Author's response to reviews

Title: A systematic review of how studies describe educational interventions for evidence-based practice: Stage 1 of the development of a reporting guideline.

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Author's response to reviews: see over
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To the Editor of BMC Medical Education: Dr Fernando Marques.

Dear Dr Marques,

Thank you for your response and feedback regarding our recently submitted manuscript number 1589729965116186, titled: “A systematic review of what studies report when describing evidence-based practice educational interventions: Stage 1 of the development of a reporting guideline.”

We have addressed the Reviewers’ comments and believe that the content and clarity of the manuscript has been further strengthened.

Please find below the detailed responses to each of the comments provided by the Reviewers. We would be very happy to answer any questions or provide further clarification for any of our responses.

I look forward to hearing from you.

Kind regards,

Anna Phillips, on behalf of the authors.

**Reviewer 1: Hudson Birden.**

**Comment 1:** Authors state (p. 7) that reference lists were screened (ancestry). How about citations (progeny)?

Response: This is an interesting idea. The systematic review protocol was based on the PRISMA guidelines for systematic reviews (Moher et al. 2009) and underwent several iterations and peer review (Sampson et al. 2009) prior to being finalised. PRISMA provides the current best guidelines for the reporting of systematic reviews and is a requirement for the publication of systematic reviews in many peer reviewed journals, including BMC Medical Education. The screening of citations (progeny) is currently not included in the PRISMA reporting guidelines. Therefore, we did not screen citations of included studies in the current review.

In theory, if a search for progeny (citations of the original study included in the review) were undertaken, the search terms used in the original strategy should have identified relevant studies if they were included in the databases.

**Action taken:** An amendment has been made to the discussion (limitations).
This systematic review was undertaken using the PRISMA reporting guideline which includes recommendations for a number of strategies to identify sources of potential eligible articles. The screening of citations of articles included in the review (progeny) is not currently included in the PRISMA reporting guideline, however, in theory, if a review of progeny were included, relevant existing studies (similar topic, within search strategy, within include databases, within timeframe) should have been identified by the original search strategy. Page 14.

**Comment 2:** Was there a review protocol? Was it registered?

**Response:** The PROSPERO database for the prospective registration of systematic reviews currently requires that the reviews include a health related primary outcome (http://www.crd.york.ac.uk/PROSPERO/). As this systematic review focused on the reporting of EBP educational interventions, it was ineligible for registration with PROSPERO. Although we could not register our systematic review, we published the prospective study protocol (http://www.biomedcentral.com/1472-6920/13/9) in BMC Medical Education which included the outline for the systematic review.

**Action taken:** Further information has been added to the methods section.

Now reads: “Protocols for systematic reviews are recommended to be prospectively registered where possible (Moher et al. 2009). However, as this systematic review focussed on the reporting of EBP educational interventions rather than a health related outcome, it was not eligible for prospective registration with databases such as PROSPERO” Page 9.

**Comment 3:** A figure showing publication frequency over time (verbally described on p. 9-10) would be interesting.

**Response:** A figure has been included to illustrate the publication frequency over time on page 10.

**Action taken:** Figure added- see below.

![Figure 2 Publication frequencies for studies included in the systematic review from 1980-2011.](image-url)
Comment 4: State reason(s) why the Spanish studies (p.14) were excluded

Source of funding for this review?

Response: This systematic review was undertaken as part of an unfunded Doctoral program of research. Considerable discussion was undertaken regarding whether to embark upon double translation for the three studies written in Spanish. Following consultation with several specialists in systematic reviews (Dr David Moher, Dr Paul Glasziou and Dr Marilyn Hammick), the decision was made to proceed with the data extraction without these three studies. The potential impact of this decision is presented in the limitations section (pg 14).

Action taken: No amendment undertaken.

Comment 5: I wish the academic librarians had been authors, not merely acknowledgments. The intellectual input of research librarians (those who collaborate with other authors develop search strings and search strategies) to systematic reviews is essential and should be appropriately credited.

