Reviewer’s report

Title: Five years' experience of an annual course on implementation science: an evaluation among course participants

Version: 0 Date: 22 Apr 2017

Reviewer: Amanda Buttery

Reviewer's report:

This paper describes an evaluation of an implementation science course in Sweden.

There is justification for undertaking this study. Greater understanding the structure, processes and outcomes of implementation science training is needed. Gaining greater understanding of student experiences and how their feedback is used to develop educational materials and delivery methods is an interesting area of research. The author's use of the Kirkpatrick model as a framework for this evaluation is useful.

However, there are some issues with the manuscript that would benefit from further consideration. Overall, the paper could be improved by adherence to the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) Statement: guidelines for reporting observational studies. This study uses cross-sectional methods, including an electronic (web-based?) survey and greater attention to methodological description and details are needed.

1. Title and Abstract-

The title could better reflect the paper (please refer to STROBE statement). This is an evaluation of an implementation science course. The title refers to an "annual doctoral-level course". Please review this phrase. Does this mean people undertaking a doctoral degree? From the results, not all people participating in the course were doctoral students?

Including the country where this research was conducted would be useful in this abstract/title. Currently, only the name of the University is reported.

The authors described that two surveys were conducted. However, I'm unsure that "survey 1" should be described in this way. It may be more accurate to describe in the methods that course evaluation forms were distributed at the end of each course?

Response rates should be included in the abstract.

More detail on the number of items and how the "surveys" were developed should be included in the abstract.
2. Introduction-

The authors give examples of a number of universities delivering courses in Implementation Science. A broader and more global perspective on courses for e.g. including examples of course delivered in the southern hemisphere would potentially have greater appeal to a global readership. Similarly, the role of the WHO in implementation science education and other training providers would be a useful addition in this section.

Please give a sense of the population size served by the county council.

The introduction should include greater justification for why the Kirkpatrick model, versus other frameworks, was selected for use in this evaluation.

3. Methods

The authors describe a "longitudinal" evaluation of participants. However, from the methods it seems that survey 2 is a cross-sectional survey of all previous students? Please ensure an accurate description of the methods with appropriate justification. If this study was a pre-planned longitudinal study designed to follow the progress of students over time, then this should be stated more clearly.

Greater description of the questionnaires is needed (for example, How they were developed? Who was involved? How many items were included? Did they change over time or was the same questionnaire used for each student cohort?). Including the evaluation form as an appendix would be useful.

The pedagogical method of Problem-based learning is described (please reference this method). Also, consistent terminology throughout the paper would be useful as later in the paper "active" learning is described with less description.

Please describe the total hours of teaching on the course, the number of teachers, and their expertise/seniority. Please give a sense of the expected amount of self-directed study included in the course (in hours is possible).

Please give greater description of changes in the course content between cohorts and greater description of the "web-based course" in the spring. Is this the same course and is this also conducted annually or is this a different course and different cohort? How did the evaluation differ between these educational methods?
Course credits are described in the methods. Is this a national system of credit points or a European/International standard that will have meaning for the article readers? Please consider removing this detail if it is only related to university credit points in Sweden.

The authors describe that the course changed over time on page 6. Line 36 in the methods with "focusing more on implementation of evidence-based practices in health care settings". Was anything removed from this course? Please describe more detail about these changes, as this will influence the results of the evaluation.

Data collection- Were questionnaires distributed face-to-face or electronically at the final seminar? How were they returned? Who distributed them (someone independent from the teaching faculty?) When first describing the Likert scale it would be worthwhile using more detailed descriptions e.g. 5-point Likert scale.

Pilot testing of the survey- How many former doctoral students were involved? E.g. n=? . Pilot testing with students that were not on the course is a study limitation and should be stated as such. What changes were made following pilot testing?

Was this a web-based survey? Was commercial software used? Please provide further details.

Data analysis

Please describe data handling methods including software programmes. How was missing data handled for all items and in all parts of the study?

Please describe the analysis methods of the qualitative content analysis. How many people were involved in this analysis and how was data handled?

4. Results

Did students not completing/ passing the course participate in this evaluation? If not, why not? This should be stated as a limitation if they were not included.

Please explain the term current work in "healthcare development"? Is this international healthcare development?

Why were categories on the 5-point Likert scale assigned numbers 1-5 and means calculated? Please reconsider these methods for this categorical (ordinal level) data.

The results section repeats information in Tables 3.
Tables

Table 2: "Accepted" - Do you mean "Number of students participating in programme"?

Please consider renaming "survey 1" as per comments above.

Table 3- Please change Table layout to a more usual presentation style for survey data e.g. put response categories of 5 point Likert scale on the left-hand side column of the Table and only present figures in body of Table rather than figures and text.

5. Discussion/Conclusion

The Discussion overstates the findings at times. For e.g. the "undeniably favourable results". Please remove the term undeniably. One explanation for these "favourable results" may be related to the methods used in this evaluation? This needs greater consideration, as does the influence of how data was collected at the end of each course, and the potential influence of bias in survey response due to items, questionnaire layout, distribution methods etc.

Page 13 of the discussion line 5 and the paragraph commencing " the course is aimed at achieving active learning..." and the following paragraph on describing the course repeats previous information in the methods. The third paragraph related to PBL should be placed in the earlier part of the paper related to this topic.

Limitations: Was non-response bias investigated? Did the characteristics of non-responders differ from the study sample? Why were no demographic details on the participants presented e.g. gender, proportion of local versus international students etc? Please remove the term "advanced statistical analysis" from this paper.

Why were independent evaluators not used? Bias and influence over students of the research team/faculty (and how this was minimised in this study) need to be discussed as a limitation of this study. The authors chose a web-based survey to gather feedback. Please discuss the limitations of selecting these methods to gather feedback versus other methods in this section.

Competing Interests

Please revise this statement. The authors should recognise that their role in the development of and teaching this course is a competing interest in this study. Declaring no competing interests is not appropriate. The role of the funders of this evaluation needs greater consideration also as a competing interest.
Level of interest
Please indicate how interesting you found the manuscript:

An article whose findings are important to those with closely related research interests

Quality of written English
Please indicate the quality of language in the manuscript:

Acceptable

Declaration of competing interests
Please complete a declaration of competing interests, considering the following questions:

1. Have you in the past five years received reimbursements, fees, funding, or salary from an organisation that may in any way gain or lose financially from the publication of this manuscript, either now or in the future?

2. Do you hold any stocks or shares in an organisation that may in any way gain or lose financially from the publication of this manuscript, either now or in the future?

3. Do you hold or are you currently applying for any patents relating to the content of the manuscript?

4. Have you received reimbursements, fees, funding, or salary from an organization that holds or has applied for patents relating to the content of the manuscript?

5. Do you have any other financial competing interests?

6. Do you have any non-financial competing interests in relation to this paper?

If you can answer no to all of the above, write 'I declare that I have no competing interests' below. If your reply is yes to any, please give details below.

I declare that I have no competing interests.

I agree to the open peer review policy of the journal. I understand that my name will be included on my report to the authors and, if the manuscript is accepted for publication, my named report including any attachments I upload will be posted on the website along with the authors' responses. I agree for my report to be made available under an Open Access Creative Commons CC-BY license (http://creativecommons.org/licenses/by/4.0/). I understand that any comments which I do not wish to be included in my named report can be included as confidential comments to the editors, which will not be published.

I agree to the open peer review policy of the journal