8.4.2 MMSR questions that take a CONVERGENT SEGREGATED approach to synthesis and integration

The convergent segregated approach adopted by JBI maintains a clear distinction between quantitative and qualitative evidence and requires individual syntheses to be conducted prior to the final integration of quantitative evidence and qualitative evidence.

Protocol development

Protocol development addresses both PICO and PICO criteria and is commonly comprised of separate review questions. As such the guidance for protocol development provided in Chapter 2 (Systematic reviews of qualitative evidence) and Chapter 3 (Systematic reviews of effectiveness) of this online reviewer’s manual should be followed. Some additional considerations are needed for a MMSR and these are detailed below.

Title of a MMSR protocol

The title should be informative and give clear indication of the topic and population of the MMSR. Titles should not be phrased as questions and there should be congruency between the title, review question(s) and inclusion criteria. The title should always include the phrase “…: a mixed methods systematic review protocol” to allow easy identification of the type of document it represents. An example title may be:

Mindfulness-based interventions for nurses: a mixed methods systematic review protocol

Abstract

This section is a summary of the protocol in 300 words. The following headings should be included in the abstract - Objective, Introduction, Inclusion Criteria, Methods, Systematic review registration number (if applicable) and Keywords. The abstract should not contain abbreviations or references.

Introduction

As with all JBI systematic review protocols, 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. Justification for the need to examine both quantitative and qualitative evidence in a single review 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 individual 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 will differ should be detailed. Finally, the introduction should conclude with an overarching review objective that captures and aligns with the core elements/mnemonic (i.e. PICO/PICo) of the inclusion criteria. The introduction should be of sufficient length to discuss all of the elements of the proposed plan for the review; usually all the relevant information may be provided in approximately 1000 words. This section should be written in simple prose for non-expert readers.

Review question(s)

Clarity in the review questions assist in developing a protocol and also ultimately, the conduct of the review. The review question(s) guide and direct the development of the specific review criteria and facilitate more effective searching, and provides a structure for the development of the full review. There should also be consistency between the review title and the review questions.

For a MMSR that takes a convergent segregated approach to synthesis, the review question(s) should focus on different aspects or dimensions of a particular phenomenon of interest and will pose questions that specifically require the inclusion of two or more syntheses that are grounded in different approaches.

As such PICO and PICo mnemonics should be used to develop the review questions as well as the inclusion criteria. Examples of clearly articulated PICO/PICo questions that may be posed by a MMSR are:

1. What is the impact of mindfulness-based interventions on nurses?
2. What do nurses perceive the benefits and challenges of mindfulness-based interventions to be?
The overarching aim of a MMSR is to produce a final integrated synthesis incorporating quantitative and qualitative evidence that informs conclusions and recommendations for clinical practice and policy decision making. In the above example, healthcare professionals and policy makers involved in delivering and planning such interventions are the target audience since the intention is to determine effective and positively experienced interventions for nurses.

Inclusion criteria

This section of the protocol details the basis on which studies will be considered for inclusion into the systematic review and should be as clear and unambiguous as possible. Inclusion criteria should be reasonable, sound and justified. These criteria will be used in the selection process, when it is decided if a study will be included or not in the review.

Population

There needs to be a clear and direct link between the review question, title and the participant characteristics in the inclusion criteria. This section should specify the details about the types of participants considered for the review. Consider what are the most important characteristics of the population? (e.g., age, disease/condition, severity of illness, setting, gender, ethnicity etc.).

For a MMSR that follows a convergent segregated approach this section is universal (i.e. the population should be the same for both the quantitative and qualitative questions) for example:

The review will consider studies that include #describe population#

Intervention

Details about the intervention of interest should be specified, for example, the nature of intervention, frequency, intensity, timing, and details about those administering the intervention. The same kind of information should be specified for all comparators considered in the review. Where possible, the intervention should be described in detail, particularly if it is multifaceted.

The quantitative component of the review will consider studies that evaluate #insert text#.

Phenomena of interest

The qualitative component of this review will consider studies that investigate #insert text#

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. There should be congruence between the intervention and phenomena of interest.

Outcomes

This should address the quantitative component only, for example:

The quantitative component of this review will consider studies that include the following outcome measures: #insert text#

Outcomes should be measurable and appropriate to the review question(s). The relevance of each outcome to the review question(s) should be justified in the introduction section. Both beneficial outcomes and harms should be considered. The appropriateness of the number and scope of outcomes depend on the specifics of the review question(s).

Context

This should address the qualitative component only, for example:

The qualitative component of this review will consider studies that investigate #insert text#

Context will vary depending on the question(s) of the review. 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).