Response: The role of the academic librarians in reviewing our proposed search strategy, database selection and key word search criteria was invaluable. As a result of their input several changes were made to the final search strategy for our systematic review. While we agree that their input was essential, the librarians were not involved in the conception and design, data acquisition, analysis and interpretation, drafting the manuscript or revising it critically for important intellectual content. We were not able to include the librarians as authors on this manuscript as they did not meet the requirements for authorship as outlined by BMC Medical Education:

“An 'author' is generally considered to be someone who has made substantive intellectual contributions to a published study. To qualify as an author one should 1) have made substantial contributions to conception and design, or acquisition of data, or analysis and interpretation of data; 2) have been involved in drafting the manuscript or revising it critically for important intellectual content; and 3) have given final approval of the version to be published. Each author should have participated sufficiently in the work to take public responsibility for appropriate portions of the content. Acquisition of funding, collection of data, or general supervision of the research group, alone, does not justify authorship”

Action taken: No amendment undertaken.

Comment 6: See minor suggestions for clarification below; P. 11 2nd sentence under Information items reported with low frequency needs clarification. Change ‘included’ to including’?

Response: This sentence has been reworded to provide greater clarification regarding the information items reported with low frequency. The word ‘included’ has been replaced with ‘including’.
**Action taken:** Previously read: “Five items from the Participants / Instructors domain included previous EBP or research training exposure of the learners (n=30, 49%); adherence or attendance at the intervention (n=24, 39%); profession of the instructors (n=2, 44%); number of instructors involved (n=24, 39%); and previous teaching experience (n=8, 13%).”

Now reads: “Half of the information items were from the Participants / Instructors domain including previous EBP or research training exposure of the learners (n=30, 49%), adherence or attendance at the intervention (n=24, 39%), profession of the instructors (n=2, 44%), number of instructors involved (n=24, 39%) and previous teaching experience (n=8, 13%).” Page 12.

**Comment 7:** p. 15 ‘detailed guidance on the breadth’

**Response:** This sentence has been simplified.

**Action taken:** Previously read: “We believe that authors will benefit from more detailed guidance on the breadth of detail necessary to support replication of interventions to facilitate foundation knowledge and skills in EBP.”

Now reads: “We believe that authors will benefit from guidance regarding the detail necessary to support replication and synthesis of educational interventions for EBP.” Page 16.

**Comment 8:** Conclusion 2nd sentence, ‘provide’ singular (delete ‘s’)

**Response:** The word ‘provides’ has been replaced with ‘provide’ in the conclusion.

**Action taken:** Previously read: “The findings of this review provides a starting point...”

Now reads: “The findings of this review provide a starting point ...”. Page 17
Reviewer 2 Curtis Olson

Comment 1: 1. The study lacks a conceptual framework that would allow the authors and the reader to clearly distinguish between the educational intervention, learner participation, context, outcomes, confounders, etc. Candidates might include Moore, Green and Gallis’ (2009) evaluation framework or any of several logic modeling frameworks (see, for example, http://www.uwex.edu/ces/pdande/evaluation/evallogicmodel.html).

I strongly encourage the authors to incorporate one if at all possible. Admittedly, given that its addition would be post hoc, it may not possible to find one that mirrors the largely tacit model that guided the authors.

Response: We agree that a definitive conceptual framework would be valuable and could assist in the reporting and interpretation of the results of the systematic review. However, this systematic review comprised the first stage in the prospectively planned and published three stage development process for GREET. As such, we were obliged to adhere to the study protocol (submitted for publication in August 2012 and published in Jan 2013; http://www.biomedcentral.com/1472-6920/13/9) with respect to the intended data extraction process for the systematic review.

As Dr Olson predicted, we were not able to find a suitable framework that mirrors our study framework post hoc. However, we have reworded the methods section (pg 9) to enable a clearer distinction to be made between the educational intervention, learner participation, context, outcomes and confounders. Further information has been included to provide a description for the prospective development plan for the systematic review, the rationale for the data extraction items and the domains.

Action taken: Further detailed information has been included in the methods section to clarify the origin of the data extraction items and intent of the data extraction framework.

Previously read: “Data were extracted using a prospectively developed data extraction instrument [20], comprising 25 items across five domains (Participants, Intervention, Content, Evaluation and Confounding)(Table 1).”

