Author's response to reviews

Title: Using an ACTIVE teaching format versus a standard lecture format for increasing resident interaction during noon conference: a prospective, controlled study

Authors:

Adam P Sawatsky (sawatsky.adam@mayo.edu)
Kathryn Berlacher (berlacherk@upmc.edu)
Rosanne Granieri (granieriir@upmc.edu)

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Author's response to reviews: see over
REVIEWER 1

A. Discretionary Revisions:

Introduction and conceptual framework

The intention of the introduction is to show there is a need for replacing the traditional lecture within a noon conference setting. It would be interesting to learn more about the conceptual framework of this conclusion as no theoretical background is mentioned. A variety of educational frameworks could have been used to justify the assertion that the ACTIVE teaching format leads to more beneficial outcomes. The authors cite a number of papers, yet this point remains unclear.

Authors’ response: Thank you for pointing out that we could have been more explicit in the background about why we chose this model. We used this reviewer’s comment, as well as reviewer 2’s helpful advice on using selecting education interventions to help describe the theoretical basis for the ACTIVE format. Please see page 4, paragraph 3.

B. Major Compulsory Revisions:

Title and Abstract

The title suggests that the authors advocate establishing a teaching format mainly aiming at the stimulation of resident interaction. In the abstract, the focus is placed on the construct “educational outcomes”, which is an unspecific term. The results and the conclusion section clearly indicate, that the focus of the study is placed both on perceived engagement and knowledge achievement. It appears to be that true both variables can influence one other. Yet each variable can also be influenced independently by an intervention. A clearer conceptualization would be helpful.

Authors’ response: We agree and have changed the article’s title to reflect increases in engagement and knowledge achievement. Also, we added the additional paragraph to the background section to help outline the background (page 4, paragraph 3).

Methods

The procedure for investigating the effects of the ACTIVE teaching format – as applied by the authors - is appropriate. The description of the format is clear. Existing literature confirms that such a structured methodological approach contributes positively to learning outcomes. What is quite surprising is that residents seek a change from the traditional lecture, although it seems that traditional lectures are well liked by many medical students, possibly also by residents. It would be interesting to learn more about the didactic preferences of residents.

Authors’ response: We have referenced a published article on residents’ preferences within the noon conference, which outlines the limits of the didactic format and desire for active learning (see page 4, paragraph 2, reference 12).
The scale of the survey remains unclear. There is no description which likert-scale was used to assess “Resident Satisfaction” (probably 1-5?).

Authors’ response: We added the Likert scale description on page 8, paragraph 2.

The description of the participants is misleading. Unfortunately table 2 does not seem to reflect the full number of participants (N = 54 instead of N = 69). The same problem occurs in table 3. The distribution of participants in the sessions relative to the absolute number of participants and residents remains unclear. A more detailed and precise description is necessary.

Authors’ response: I have tried to make this clearer. 80 residents participated overall, 54 in the initial assessment and an additional 26 residents who did not attend any conference. The bottom of table 2 reflects this more clearly, and we made this clearer on page 2, paragraph 3).

Results

Although some of the results reach statistical significance, all in all the difference between the groups is very small. Maybe a more conservative testing would be more appropriate. If the authors would have uses two-sided testing, there would not be any statistical significance. The use of a one-tailed t-test is questionable. Another possible way is to present effect-sizes of the differences.

Authors’ response: You are correct, and we have recalculated the difference using a more conservative two-sided t-test, which does provide a P value of 0.15. We have changed this in the methods section (page 9, paragraph 2) and in the results section (page 10, last paragraph).

Discussion

The Discussion section supports the view that the ACTIVE teaching format presents a suitable alternative to the traditional lecture. The description of the faculty satisfaction is important information, because a new teaching format should be accepted by the teachers. Here it would be interesting to learn more about possible contradictions or negative side-effects which may have occurred during this study.

Authors’ response: Thank you for raising this interesting point. We have added another paragraph to the discussion outlining some of the challenges to using the ACTIVE format. This can be found on the first full paragraph of page 14, and we have included the text below.

