8.5.1 Mixed methods systematic review using a CONVERGENT INTEGRATED approach to synthesis and integration

Title of a mixed methods systematic review

The title should be informative and give clear indication of the topic of the MMSR. The title should always include the phrase “…: a mixed methods systematic review” to allow easy identification of the type of document it represents. An example title may be:

Barriers and facilitators to asthma self-management in adolescents: a mixed methods systematic review

Abstract

This section is a summary of the review in 500 words, stating the objective, methods, main findings and principal conclusions of the review. The abstract should not contain abbreviations or references.

The following headings should be included in the abstract.

Objective: State an overarching review objective structured using the key components of the inclusion criteria (approximately one to two sentences).

Introduction: Briefly describe what is already known on the topic and what this review will add to the evidence base (approximately two to three sentences).

Inclusion criteria: Summarize the inclusion criteria as it relates to the type of review being conducted. Present the information in one or two sentences – NOT under individual subheadings.

Methods: List the key information sources searched (those that provided the majority of included studies), any limits placed on the scope of the search (e.g. language), and the date range, or the date of the last search. State the recommended JBI approach to MMSR was followed e.g. study selection, critical appraisal, data extraction and data synthesis and integration. The method of synthesis and integration should be clearly reported (convergent integrated). Otherwise, briefly describe any notable deviations to the methodological approach taken (e.g. criteria used to exclude studies on the basis of methodological quality etc.).

Results: The bulk of the abstract should be reserved to convey the main results of the review. As a general rule, report the number and type of included studies, and any pertinent study characteristics. Summarize the overall quality of the included studies. Report the findings obtained from the integration of ‘qualitized’ data and qualitative data.

Conclusions: Provide a conclusion based on a general interpretation of the results considering, for example, the methodological quality of the included studies and any limitations of the review. Briefly convey key implications for practice and/or research.

Introduction

As with all JBI systematic reviews, the introduction to a MMSR should describe and situate the topic of interest under review. Definitions can assist to provide clarity. Where complex or multifaceted phenomena are being described, it may be important to detail the whole of the phenomenon for an international readership. Explanation of how the review question can be answered by both quantitative and qualitative studies is required as is an explanation on how the review will add to the evidence base or inform clinical practice.

Additionally a statement that a preliminary search of databases (with databases listed) has been undertaken and no existing or ongoing mixed method or systematic reviews on the topic have been identified should be provided. If other systematic reviews on the topic exist, indication on how the proposed systematic review differed should be detailed. Finally the introduction should conclude with an overarching review objective that captures and aligns with the core elements of the inclusion criteria. The introduction should be approximately 1000 words.

Review question(s)

The review question(s) should be explicitly stated in unambiguous terms. See Section 8.4 of this Chapter for further information regarding the question(s) of a MMSR.
Inclusion criteria

This section of the review details the basis on which studies were considered for inclusion in the systematic review and should be as clear and unambiguous as possible. Inclusion criteria should be reasonable, sound and justified and address the elements in the PICo question(s).

**Population**

This section should specify the details about types of participants considered for the review (e.g., age, disease/condition, severity of illness, setting, gender, ethnicity etc.). This section is universal for example:

The review considered studies that included #describe population#

**Phenomena of Interest**

A phenomenon of interest is the experience, event or process occurring that is under study. The level of detail ascribed to the phenomena may vary with the nature or complexity of the topic.

Like the protocol, details about the phenomena of interest should be adequately described. For example:

This review considered studies that investigated #insert text#

**Context**

Context may include, but is not limited to consideration of: cultural or sub-cultural factors, geographic location, specific racial or gender based interests, or detail about the specific setting (such as acute care, primary health care, or the community). Like the protocol, details regarding the context should be provided. For example:

This review considered studies that investigated #insert text#

**Types of studies**

This section should include the relevant information related to quantitative, qualitative and mixed methods studies. For example:

This review considered quantitative, qualitative and mixed methods studies. Quantitative studies included #insert text#. Qualitative studies included #insert text#. Mixed method studies where data from the quantitative or qualitative components could be clearly extracted were also considered.

