Reviewer's report

Title: A randomized trial comparing digital and live lecture formats

Version: 2 Date: 13 October 2004

Reviewer: Peter W Callas

Reviewer's report:

General

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

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Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

My main question was the comparability of the two groups of students. In their response, the authors state that because students were randomized, confounding is not possible. This is incorrect. The quoted statement by Campbell and Stanley ("the most adequate all-purpose assurance of lack of initial biases between groups is randomization") indicates that there will be no selection bias, or systematic difference, in which subjects end up in which group. However, when the sample size is small, potentially confounding differences can and often do occur simply due to chance (not bias), as described by Fletcher, Fletcher, and Wagner (1996, p145):

"However, random allocation does not guarantee that the groups will be similar. Although the process of random allocation is unbiased, the results may not be. Dissimilarities between groups can arise by chance alone, particularly when the number of patients randomized is small. To assess whether this kind of "bad luck" has occurred, authors of randomized controlled trials often present a table comparing the frequency of a variety of characteristics in the treated and control groups, especially those known to be related to the outcome. It is reassuring to see that important characteristics have, in fact, fallen out nearly equally in the groups being compared. If they have not, it is possible to see what the differences are and attempt to control them in the analysis."


If baseline characteristics of the students in the two groups are available, they should be presented in the paper. If they are not available, the fact that baseline comparability of the two groups is unknown should be noted in the discussion as a limitation of the study.

References:


Since two of the three reviewers questioned the importance of the finding of difference in variance, the authors should reconsider including it in the abstract. As I stated in the previous review, the lack of consistency for the finding of greater variance suggests that this finding may be due to something other than lecture format, such as chance or different characteristics of the students in the two groups.

Also, in response to my question about one-tailed versus two-tailed testing, the authors state “the goal of the study was to see if students who viewed the presentations on CD-ROMs could perform as well on the examination as students who viewed the live lectures. We were not specifically interested in if the students viewing the CD-ROMs would perform better than the students who viewed the live lectures…”. For future reference, when designing a study where the aim is to show no difference between groups, the study should be designed as an equivalence trial, in which the usual null and alternative hypotheses are reversed – see Blackwelder, 1982.


What next?: Accept after minor essential revisions

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

Quality of written English: Acceptable

Statistical review: No

Declaration of competing interests:

None