Author’s response to reviews

Title: Advanced practice physiotherapy in patients with musculoskeletal disorders: a systematic review

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Version: 4 Date: 8 May 2012

Author’s response to reviews: see over
April 10th, 2012

Dr J. Bart Staal  
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Re: Submission of revised manuscript MS: 8859763396622642

Dear Dr Staal,

We thank you for the opportunity you gave us to resubmit our manuscript entitled: “*Advanced practice physiotherapy in patients with musculoskeletal disorders: a systematic review*”.

You will find, in the following paragraphs, the list of changes done as well as our responses to the reviewer’s comments. All issues and comments raised were addressed and we feel the manuscript has been significantly improved in the process.

We appreciate the time you and the reviewers invested in the review process. We hope that this revised version of the manuscript will be found acceptable for publication in *BMC Musculoskeletal Disorders journal* and we are looking forward to hear from you.

Sincerely yours,

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First, we would like to thank the reviewers for their careful reading of the manuscript and constructive comments and questions. Here follow our responses, in the same order the comments and questions were presented:

RESPONSES TO COMMENTS AND QUESTIONS OF REVIEWER 1

Essential Revisions:

1. “What remains unclear to me is whether studies were selected that assessed the role of APPs with or without further assessment of the required competencies in terms of additional training. Based on the selection criteria it seems that the authors only looked at the role: physiotherapists that perform certain advanced activities. However, in the discussion the authors critically discuss the review by Kilner which includes physiotherapists in an APP role but without advanced training. This left me with the question how the studies for the current review were selected.”

   We included studies that assessed the role of APP regardless of any additional training candidates might have received and the focus was therefore on the APP role. We have clarified that definition of APP in the eligibility criteria of the studies. (page 8, lines 1-2).

   We have made changes in the discussion about the Kilner et al. review and we have removed any reference to “additional training” as it might be confusing for the reader. (page 19, line 14)

2. “In the introduction the authors already revealed some of their results to build their case for the need of the review: ‘nine additional studies have been published’. This should be rephrased.”

   There is always a preliminary non-systematic review of the literature, to see if a new systematic review is warranted and would include newly published studies. We have made changes to that sentence accordingly and removed the reference to a specific number of studies. (page 6, line 11)

3. “Similar issue to revealing results in the methods: the categorization of studies was based on the actual results of the identified studies. A more general classification would be appropriate.”

   Again, preliminary evaluation of the previous systematic reviews allowed us to classify the studies on APP into these four broad categories. This categorization was made a priori. This initial step allowed us to identify and use methodological appraisal tool specific to the study designs and objectives of studies that would likely be included in the review. We felt it was a critical step to identify and use specific methodological appraisal tools since we believed using a single appraisal tool regardless of the type of study or its design was a weakness of previous reviews. Following the formal systematic literature search, new studies were included in the review but these studies could be classified into one of the four categories identified a priori and therefore they could be
appraised with one of the four tools initially selected. We have made changes to this section to reflect that the categorization was made prior to beginning the systematic literature search. (page 8, line 12)

4. “The methods section does not describe who selected the papers and rated their quality.”
We have modified this section and added the information. (page 7, lines 20-21)

5. “The authors reflect on the use of adapted and non-validated quality assessment instruments. However, they do not discuss the large confidence interval of the inter-rater reliability of the diagnostic.”
Reviewer one is right in stating, that for the diagnostic tool, the confidence interval was large, nonetheless the inter-rater reliability was good (ICC= 0.85). As mentioned in the response to question 3, we felt it was important to use specific appraisal tools since we believed using a single appraisal tool, regardless of the type of study, was a weakness of previous reviews. Unfortunately we could not identify a fully validated diagnostic study appraisal tool that would specifically evaluate diagnostic agreements study and therefore we used a tool designed by one the authors (JCM). Because the tool was designed to evaluate diagnostic tests, some methodological items may have been more difficult to interpret in the context of an agreement study leading to more variability. Nonetheless, in all cases, differences between the two raters were resolved by consensus. We are therefore confident that the results presented are a valid estimation of the methodological quality of the included studies. We have added this comment in the discussion section. (page 22, lines 3-8)