Now reads: “A data extraction instrument was prospectively planned, developed and published [15] based on the Cochrane Handbook for Systematic Reviews of Interventions [17]. As outlined in the study protocol for GREET, the 25 data items were extracted across domains including Participants, Intervention, Content, Evaluation and Confounding (Table 2).” Page 9.

Comment 2: Where systematic reviews with or without meta analysis have been undertaken in this area, a common limitation is the lack of detail in the reporting of the educational interventions used for facilitating knowledge and skills of EBP, thereby limiting the ability to compare and interpret findings [5-9].” p5
The views of the authors of systematic reviews on what information about interventions was lacking strikes me as highly relevant and important information given the purpose of this study. In the systematic reviews of effectiveness of educational interventions with which I am familiar, a frequent complaint is lack of detailed information about the instructional design of the intervention (eg, what types of educational strategies were employed--case discussion, audit and feedback, simulations, academic outreach, lecture, group discussion, deliberate practice). If the primary goal is to facilitate these systematic reviews, a more detailed description of the problems identified by those who conduct reviews would help establish the need and rationale for the current study.

Response: We agree with the authors of previous systematic reviews regarding the information about interventions that are important. We have added more detailed information from the findings of the previously mentioned systematic reviews and the findings from two recent systematic reviews (Maggio et al. 2013; Ilic & Maloney 2014) to the manuscript.

Action taken: The background has been reworded to provide a more detailed description of the problems identified by the authors of previous systematic reviews.

Previously read: “Where systematic reviews with or without meta analysis have been undertaken in this area, a common limitation is the lack of detail in the reporting of the educational interventions used for facilitating knowledge and skills of EBP, thereby limiting the ability to compare and interpret findings [5-9].”

Now reads: “Despite the continued investment of time, effort and resources in EBP education, best practice in EBP education remains unclear [3]. Inconsistent and incomplete reporting of information in educational interventions for EBP is common, thereby limiting the ability to compare, interpret and synthesise findings from these studies. Researchers undertaking systematic reviews in EBP education frequently identify the lack of detailed reporting of the educational interventions [2-7] as an issue. In 2003, Coomarasamy, Taylor and Khan (2003) [4] had difficulty determining the type and dose of the intervention due to the poor reporting in the included studies. A decade later, the problem persists, with Maggio et al (2013)[5] and Ilic & Maloney (2014)[3] unable to draw conclusions about the effectiveness of the EBP educational interventions included within their systematic review due to the incomplete descriptions of the interventions. The consistent appeal from authors of systematic reviews is for improved detail in the reporting of educational interventions for EBP. The specific requests from authors of systematic reviews include improvements in the detail for the reporting of the development, implementation and content of the curriculum for the intervention, the employment of more rigorous study designs and methodology, and the use of robust outcome measures [2-7].” Page 5.
Comment 3: “Data were extracted using a prospectively developed data extraction instrument [20], comprising 25 items across five domains (Participants, Intervention, Content, Evaluation and Confounding)(Table 1).” P9

This approach would seem to assume that no important information would lie outside the 25 categories, potentially resulting in an incomplete accounting of what has been included in published reports. I did not see mention of this problem in the methods or the limitations. There is an opportunity for important omissions as a result. For example: implementation fidelity. We know that the intervention as implemented may be rather different than the intervention as planned and that implementation may vary across sites and over time. Were there no studies that addressed fidelity? Another example: program development. What was the process by which the intervention was developed? Was there a needs assessment? A third example: the purpose of the intervention. What were the goals/learning objectives of the intervention? The categories described by the authors do not appear to include information related to these examples but I would be astonished if none of the 61 articles addressed these topics.

Response: We agree that the prospectively developed data extraction instrument is a potential limitation for our systematic review and it is possible that information items may have been missed as a result. This was mentioned in the limitations section for our manuscript on page 15, stating that, “Despite the development and testing of a prospective data extraction process, the allocation of items into pre-determined domains had potential to introduce bias.”

The domains used in our systematic review are similar to the domains used in recently published systematic reviews (Maggio et al. 2013), Ilic & Maloney 2014). Maggio et al. (2013) extracted data across four domains: (1) educational setting, (2) study participants (instructors and learners), (2) EBM skills covered and (4) teaching methods. Ilic & Maloney (2014) extracted data across four domains: (1) demographic information, (2) number and type of participants, (3) methodology (including a description of the intervention, mode of delivery and study setting) and (4) results.