“There were a few challenges to implementing this ACTIVE format. Many faculty members raised the concern that this format reduces the amount of information delivered to the learners during the conference. We know from previous studies that the lecture format did improve resident knowledge retention [4-11], and we hypothesized that by decreasing the amount of information and increasing learner participation, we would improve overall knowledge retention. Unfortunately, we did not demonstrate an improvement in retention in the sample that we observed. Many faculty members were also concerned about loss of control over the learning environment when using active learning in a large group setting. We anticipated that by providing specific structure to the active learning, the faculty would maintain a sense of control. Faculty members were comfortable using the ACTIVE format, but still
were concerned because they could not monitor the quality of discussion in each individual small group. Finally, the faculty members volunteered to participate in the study and were willing to teach using a new format. Not all faculty members may be willing to use this format. While the response to the ACTIVE format was positive, implementation within the residency program would require faculty and resident buy-in.”

The authors’ conclusion is not adequately supported by the data. In the beginning the authors argue that the traditional lecture leads to no improvements in knowledge retention. When we look at the data, it can be seen that the control group has an overall achievement score of 69 %. Although this result is smaller in comparison to the ACTIVE group, the difference is not that big, especially when we consider the limitations of the study. Additionally, there is no difference in the perceived knowledge gain of the residents. The results on long-term knowledge retention show that there is no difference between residents who attended the format and residents who did not attend any lectures in the study month. With regard to the evidences presented, the conclusion that the ACTIVE teaching format should be an alternative to the standard lecture is not convincing. It would be better to state that the ACTIVE teaching format was regarded rather as an additional format than an alternative. Nevertheless I entirely agree that the format should be promoted and be subject to further research.

Authors’ response: This is a good point, and we have re-worded the conclusions to reflect this. The final sentence now reads: “The ACTIVE format provides an additional teaching method for fulfilling ACGME requirements for regular didactic sessions.”

REVIEWER 2

Over all an excellent investigation of an active teaching format compared to conventional teaching methods.

A. Major Compulsory Revisions

None.

B. Minor Essential Revisions

The article would improve if the general effect of educational interventions with different formats on knowledge transfer/practice outcome would be mentioned in one paragraph; see e.g.: Dave Davis, MD and Nancy Davis, PhD: Selecting educational interventions for knowledge translation, CMAJ. Feb 9, 2010; 182(2): E89–E93. doi: 10.1503/cmaj.081241

Author’s response: Thank you for pointing out that we could have been more explicit in the background about why we chose this model. We used this reviewer’s comment, as well as reviewer 1’s comment above to help describe the theoretical basis for the ACTIVE format. Please see page 4, paragraph 3.

Could you please describe a bit more precisely the study design:
“To assess initial knowledge achievement, we distributed 5 multiple-choice questions based on topics covered in the conference. These questions were constructed similarly to those in the American Board of Internal Medicine certification exam.

Do you mean 5 questions after every conference (total = 20 questions)?

“To assess long-term knowledge retention, we distributed 20 multiple-choice questions 4-6 weeks after the lecture series. The same 5 questions were given after each of the 4 conferences.”

What do you mean with “the same 5 questions” after “we distributed 20 multiple-choice questions...”?
The same 20 questions?

Authors’ response: We have reworded this to be clearer. The last paragraph of page 8, the last sentence now reads: “To assess long-term knowledge retention, we distributed 20 multiple-choice questions (the same 5 questions distributed at the end of each lecture) 4-6 weeks after the end of the lecture series.”

Long-term Knowledge Retention

Please add a table with the results of the results for the long-term knowledge retention results.

Authors’ response: Because of poor response rates, we are not comparing those who attended the ACTIVE format versus those who attended the usual lecture format, but instead with non-attenders. We did not feel that doing a direct comparison of each lecture made sense in this situation, therefore just looked at overall scores. We didn’t feel that this was enough information to warrant a table. This is something we could add if the reviewers and editors felt was necessary.

Discretionary Revisions

Make the research question may be a bit more explicit:

For example:

Will the ACTIVE teaching format improve ...1st the participant’s knowledge? 2nd the long-term knowledge retention? 3rd the satisfaction of the participants?

Authors’ response: Thank you for this point. We have tried to make this clearer in the final sentence of the background section, which now reads: “In this study, we sought to answer the following question: will the ACTIVE teaching format improve residents’ 1) satisfaction with learning; 2) immediate knowledge achievement; and 3) long-term knowledge retention. Additionally, we wanted to explore the faculty members’ responses to teaching using the ACTIVE format.”