Reviewer’s report

Title: Implementation of a large-scale simulation-based cardiovascular clinical examination course for undergraduate medical students – a pilot study

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Reviewer: Torben Wisborg

Reviewer's report:

This manuscript concerns students' reaction to a cardiovascular teaching programme after introduction of mannequins for training auscultation and blood pressure measurement.

The authors deliberately sought after Kirkpatrick level one assessment only (students' reactions to the educational activity). This precludes outcome in form of actual learning. It is hard to believe that students would react negative to a new educational activity, especially when presented by teachers probably enthusiastic about their invention. This indicates a high risk of bias, and should encourage to the use of a strict methodological approach aiming to reduce this confounding.

The background does not sufficiently explain the rationale behind the development of the new educational approach, nor does it describe the previous teaching methods. The aim is well described.

The methods does not describe the educational activity in sufficient detail to allow other to replicate it. In general, the manuscript would improve by adherence to the CONSORT & STROBE extensions (Cheng A et al. Advances in Simulation 2016; 1: 25). That said, being a deliberate intervention, the study ought to have been registered in a trials registry. I found no such registration described in the manuscript. The authors construct a composite result of 6 individual questions, but the exact calculation of this composite is not detailed to allow readers to understand the results.

The results reports an impressive response rate. Free text fields are reported in a numerical fashion, although the calculations are left to the reader to guess.

The discussion is extensive, and contains new information not given previously in the manuscript. This concerns scheduling of the teaching, change of simulators etc.

I have some main concerns about this manuscript:
The methodology is inappropriate. This is an attempt to do a controlled intervention. You would need a comparator, either a historical control or two parallel groups - or even the two years as compared to each other. The intervention must be well described. It is difficult to follow the intervention: Which simulators were used for cardiac auscultation in the first and second year? What was the blood pressure measurement experiment? Any changes here from year 1 to year 2? Equipment used?

Kirkpatrick level 1 improvements are easily achieved, and the value of a such outcome must be substantiated by a meticulous description of the methodology used and the changes implemented. This would enable the reader to assess whether to try implementing the same changes into their curriculum. As the manuscript stands now it does in my view only report that pre-clinical students are happy when being taught clinical skills, and some (unreported) cardiac sound simulators seems to achieve better evaluation than others.

**Are the methods appropriate and well described?**
If not, please specify what is required in your comments to the authors.

No

**Does the work include the necessary controls?**
If not, please specify which controls are required in your comments to the authors.

No

**Are the conclusions drawn adequately supported by the data shown?**
If not, please explain in your comments to the authors.

Unable to assess

**Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?**
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

I am able to assess the statistics

**Quality of written English**
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