This systematic review was undertaken to complete the first stage in the three stage development process for GREET. The purpose of the systematic review was to determine what had previously been reported in educational interventions for EBP. While a comprehensive search strategy was planned and undertaken, it was not our intent to extract every information item possible for reporting educational interventions for EBP as the systematic review was intended to be used to inform the second stage on the development process, the Delphi survey. The Delphi survey was planned to seek the prospective views of authors regarding what information is important to report (i.e what should be reported). Commencing with an open ended question in the first round, the Delphi survey sought to elicit which information items authors believed were relevant for
reporting for an educational intervention for EBP. The information items proposed by Reviewer 2, including the fidelity of the intervention, the program development and the learning objectives (purpose of the intervention) were volunteered by participants in the first round of the Delphi and subsequently achieved consensus agreement for inclusion in the GREET.

We have updated the limitations to clarify this important point

**Action taken:**
The discussion has updated to reflect that some potentially important information may have been missed.

Previously read: “Despite the development and testing of a prospective data extraction process, the allocation of items into pre-determined domains had potential to introduce bias.”

Now reads: “Despite the development and testing of a prospective data extraction process, the allocation of items into pre-determined domains had the potential to overlook important information items and introduce bias. This systematic review was planned as the first of a three stage development process for GREET. The purpose of the systematic review (stage 1) was to determine what had previously been reported in educational interventions for EBP to inform the second stage of the development process, the Delphi survey. The Delphi survey was planned to seek the prospective views of experts in EBP education and research regarding which information should be reported when describing an intervention to facilitate knowledge and skills in EBP. In order to ensure that the widest possible range of items were considered in the third stage of the reporting guideline development process, it was prospectively planned that all items identified within the systematic review would be included for comment in the Delphi process.”

Pages 15-16.

**Comment 4:** “This rapid growth has necessitated a series of landmark papers each clarifying and recommending foundation principles and a common language for EBP.”

There is a causal relationship implied here that is questionable and, I believe, unnecessary for establishing the case that better descriptions of EBP educ interventions are needed.

**Response:** The introduction has been amended and this paragraph has been reworded

**Action taken:** Previously read: “As EBP has gained global currency as a decision making paradigm, the frequency and number of studies exploring educational strategies for developing knowledge and skills in EBP has increased. This rapid growth has necessitated a series of landmark papers each clarifying and recommending foundation principles and a common language for EBP. A seminal paper by Sackett et al. (1996)[2] “Evidence-based medicine; what it is and what it isn’t” might be considered the earliest of these papers. Following this were the two Sicily statements concerning the steps fundamental in teaching EBP skills [3] and outcome measures to evaluate each step [4]. These papers reflect an
ongoing need to provide a consistent approach to planning, educating and assessing educational strategies for developing skills and knowledge in EBP.”

Now reads: “As EBP has gained global currency as a decision making paradigm, the frequency and number of studies exploring educational strategies for developing knowledge and skills in EBP has increased. A recent systematic review identified over 170 published studies investigating educational interventions aimed at facilitating skills and knowledge of EBP [2].” Page 5.

Comment 5: “Given the number of available studies, it seems reasonable to infer that subsets of studies would share sufficient commonality to permit secondary analysis via systematic review.” P5 This sentence is rather awkwardly phrased and in my view is not needed to make the authors’ point. I would suggest deleting it.

Response: The introduction has been amended.
Action taken: This sentence has been removed from the introduction.

Comment 6: The first stage recommended for the development of reporting guidelines . . .” p6To help set the context for the present study, a brief description of the main stages for developing reporting guidelines would be desirable.

Response: Further information has been added to the background (pg6) to help set the context for the present study.
Action taken:
Previously read: “The first stage recommended for the development of reporting guidelines is to undertake a systematic review of the literature in order to determine which factors or items have been reported by authors on the topic of interest [19].”