There should be a congruence in this section between the methodology of the primary research studies that were considered for the review and the review question(s).

**Methods**

This section of the review is reserved for the methods used to conduct the review and should be presented under the relevant subheadings, including any deviations from the method outlined in the *a priori* protocol and a rationale.

Directly below the Methods heading provide the following information:

- State and appropriately cite the JBI methodology that was employed in the conduct of the review and synthesis.
- Refer to and cite the *a priori* protocol that was published, or accepted for publication (e.g. ‘in press’), in the JBI Database of Systematic Reviews and Implementation Reports.
- If the protocol was registered with PROSPERO, provide registration information including registration number (e.g. PROSPERO CRD42015425226).

**Search strategy**

The search strategy section of a review should provide explicit and clear information regarding all information sources that were used in the review, and the actual strategies used for searching. The review should provide details regarding all information sources that were used in the review: electronic bibliographic databases (including the search platform used); gray literature sources; relevant journals; websites of relevant organizations; etc. The review should specify the timeframe for the search, the date of last search for each database, and any language and date restrictions, with appropriate justifications. For example:
The search strategy aimed to find both published and unpublished studies. A three-step search strategy was utilized in this review. First an initial limited search of #MEDLINE and CINAHL# change as appropriate# was undertaken followed by analysis of the text words contained in the title and abstract and the index terms used to describe the articles. The search strategy, including all identified keywords and index terms was adapted for each included information source and a second search was undertaken on #insert month and date searched#. The full search strategies are provided in Appendix #. Finally the reference list of all studies selected for critical appraisal will be screened for additional studies.

Information sources

The databases that were searched included: #insert databases with platforms as appropriate#.

Sources of unpublished studies and gray literature included #insert text, e.g. trial registers etc.#

Study selection

The review report should describe the actual process of study screening for all stages of selection (e.g. title and abstract examination; full text examination) and the actual procedures used for solving disagreements between reviewers. For example:

Following the search, all identified citations were collated and uploaded into #insert bibliographic software or citation management system (e.g. EndNote version/year (Clarivate Analytics, PA, USA))# and duplicates removed. Titles and abstracts were then screened by two reviewers for assessment against the inclusion criteria for the review. Studies that met the inclusion criteria were retrieved in full and their details imported into the JBI System for the unified Management Assessment and Review of Information package (JBI SUMARI). The full text of selected studies were retrieved and assessed in detail against the inclusion criteria by two independent reviewers. Full text studies that did not meet the inclusion criteria were excluded and reasons for exclusion are provided in #insert Appendix number#. Any disagreements that arose between the reviewers were resolved through discussion (OR There were no disagreements that arose between reviewers).

Assessment of methodological quality

The review should specify the critical appraisal process and instruments that were used in the review process and the procedures for solving disagreements between reviewers. The details of the decision processes and criteria used for exclusion of studies based on the results of critical appraisal should be explicitly provided. All details about the scoring systems and the cut-off scores (if applicable) for inclusion of studies in the review should be described and justified. For example:

Eligible studies were critically appraised by two independent reviewers for methodological quality using the #insert names of tools used and cite them.# Authors of papers were contacted to request missing or additional data for clarification, where required. Any disagreements that arose between the reviewers were resolved through discussion, or with a third reviewer.

Indicate what constituted acceptable levels of information for a study to receive a positive, negative or unclear response to a critical appraisal question and if applicable, the rationale and criteria for excluding studies on the basis of methodological quality.

Data extraction

The review should specify the data extraction process and instruments that were used in the review process and the procedures for solving disagreements between reviewers. As outlined in Section 8.4 of this Chapter, for a MMSR that follows a convergent integrated approach it needs to be specified what information from the quantitative and qualitative studies were considered as constituting the findings. For example:

Quantitative and qualitative data were extracted from included studies by two independent reviewers using the standardized JBI data extraction tool. #Cite the tool used or append the data extraction tool if an existing tool was modified or a new tool developed. Any modifications to existing tools should be described in the text#. The data extracted included specific details about the population, study methods, the phenomenon of interest, context and outcomes of relevance to the review question(s). In addition, qualitative data comprised of themes or subthemes with corresponding illustrations, which were assigned a level of credibility. Any disagreements that arose between the reviewers will be resolved through discussion, or with a third reviewer. Authors of #insert number of studies# were contacted for missing information or additional data.