6. “In the results, reference #28 is mentioned as study that compared APP to orthopedic surgeons for diagnostic accuracy. However, table 1 does not show any comparisons for this study.
We have corrected that reference. (page 13, line 9)

Minor Comments:
7. “The introduction refers to the new role of physiotherapists where countries now report implementation of this role, while using outdated references from 1988-1999.”
We have corrected these references. (page 5, line 10)

8. “The references to ref #20 and 21 in the discussion seem out of place to me. Do they discuss the validation of the satisfaction appraisal tool?
We have made changes to clarify that statement. The changes allow the reader now to understand that we are referring to important components of patients’ satisfaction described by these authors. (page 21, lines 4-9)
RESPONSES TO COMMENTS AND QUESTIONS OF REVIEWER 2

Major Compulsory Revisions:

Methods

1. Analyses are not reported; to be added. It seems a descriptive report of findings.
   Our review was a systematic review, not a meta-analysis, therefore it did not involve any formal analyses and pooling of results from the included studies. The only analyses made, were in regards to inter-rater agreement and consensus on methodological quality of studies. They were described at the end of the Data Extraction and Quality Assessment section and we have added a new subheading for that section named data analysis. (page 10, lines 9-18)

2. Unclear which study designs are included.
   All study designs were included as long as the study reported quantitative original data. Descriptive studies were not included. We have made changes to clarify the inclusion and exclusion criteria. (Page 8, lines 5-9)

3. Unclear if the 4 categories were defined a priori (in that case it should be reported in the methods) or that is a result of studies identified (in that case it should be reported in the results).
   Please see response to comment #3 for Reviewer 1.

4. Methodological quality appraisal, not clear why the authors choose four different appraisal instruments.
   Please see response to comment #3 for Reviewer 1.

5. In the results the authors report a % score (e.g. page 11 There was a wide range in the quality of the individual studies (from 25% to 93%). It is unclear how this score is calculated and how to interpret these scores.
   Scores for all four methodological tools were transformed in percentages and higher scores sign a better methodological quality. We have corrected that section to make it clear to the reader how to interpret the scores. (Page 12, lines 9-13) Also, in the methods section presentation of the four tools and in the Data Analysis section we report the score transformation into percentages.

6. Which outcomes did the authors want to include? Clinical outcomes, process of care outcomes, cost outcomes?
   We did not specify any specific outcomes criteria. The emerging literature in terms of evaluation of the APP model of care may focus on various outcomes and we wanted to include as many studies as possible. We have modified the inclusion and exclusion criteria section to clarify that information. (Page 8, lines 7-9)

7. Use of subheading would improve readability.
   We have added subheadings in the Methods section.
Results

1. A description of flow of studies is lacking (only presented in figure 1)
   We have added a description of the flow of studies included. (Page 10, Lines 19-22)

2. Design of studies is lacking with the exception of ‘cohort studies’.
   We have added that information and we also detailed the type of studies for the cohort
   and satisfaction studies regarding the design (experimental, quasi-experimental,
   observational) and data collection time (prospective, retrospective or cross-sectional).
   This information was added in the text (Page 11, lines 11-19) and in Table 1.

3. ‘Medial diagnostic.....etc’: start with number of studies included, design and the main
   outcomes measured. Next report main findings. It is unclear why these aspects of
   methodological quality are reported and not others. If this is more clearly described in
   methods, the results are more easy to follow.
   We have reworked the results section and added subheading to improve readability.
   The first section of the Results is now entitled Overall description of included studies
   and the reader can find a description of the type of studies included. Later in the section, for
   the four categories of studies included (diagnostic, effectiveness, economic and
   satisfaction) the reader can now find summarized results of the included studies under
   two subheadings: 1- Description and main findings of studies and 2-Methodological
   quality appraisal main findings. We have also added references to table 1 where the
   detailed description of the included studies can be found and references to tables 1
   through 5 for the detailed methodological quality scoring.