Now reads: “Therefore an original project was commenced, based on the recommendations for developers of reporting guidelines for health research [14], to develop the guideline for reporting evidence-based practice educational interventions and teaching (GREET). Comprising three key stages [19], the development process for GREET included a systematic review (stage 1), Delphi survey and consensus discussions (stage 2) and the development and pilot testing for GREET and an accompanying explanatory paper (stage 3).” Page 6

Comment 7: “To date, there are four reporting guidelines listed on the EQUATOR Network website specific to educational interventions, including, reporting guidelines for interventions in team based learning [15], Objective Structured Clinical Examinations (OSCE) [16], cancer pain education [17] and standardised patient research reports [18].” p6
Later, the authors say they assume that a separate guideline is needed for EBP because the guidelines will vary based on the subject matter. These four guidelines provide them with an opportunity to strengthen that part of the rationale for their study. A brief assessment of convergence/divergence among these guidelines would serve that purpose.

Response: Further information regarding the four existing reporting guidelines for educational interventions has been added to the introduction.

Action taken: Previously read: “To date, there are four reporting guidelines listed on the EQUATOR Network website specific to educational interventions, including, reporting guidelines for interventions in team based learning [15], Objective Structured Clinical Examinations (OSCE) [16], cancer pain education [17] and standardised patient research reports.”

Now reads: There are four reporting guidelines currently listed on the EQUATOR Network website which are specific to educational interventions [1-4]. These include educational interventions in Cancer Pain education [2], Team Based Learning [3], Standardised Patients [1] and Objective Structured Clinical Examinations (OSCE) [4]. Other than the inclusion of a narrative literature review, the development processes used for these reporting guidelines differed and no formal consensus processes were reported for any of these reporting guidelines. The end user framework used for these reporting guidelines share some similarities. Howley et al. (2008)[1] and Patricio et al (2009)[4] employ a checklist format, comprised of 18 [4] to 45 [1] items. Haidet et al. (2012) [3] and Stiles et al. (2010)[2] include a series of domains and recommendations for reporting in each domain. The information items included in each of these reporting guidelines are content specific. For example, Patricio et al. (2009)[4] include 31 items related specifically to the set up and design for OSCE’s. Howley et al. (2008)[1] include nine items specific to behavioural measures for standardised patients. None of the four reporting guidelines appeared to be appropriate for reporting educational interventions for developing knowledge and skills in EBP. Therefore an original project was commenced, based on the recommendations for developers of reporting guidelines for health research [5], to develop the guideline for reporting evidence-based practice educational interventions and teaching (GREET)[6] Page 6.

Comment 8: “‘What information has been reported when describing educational interventions targeting foundation evidence-based practice knowledge and skills?’ p6 The term “foundation” requires explanation. I believe the authors might mean foundational” or “basic”. However, their methodology does not appear to allow for distinctions at this level, as any intervention developed to teach EBM skills that met their criteria were included without regard to the level of expertise of the learners or level of difficulty of the curricular content.
Response: The term foundation was not intended to mean the level of difficulty for the educational content or describe the level of expertise of the learners. The inclusion of the term foundation was to assist in the capture of educational intervention studies that included all five foundational steps of EBP and to differentiate between interventions for clinical practice that are evidence-based, such as education about clinical practice guidelines, or management of specific conditions that are evidence-based, from interventions that were teaching the five step process of EBP. As such, we agree that the term might be better expressed as “foundational”.

Action taken: The word foundation has been replaced with foundational.
Previous read: “What information has been reported when describing educational interventions targeting foundation evidence-based practice knowledge and skills.”
Now reads: “What information has been reported when describing educational interventions targeting foundational evidence-based practice knowledge and skills” Page 1.

Comment 9: “Initially, reported items were sorted according to the frequency of reporting in the included studies (ranging from low to very high frequency of reporting)” p9 Why? What did you expect this perspective on the data would tell you?

Response: The descriptive analysis was undertaken to provide perspective regarding the range in the frequency for the reporting of the information items. Sorting the information items according to the frequency of reporting enabled the most commonly reported information items and domains to be easily identified.

