Reviewer’s report

Title: How effective is blended learning in teaching evidence-based medicine? A mixed methods study

Version: 2 Date: 22 September 2014

Reviewer: Ulrich Woermann

Reviewer’s report:

Major Compulsory Revisions

The authors describe a RCT on EBM teaching comparing a didactical more traditional approach consisting of ten 2 hour lectures followed by small group discussions to a blended approach with an online preparation phase (resources provided by the library and lecture videos), a classroom phase and an application phase (mobile learning). Their goal is to compare the effectiveness of these two settings. While the assessment of competency by two validated tools showed no difference, the assessment of self reported behaviors, attitudes and self-efficacy resulted in significant differences. Focus group discussions showed that students clearly preferred the blended approach.

This study underlines well the value of blended learning scenarios. The fact that competency measures showed no difference is probably due to the nature of the assessment tools asking only for cognitive knowledge and not for demonstrating the application of EBM. Another explanation for this observation could be a ceiling effect since only a minority of the students eligible participated in the assessment and supposedly rather good than bad students volunteered to take the test.

The authors contribute the superiority of blended learning to the fact that blended learning better accommodates the different learning styles of students. They do not specify what they mean by learning styles or which type of learning styles they use. The concept of learning styles is not well defined and questioned by different authors (G. Norman, When will learning style go out of style? Adv in Health Sci Educ (2009) 14:1–4). The superiority of blended learning is probably due to a higher level of activity of learners, redundant knowledge presentation and spacing of learning as well as some other factors.

The authors are not very precise in describing the two different teaching approaches. This would be very important in understanding why the differences in self reported behaviors, attitudes, and self-efficacy came about. Especially the factor time spent on learning is not addressed. This factor is essential when comparing two teaching approaches since more time results in more learning (DA Cook, AJ Levinson, S Garside, Time and learning efficiency in Internet-based learning: a systematic review and meta-analysis, Adv in Health Sci Educ (2010) 15:755–770).

Major Compulsory Revisions
None.

Minor Essential Revisions

The authors must describe the two teaching approaches in more detail allowing readers to understand why the differences in behavior, attitudes and self-efficacy could come about.

The authors must include in their discussion the factor time spent on learning. Since they did not measure time spent on learning, they should at least do an estimate. Measuring time spent on learning must also be a recommendation for further research and not only measuring costs which is important too. About costs they should be aware that providing online resources is initially expensive but becomes cheap in continuous use.

Discretionary Revisions

I recommend the authors to give up the learning styles as a quality of blended learning since this concept is not well grounded.

They could also consider to include my thoughts on the lacking difference in competency assessment.

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