4. Cohort studies..... why included the ‘design’ in the heading. The topic is effectiveness
   of treatment. In the result the design of these studies should be reported.
   Methodological assessment see previous remarks. This is also valid for the other 2
   topics discussed.
   We have removed the term cohort and we have added the design of the studies. (see
   comments 2 and 3)

5. Use subheadings to improve readability
   We have added subheadings in the results section

Discussion:

1. This is a repetition of results. Discussion should be written at a more abstract level.
   We have reworked the discussion to eliminate some redundancy with the results
   section.

2. It includes new results (e.g. page 17: In terms of health service use, two studies
   measured the proportion of X-rays ordered, etc. .....). Outcomes should be reported in
   the ‘results’ not in the discussion.
   These results are now presented in the results section. Please see response to previous
   comment.
3. Comparison could be shorter…. what does this review add to the 2 (or 3?) other reviews. Not interested in the limitations of these other reviews. We have reworked that paragraph and we have shorten this section.

4. The present systematic review has many strengths; there are not that many strengths. There seems to be more limitations. We have rephrased that sentence. However, our opinion is that the present systematic review does have many strengths and although we have outlined a number of limitations in the present work, we believe the results presented add to the body of knowledge on APP care and will help clinicians, investigators and stakeholders in understanding and making decisions regarding the development and evaluation of such models.(page 21, line 18- page 22, line 9)

Minor Revisions

Introduction:

1. It seems odd to write that new interprofessional models of care that often involve the extension of the scope of practice for allied health professionals. Please re-structure the introduction to make it more sound. Start with reasons new roles emerge, historically nurse practitioners and physician assistants, more recent physiotherapists... this is focus of review.

We have added lines 9-13 on page 4 to indicate that the extended scope nursing roles have existed since WWI and that similar extension of physiotherapist roles occurred post wartime (particularly in the US with the Vietnam War). While the physician assistant model has developed in the US, the Physician Assistant roles in Canada (and many other countries) have evolved separately from those of Advanced Practice/extended scope physiotherapy roles.

2. Relative long introduction, but it does not end in “the aim of this review....”. We have made change so the last sentence states the aim of the current review. (Page 6, line 12)

3. Table 1: Order of the studies in line with order of report in main text. Meaning that 7 studies related to ‘medical diagnosis, triage and clinical recommendations’ are presented first, followed by ‘effectiveness of treatment’ etc. In that way it provides the reader a quick overview of papers. If more than one topic is discussed. We rearranged the order of the studies. Thank you for the suggestion.

4. Please explain “n”; to avoid misinterpretation (this is number of patients not number of practices or providers.) We have added that information in the legend. Thank you for the suggestion.
Table 2 – 4: Methodologic quality. Although the items are explained in legend of the table I would prefer to see short description in table instead of item 1, item 2 etc. If short description is shown, it is much easier to see which are potential biases. We have made changed accordingly. Thank you for the suggestion.

Abstract
6. Conclusion: it seems odd to start with ‘at present there is limited evidence about APP care,….’ This is not conclusion of the study. What is the main message, the take home message. We have changed and removed the beginning of that sentence. (page 3, line 3)

Discretionary Revisions
1. Don't use terms extended scope roles, advanced physiotherapy practice (APP), new models of care, but choose for one definition to increase readability of the paper. Advanced physiotherapy practice (APP) is best term to be used and can be defined in the introduction, and used throughout the paper.

We made changes to use the term APP as much as possible throughout the text. The challenge is that the term “advanced practice” physiotherapy roles in Canada, New Zealand and Australia would be synonymous with the terms “extended scope” in the US and “Consultant” in the United Kingdom. In some countries the terms “extended scope” is a regulatory term.