Data transformation

The review should specify the data transformation process that was used to convert the extracted quantitative data into qualitized data to facilitate integration with data extracted from qualitative studies (and the qualitative component of mixed methods studies). For example:
The quantitative data was converted into ‘qualitized data’. This involved transformation into textual descriptions or narrative interpretation of the quantitative results from experimental and observational studies (including the quantitative component of mixed methods studies), in a way that answered the review questions by repeated detailed examination.

**Data synthesis and integration**

The review should indicate that a convergent integrated approach was applied. The review should detail how the reviewers analyzed and integrated the data extracted from included quantitative, qualitative and mixed methods studies and detail the aggregative approach to integration. For example:

The convergent integrated approach according to the JBI methodology for mixed methods systematic review using JBI SUMARI was used in this review. #Insert a citation to the methodology#. This involved assembling the ‘qualitized’ data with the qualitative data. Assembled data were categorized and pooled together based on similarity in meaning to produce a set of integrated findings in the form of line of action statements.

**Results**

This section of the review has distinct sub-sections describing the study inclusion, the methodological quality of included studies, detailed characteristics and description of the included studies and, importantly, the findings of data transformation and the integration processes.

**Study inclusion**

This section should allow the reader to clearly follow how the included studies were identified and selected for inclusion in the review. There should be a narrative description of the process accompanied by a PRISMA flowchart; details to be reported include narrative summary of the numbers of studies identified, numbers screened, studies selected for retrieval and included/excluded and their reasons for exclusion, numbers appraised and included/excluded, and numbers included in the review.

Ideally, a list of all excluded studies, excluded after full text examination and after critical appraisal, with the explicit reasons for exclusion, should be provided in appendices to the review. As a minimum, at least the list of studies excluded after critical appraisal and the reasons for exclusion should be reported. If no studies were excluded after critical appraisal then the list of all studies excluded after full text examination including the explicit reasons for exclusion, should be provided in appendices to the review.

**Methodological quality**

This section should focus on methodological quality as determined by the relevant critical appraisal instrument. There should be a separate narrative summary for the overall methodological quality of the quantitative (and quantitative component of mixed methods studies) and qualitative studies (and qualitative component of mixed methods studies), which can be supported by tables showing the results of the critical appraisal (see Tables 8.4 and 8.5 for examples). Please note, not all quantitative study designs are shown below). Where only few studies are identified, or there are specific items of interest from included studies, these should be addressed in the narrative also, particularly where studies were deficient, or particularly good. Use of ‘Unclear’ and ‘Not Applicable’ should also be explained in the text.

**Table 8.4: Critical appraisal results for included studies using the JBI Critical Appraisal Checklist for Randomized Controlled Trials (and RCT component of mixed methods studies)**

<table>
<thead>
<tr>
<th>Study</th>
<th>Q1</th>
<th>Q2</th>
<th>Q3</th>
<th>Q4</th>
<th>Q5</th>
<th>Q6</th>
<th>Q7</th>
<th>Q8</th>
<th>Q9</th>
<th>Q10</th>
<th>Q11</th>
<th>Q12</th>
<th>Q13</th>
</tr>
</thead>
<tbody>
<tr>
<td>Author(s) a</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>U</td>
<td>Y</td>
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<td>Author(s) b</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>U</td>
<td>Y</td>
<td>N/A</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>U</td>
<td></td>
</tr>
</tbody>
</table>

Y - Yes, N - No, U - Unclear, N/A - not applicable

**Table 8.5: Critical appraisal results for included studies using the JBI Qualitative Critical Appraisal Checklist (and qualitative component of mixed methods studies)**