Action taken: This section has been reworded to improve the meaning and flow of the paragraph.
Previous read: Initially, reported items were sorted according to the frequency of reporting in the included studies (ranging from low to very high frequency of reporting)
Now reads: “The 25 data items were grouped according to the frequency of reporting (ranging from low to very high frequency of reporting) and further reviewed to determine their role in relation to the reporting of the intervention.” Page 10.

Comment 10a: The TIDIER guidance is currently under development as an extension to CONSORT for the reporting of interventions [Glasziou P, Moher D, Phillips A, Williams MT, personal communication May 17th, 2013].” p9 Not having access to this template is problematic for the reader, since it is the source of several categories. Can more information about TIDIER be included?

Response: The TIDieR guidance was published in the British Medical Journal in March 2014 and this reference has been added to the manuscript.

Action taken: Now reads: For items relating specifically to the intervention, the Template for Intervention Description and Replication (TIDIER) was used (Hoffmann et al. 2014).
Comment 10b: Also, a rationale for the choice of CONSORT and TIDIER reporting guidelines as guiding frameworks for the categories used in this study should be added. [I consider this second point a major compulsory revision]

Response: Addressing this major compulsory revision incorporates the responses to comments 9 and 10a and has resulted in the addition of an explanation within the methods section (pages 9-10) concerning our selection of the TIDieR checklist and the CONSORT statement as guiding frameworks for the allocation of information items in this systematic review.

Action taken: Previously read: For the purposes of this review, the 25 data items were classified in two stages. Initially, reported items were sorted according to the frequency of reporting in the included studies (ranging from low to very high frequency of reporting). Following this, two reporting guidelines were used to classify data items relating to the reporting of study design/methodology and those relating specifically to the intervention. For items related to study design/methodology and confounding issues, CONSORT (excluding item 5, intervention) was used [12]. For items relating specifically to the intervention, the Template for Intervention Description and Replication (TIDIER) was used. The TIDIER guidance is currently under development as an extension to CONSORT for the reporting of interventions [Glasziou P, Moher D, Phillips A, Williams MT, personal communication May 17th, 2013].

Now reads: The 25 data items were grouped according to the frequency of reporting (ranging from low to very high frequency of reporting) and further reviewed to determine their role in relation to the reporting of the intervention. To provide an objective guide for the differentiation of information items relating specifically to the intervention and those relating to the reporting of study design/methodology, two reporting guidelines were used. The Template for Intervention Description and Replication (TIDIER) [25] was used to identify information items considered to be specific to the reporting of the intervention and the CONSORT statement (excluding item 5, intervention) was used to identify information items which were considered to be related to the study design/methodology and confounding issues [11]. Page 10.

Comment 11: “(Participant domain: context/stage of education . . .)” p 10

The term “context” is very broad, which brings me to this observation: the manuscript would be enhanced with the addition of a brief explanation of the categories of items. Some are self-evident; many are not.

Response: Further clarification for the term context / stage of education has been added to the manuscript. The term ‘context’ refers to what stage the learner is at in their program or course (e.g. first year medical student).
**Action taken:** The term ‘context / stage of education’ has been amended.

Previously read: context / stage of education

Now reads: context of education / stage of training. A key has been added to Table 1 to provide further information for the reader. *The context of education refers to the year level of the learner within an undergraduate or post-graduate degree or course.*

**Comment 12:** “We included only randomised and non-randomised trials, on the assumption that other designs might report less detailed information about educational interventions. “p15 Move into methods section?

**Response:** In response to this comment and comments 12 and 16, this paragraph has been reworded and this sentence has been removed.

**Action taken:** Previously read: “We included only randomised and non-randomised trials, on the assumption that other designs might report less detailed information about educational interventions. Our analysis comparing a small sample of included studies to studies excluded based on design suggest that the reporting of EBP educational interventions is similar irrespective of research design.”

Now reads: “Finally, it is not always possible or practical to have a control group in studies investigating the effectiveness of educational interventions, hence the findings from this review may be limited by the exclusion of studies without a control group. Although our analysis comparing a small number of included studies to studies excluded based on design suggested that the reporting of EBP educational interventions was similar irrespective of research design.” Page 16.

