peer sessions. The control institutions were left to their own devices. Within one month, the interventions were to be implemented and all institutions were evaluated using a three part survey that evaluated knowledge, intervention skills and self-assessed performance. The assessment was repeated in phase III after 27 months. The in-charges were assessed in all three phases, while their charges were only assessed at the conclusion of phase II and phase III. The results were surprisingly strong for such a limited educational intervention, with the phase II findings being dramatic, but somewhat diminished at the end of phase III. The following are some issues that need attention.

- Discretionary Revisions (which are recommendations for improvement but which the author can choose to ignore)

1. The topic is guidelines for family planning services. It would seem like this is a minimum competency situation. The instruments were created by eliminating
items that incharges answered correctly at 80% or more. This seems incompatible with a minimum competency situation and probably underestimates the true knowledge level. However, as a means of making the survey less lengthy and focusing on areas for change, it was probably a practical thing to do. Some comment on why this was done would be useful.

2. All the details about how the authors ended up with 19 items in the first section and 22 items in the second section are confusing. It would be better just give a paragraph indicating that out of 26 initial items, 19 remained after removing 7 items that had either >80% correct or….. and of 36 items in part 2, 22 remained after ….

3. Tables 2 and 4 could be put in an appendix to make the presentation simpler and allow those with a more abiding interest to see the details if they so desired.

4. A very interesting feature of the study is that the authors know that some of the intervention facilities did not implement the intervention, so the results are really diluted by the non-implementers. It would be interesting if they could run a separate analysis in which they removed the non-implementers from the analysis.

- Major Compulsory Revisions (which the author must respond to before a decision on publication can be reached)

1. Table 3 is the most critical results presentation. However, it needs to add the sample size and SD with the means reported. This could be done by having a separate line for incharges and all providers rather than both across the top. Also, the reliability (internal consistency) of the sections needs to be reported.

2. It is not clear what the motivation was for incharges or anyone else in the study to participate in the intervention. It is addressed to some degree in the discussion, but it needs to be brought up to the methods.

3. These are pretty remarkable results for such a limited intervention. It could be that there any cultural aspects that might make it more effective than it might be elsewhere. Some discussion of this is needed.

4. In the retrospective power analysis, the use a "design effect for follow-up I=1.74". Please define what is meant by this value in more specific terms. If it is an effect size, meaning the differences in means divided by an estimate of the within group SD, that is a massive effect size to expect. Why would they have expectations for such a large effect size? If it is the actual effect size obtained in the study, this should be reported in table 3 and discussed in the text as a remarkable impact for such a limited intervention.