Types of studies

This should address each of the syntheses included in the review. The time frame chosen for the search should be justified and any language restrictions stated. For example:

This review will consider quantitative, qualitative and mixed methods studies. Quantitative studies will include #insert text#. Qualitative studies will include #insert text#. Mixed method studies will only be considered if data from the quantitative or qualitative components can be clearly extracted.
Studies published in #insert language(s)# will be included. Studies published from #database inception/or insert date# to the present will be included as #justify date range#

There should be a match in this section between the methodology of the primary research studies to be considered for the review and the review question.

Methods

Reference to the JBI methodology for MMSR should be provided. Additionally, if the review title has been registered, the name of the registry (e.g. PROSPERO) and the registration number should be reported below the Methods heading. For example:

The proposed systematic review will be conducted in accordance with the JBI methodology for mixed methods systematic reviews #insert a citation to the Chapter in the JBI Reviewer's Manual # Note: if the review title has been registered, report the name of the registry (e.g. PROSPERO) and the registration number.

Search strategy

This section of a review protocol should provide explicit and clear information regarding two different aspects of locating studies: all information sources that will be searched for the review, and the strategies used for searching. The aim of a systematic review is to identify all relevant studies, published or not, on a given topic. Searching should be based on the principle of comprehensiveness, with the widest reasonable collection of information sources that are considered appropriate to the review.

The databases to be searched must be listed, including the search platform used where necessary, along with a completed search strategy for one major database which should be presented as an Appendix.

This section is universal, for example:

The search strategy will aim to locate both published and unpublished studies. An initial limited search of #MEDLINE and CINAHL #change as appropriate# was undertaken to identify articles on the topic. The text words contained in the titles and abstracts of relevant articles, and the index terms used to describe the articles were used to develop a full search strategy for #report the name of the relevant database# (see Appendix #). The search strategy, including all identified keywords and index terms will be adapted for each included information source. The reference list of all studies selected for critical appraisal will be screened for additional studies.

Depending on the review questions that are posed, authors may find that it is appropriate to search for all forms of evidence simultaneously with the one search strategy or they may develop separate search strategies for the different review questions. This decision will need to be made by the reviewers and consideration should be given to the review questions posed, the amount of literature available in the topic area and the searching expertise of the reviewers.

Information sources

This section is universal for example:

The databases to be searched include: #insert text#

The search for unpublished studies and gray literature will include: #insert text#

Where databases registries/sources are specific to a particular design, the reviewers should clearly indicate such e.g.:

    Cochrane Central Register of Controlled Trials (For quantitative studies only)

Study selection

This section should describe the process of reviewing the results of the search to see if they meet inclusion criteria and subsequently deciding which of the papers are to be retrieved.

For a MMSR that follows a convergent segregated approach this section is universal for example:
Following the search, all identified citations will be loaded into #insert the name of the bibliographic software or citation management system e.g. EndNote version/year (Clarivate Analytics, PA, USA)# and duplicates removed. Titles and abstracts will then be screened by two independent reviewers for assessment against the inclusion criteria for the review. Potentially relevant studies will be retrieved in full and their citation details imported into JBI's System for the Unified Management, Assessment and Review of Information (JBI SUMARI). The full text of selected citations will be assessed in detail against the inclusion criteria by two independent reviewers. Reasons for exclusion of full text studies that do not meet the inclusion criteria will be recorded and reported in the systematic review. Any disagreements that arise between the reviewers at each stage of the study selection process will be resolved through discussion, or with a third reviewer. The results of the search will be reported in full in the final report and presented in a Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) flow diagram. #Insert reference to the PRISMA statement#

**Assessment of methodological quality**

This section should describe the critical appraisal process and instruments that will be used in the review process and the procedures for solving disagreements between reviewers.

Studies that are eligible for inclusion in the review must be assessed for methodological quality. The decision as to whether or not to include a study can be made based on meeting a pre-determined proportion of all criteria, or on certain criteria being met. It is also possible to weight certain criteria differently. Decisions about a scoring system or any cut-off for exclusion should be made in advance and agreed upon by all reviewers before critical appraisal commences.

All included studies need to be critically appraised using the standard JBI critical appraisal instruments (qualitative instrument available in Appendix 2.1 and quantitative instruments available in Appendices 3.1-3.4). The source of the JBI critical appraisal tool should be cited in the protocol.

The recommended set text should therefore address each of the syntheses included in the review, for example:

Quantitative studies (and quantitative component of mixed methods studies) selected for retrieval will be assessed by two independent reviewers for methodological validity prior to inclusion in the review using standardized critical appraisal instruments from JBI SUMARI. #Insert reference to appraisal tools#

Qualitative studies (and qualitative component of mixed methods studies) selected for retrieval will be assessed by two independent reviewers for methodological validity prior to inclusion in the review using the standardized critical appraisal instrument from JBI SUMARI (The Joanna Briggs Institute et al., 2017).