**Comment 13:** “Given the number of information items identified within this systematic review, we believe that authors will benefit from more detailed guidance on the breadth of detail necessary to support replication of interventions to facilitate foundation knowledge and skills in EBP.” p15

Note that the problem of interest to the authors suddenly shifts here from “facilitating systematic reviews” to “supporting replication”. Better integration of these dual problems is needed, starting in the introduction.

**Response:** Reviewer 1 (Comment 7) also raised a related point. The dual problems of being able to synthesise studies meaningfully, undertake systematic reviews and replicate studies have been introduced in the introduction section and integrated consistently through the manuscript.

**Action taken:** Further information regarding the synthesis and replication of educational interventions for EBP has been included in the background for the manuscript.
Previously read: “... the lack of detail in the reporting of the educational interventions used for facilitating knowledge and skills of EBP, thereby limiting the ability to compare and interpret findings.”

Now reads: “... Inconsistent and incomplete reporting of information in educational interventions for EBP is common, thereby limiting the ability to compare, interpret and synthesise findings from these studies.” Page 5.

Summary of response Comment 7 for Reviewer 1.
Previously read: “We believe that authors will benefit from more detailed guidance the breadth of detail necessary to support replication of interventions to facilitate foundation knowledge and skills in EBP.”

Now reads: “Given the number of information items identified within this systematic review, we believe that authors will benefit from guidance regarding the detail necessary to support replication and synthesis of educational interventions in EBP.” Page 15.

**Comment 14 and 15:** “Determining which items are important when reporting an intervention is complex and depends upon the purpose for which the intervention description is intended to be used. Potentially, there are two broad areas where a description of an intervention might be used. The first being whether the reader wishes to replicate or compare the intervention with their current practice or context. The second concerns whether priority should be given to items that may influence study outcomes. For methodological features such as ‘blinding’ and ‘allocation concealment’, there is empirical evidence of their impact on study outcomes to support their inclusion as specific items for methodology [91, 92].

“Determining which aspects of an educational intervention might influence or introduce ‘bias’ in a study is more due to the variability in the nature of the educational intervention and the diversity in reporting of those interventions which have limited detailed subanalysis (of items most likely to influence study outcomes). For example, in the intervention groups in this review, the duration of interventions ranged from 30 minutes [58] to 79 weeks [36] the number of learning sessions ranged from 1 [23,29,31,32,34,35,39,43,45,59,61,63,69,75,76,78,79] to 25 [53], student attendance in the intervention ranged from 49 [25] to 100 per cent [38, 59] and the number of studies reporting EBP steps varied from seven per cent for step 5 (assess) to 75 per cent for step 3 (appraise).” p16

The logical flow and clarity of this paragraph need attention. I found this very difficult to follow and in the end was unable to figure out much of what the authors were trying to say in this section.
Response: This paragraph has been edited to improve the logical flow and to clarify the key messages for this paragraph.

Action taken: Previously read: “Determining which aspects of an educational intervention might influence or introduce ‘bias’ in a study is more due to the variability in the nature of the educational intervention and the diversity in reporting of those interventions which have limited detailed subanalysis (of items most likely to influence study outcomes). For example, in the intervention groups in this review, the duration of interventions ranged from 30 minutes [58] to 79 weeks [36] the number of learning sessions ranged from 1 [23,29,31,32,34,35,39,43,45,59,61,63,69,75,76,78,79] to 25 [53], student attendance in the intervention ranged from 49 [25] to 100 per cent [38, 59] and the number of studies reporting EBP steps varied from seven per cent for step 5 (assess) to 75 per cent for step 3 (appraise).” p16

Now reads: “The determination of which items are necessary for describing an educational intervention is a complex task. Empirical evidence for which items are likely to introduce bias in EBP educational interventions is not available, largely due to the inconsistent and incomplete reporting for studies reporting educational interventions for EBP [1]. In the absence of available evidence or guidance regarding which elements are likely to impact on the study outcomes, it was proposed that the information items reported by authors as confounders or limitations, may provide an anecdotal guide to the items which are likely to introduce bias or impact upon study outcomes. The most frequently reported limitations by the authors related to the delivery, duration or the time of year for the educational intervention (n= 10, 24%).” Pages 16-17.