<table>
<thead>
<tr>
<th>Study</th>
<th>Q1</th>
<th>Q2</th>
<th>Q3</th>
<th>Q4</th>
<th>Q5</th>
<th>Q6</th>
<th>Q7</th>
<th>Q8</th>
<th>Q9</th>
<th>Q10</th>
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<tbody>
<tr>
<td>Author(s) a</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
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<td>Author(s) b</td>
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<td>Y</td>
<td>N/A</td>
<td>Y</td>
<td>Y</td>
</tr>
</tbody>
</table>

Y - Yes, N - No, U - Unclear, N/A - not applicable

If modified appraisal tools are not appended to the review, the appraisal questions should be added as a footnote/caption to the tables so readers can clearly interpret the information presented.

**Characteristics of included studies**
This section of the results should include an overall description of the included studies (with reference to the table of included study characteristics in the appendices), with the main aim to provide some context to the results section and sufficient detail for the reader to confirm that the studies match the eligibility criteria for the review. This includes the descriptive and demographic features (e.g. the country and setting of the study) of the included studies, methodology of included studies, geographic context of included studies, participant characteristics, and phenomena of interest, as they relate to the review question(s) and the inclusion criteria. Specific items/points of interest from individual studies may also be highlighted here and synthesized in a narrative.

Findings of the review

Review findings are structured according to the phenomena of interest and should describe all the identified integrated finding(s), the categories that form them and the underpinning qualitative and/or qualitized data. Integrated findings should be presented with an explanatory statement that conveys the inclusive meaning of a group of similar categories (i.e. line of action statements). This section should also provide a narrative of all the data that cannot be combined to form a category.

A schematic of the synthesis (See Figure 1) should constitute part of this section, which must be accompanied by sufficient narrative to explain the categories and integrated findings. Where textual pooling was not possible the findings should be presented in narrative form. The suggested structure for reporting findings:

#insert Integrated Finding# (where appropriate)

#Brief explanatory statement#

#insert underpinning Category 1#

#Report the qualitative and/or qualitized data underpinning the category#

#insert underpinning Category 2#

#Report the qualitative and/or qualitized data underpinning the category#

Please note: Due to the complexities associated with recommendations being derived from both streams of evidence and the impact of data transformation and/or integration on the grading process, an assessment of the certainty of the evidence using either the GRADE or ConQual approach is currently not recommended for JBI MMSR following either the integrated or segregated approach and requires further investigation.

Discussion

This section should provide a detailed discussion of issues arising from the conduct of the review, as well as a discussion of the findings of the review and of the significance of the review findings in relation to practice and research. The findings should be discussed in the context of current literature, practice and policy. It should also include a narrative discussion of the review results in comparison with other external literature, and against the broad directions established in the introduction of the review. The discussion does not bring in new findings that have not been reported in the results section but does seek to establish a line of argument based on the findings regarding the phenomenon of interest.

Conclusions and Recommendations

This section should include the overall conclusions of the review. The conclusions should provide direct answers to the review question(s). These conclusions should be based only on the results of the review and directly inferred from the review results.

Recommendations for practice

This sub-section of the Conclusion section should include the recommendations for practice inferred from the results of the integration of the ‘qualitized’ data and qualitative data. Recommendations should be assigned a JBI Grade of Recommendation.

Recommendations for research

This sub-section of the Conclusion should include the recommendations for future research inferred from the results of the integration of the ‘qualitized’ data and qualitative data, and issues and problems noted in the review process related to the search, selection of studies, critical appraisal, data extraction, and data synthesis.
Conflicts and acknowledgements

Details of requirements in these sections are described in Section 1.6 of this Manual.

**Conflicts of interest**

A statement which either declares the absence of any conflicts of interest or which describes a specified or potential conflict of interest should be made by the reviewers in this section.

**Funding**

Authors should provide details regarding any sources of funding for the review project. The role of all funders in the review process, if any, should be explicitly described. If the review is funded, then any potential conflicts of interest or intellectual bias of the funders should be specified in the review.

**Acknowledgements**

Any acknowledgements should be made in this section e.g. sources of external funding or the contribution of colleagues or institutions. It should also be noted if the systematic review contributes towards a degree award.