Authors of papers will be contacted to request missing or additional data for clarification, where required. Any disagreements that arise between the reviewers will be resolved through discussion, or with a third reviewer. The results of critical appraisal will be reported in narrative form and in a table.

Choose from one of the following two options:

- All studies, regardless of the results of their methodological quality, will undergo data extraction and synthesis (where possible). #Indicate how the results of the critical appraisal will be incorporated into the review#.
- Following critical appraisal, studies that do not meet a certain quality threshold will be excluded. This decision will be based on #list the decision rules#.

**Data extraction**

This section of the review protocol should specify the data extraction process and instruments that will be used in the review process, as well as the procedures for solving disagreements between reviewers.

For a MMSR that follows a convergent segregated approach this should address each of the syntheses included in the review, for example:

For the quantitative component, data will be extracted from quantitative and mixed methods (quantitative component only) studies included in the review by two independent reviewers using the standardized Joanna Briggs Institute data extraction tool in JBI SUMARI #modify if other software or processes will be used for your review#. #Cite the tool to be used or append the data extraction tool if an existing tool has been modified or a new tool developed# Any modifications to existing tools should be described in the text#. The data extracted will include specific details about the populations, study methods, interventions, and outcomes of significance to the review objective.

For the qualitative component, data will be extracted from qualitative and mixed methods (qualitative component only) studies included in the review by two independent reviewers using the standardized Joanna Briggs Institute data extraction tool in JBI SUMARI #modify if other software or processes will be used for your review#. #Cite the tool to be used or append the data extraction tool if an existing tool has been modified or a new tool developed. Any modifications to existing tools should be described in the text#. The data extracted will include specific details about the population, context, culture, geographical location, study methods and the phenomena of interest relevant to the review objective. Findings, and their illustrations will be extracted and assigned a level of credibility.
Any disagreements that arise between the reviewers will be resolved through discussion, or with a third reviewer. Authors of papers will be contacted to request missing or additional data, where required.

Data synthesis and integration

This section should describe how the data will be synthesized, combined and reported in the systematic review. For a MMSR that follows a convergent segregated approach this should address the quantitative synthesis and the qualitative synthesis as well as how they will be integrated in the final synthesis, for example:

This review will follow a convergent segregated approach to synthesis and integration according to the JBI methodology for mixed methods systematic reviews using JBI SUMARI. #Insert a citation to the methodology#. This will involve separate quantitative and qualitative synthesis followed by integration of the resultant quantitative evidence and qualitative evidence.

Quantitative synthesis

Data will, where possible, be pooled with statistical meta-analysis using JBI SUMARI. Effect sizes will be expressed as either odds ratios (for dichotomous data) or weighted (or standardized) final post-intervention mean differences (for continuous data) and their 95% confidence intervals will be calculated for analysis #modify as appropriate#. Heterogeneity will be assessed statistically using the standard chi squared and $^2$ tests. Statistical analyses will be performed using #insert model (random or fixed effects) #. #Cite the Tufanaru et al study# Subgroup analyses will be conducted where there is sufficient data to investigate #add text as appropriate#. Sensitivity analyses will be conducted to test decisions made regarding #add text as appropriate#. Where statistical pooling is not possible the findings will be presented in narrative form including tables and figures to aid in data presentation, where appropriate. A funnel plot will be generated #state software to use# to assess publication bias if there are 10 or more studies included in a meta-analysis#. Statistical tests for funnel plot asymmetry (Egger test, Begg test, Harbord test) will be performed where appropriate.

Qualitative synthesis

Qualitative research findings will, where possible be pooled using JBI SUMARI with the meta-aggregation approach. #Insert a citation to the methodology#. This will involve the aggregation or synthesis of findings to generate a set of statements that represent that aggregation, through assembling the findings and categorizing these findings based on similarity in meaning. These categories are then subjected to a synthesis to produce a comprehensive set of synthesized findings that can be used as a basis for evidence-based practice. Where textual pooling is not possible the findings will be presented in narrative form.

Integration of quantitative evidence and qualitative evidence

The findings of each single method synthesis included in this review will then be configured according to the JBI methodology for mixed methods systematic reviews. #Insert a citation to the methodology# This will involve quantitative evidence and qualitative evidence being juxtaposed and organized/linked into a line of argument to produce an overall configured analysis. Where configuration is not possible the findings will be presented in narrative form.

Conflicts of interest 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.

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.