Comment 16: “While eligibility limited the inclusion to only controlled trials, it cannot necessarily be assumed that reporting of items will not vary across study designs.” p8This sentence contains a double negative making it difficult to understand on first reading. I would suggest revising.

Response: This sentence has been rephrased and the double negative removed.

Action taken: Previously read: “While eligibility limited the inclusion to only controlled trials, it cannot necessarily be assumed that reporting of items will not vary across study designs.”

Now reads: “Eligibility was limited to controlled trials. To estimate whether reported items differed between controlled trials and lower level study designs, a random selection of 10 studies identified in the search using lower level study designs (pre-post studies without a separate control group) were compared with 15 randomly selected randomised and non-randomised trials (with control groups) for frequency and commonality of reporting items.” Page 9.
Comment 17: There were relatively equal numbers of randomised (n=29, 48%) and nonrandomised (n=32, 52%) trials.” P 10 I question the use of the term “relatively”. “Roughly”, perhaps?

Response: The term relatively has been replaced with approximately.

Action taken: Previously read: “There were relatively equal numbers of randomised (n=29, 48%) and nonrandomised (n=32, 52%) trial.”

Now reads: “There were approximately equal numbers of randomised (n=29, 48%) and nonrandomised (n=32, 52%) trial.” Page 11.

Comment 18: The majority were from the Intervention domain and related to educational prescription, . . .” p10 Not sure what ‘educational prescription” means

Response: This sentence has been amended and the term prescription has been removed.

Action taken: Previously read: “The majority were from the Intervention domain and related to educational prescription.”

Now reads: “The majority were from the Intervention domain including the number of sessions (n=51, 84%), program duration (n=50, 82%), setting (n=49, 80%), frequency of the sessions (n=44, 72%) and the educational materials used (n=45, 74%).” Page 11.

Comment 19: “The educational dose for an intervention has been described as “a core principle of an educational intervention” [17], necessary to facilitate replication or adoption of the intervention in other settings [84].” Sorry. You lost me.

Response: This sentence has been amended to clarify the intended meaning.

Action taken: Previously read: “The educational dose for an intervention has been described as “a core principle of an educational intervention” [17], necessary to facilitate replication or adoption of the intervention in other settings [84].”

Now reads: “Stiles et al. (2010)[2] use the term ‘educational dose’ to describe information such as the duration of the educational intervention, learning environment, the extent and intensity of direct interactions with the educators and the extent of institution support. This educational dose is considered a core principle of an educational intervention [2]. For an EBP educational intervention to be replicated, compared or synthesised, a detailed description of this educational dose is essential. However, this current review and several previous reviews [7-12], have identified inconsistent reporting of information items for the ‘educational dose’ in studies of educational interventions.” Page 13.
Comment 20: “... hence the generalizability of the findings from this review may be limited by the exclusion of lower level study designs.” p15 Not sure how the concept of generalizability applies. There was no sampling involved in selecting articles for review.

Response: The word generalisability has been removed from this sentence.

Action taken: Previously read: “... hence the generalizability of the findings from this review may be limited by the exclusion of lower level study designs.”

Now reads: “... hence the findings from this review may be limited by the exclusion of lower level study designs.” Page 16.

Comment 21: “We included only randomised and non-randomised trials, on the assumption that other designs might report less detailed information about educational interventions.” p15 Add “controlled”? Qualitative studies are usually non-randomized (although I grant that they are seldom if ever used for trials). Also, this sentence describes a rationale for choosing trials for this study. Consider moving this into the methods section. By the way, I think this sentence describes a dubious assumption.

Response: This sentence has been removed.

Action taken: Please see response to Comment 12.

Comment 22: “Our analysis comparing a small sample of included studies...” p15

Not sure that the term “sample” is the right one given the study’s methodology.

Response: This sentence has been reworded in relation to comments 20 and 22.

Action taken: Previously read: “Our analysis comparing a small sample of included studies...”

Now reads: “Although our analysis comparing a small number of included studies...” Page 16.

Comment 23: Consider revising the title. As it stands it is not clear whether the practice in “evidence based practice” refers to evidence-based educational practice or evidence-based clinical practice.

Response: The title has been revised to provide greater clarification that this systematic review is in relation to the education of EBP.
