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The wiki toolkit for planning, conducting and reporting mixed studies reviews

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ABSTRACT

A mixed studies review (MSR) is a type of literature review that includes qualitative, quantitative, and mixed methods studies. This form of literature review is popular since it can provide a rich understanding of complex health interventions and programs. However, conducting a MSR can be challenging since it combines several study designs. A wiki toolkit was developed to provide MSR-specific guidance and suggest tips and tools for planning, conducting and reporting MSR. The toolkit is structured according to eight stages for conducting a systematic review: (1) formulate a review question, (2) define eligibility criteria, (3) select sources of information, (4) identify potentially relevant studies, (5) select relevant studies, (6) appraise the quality of studies, (7) extract data, and (8) synthesize included studies. The toolkit includes examples, tips for searching studies with diverse designs, existing tools for searching, selecting and appraising, synthesis designs, and a template for proposals and reports. This toolkit is presented as a wiki, which allows users to collaboratively modify the content and provides continuous updates on the science of MSR. It is hoped that this wiki toolkit will be useful to all users and contribute to creating a network of people interested in MSR.

Keywords: Mixed studies review, mixed methods review, systematic review, toolkit, wiki

1. INTRODUCTION

This is the second of a three-part series papers on the topic of systematic reviews for information professionals. As information professionals are more and more involved in managing, developing tools, and teaching researchers, clinicians, and students how to perform systematic reviews (Spencer & Eldredge, 2018), they might be interested in learning more on available resources on this topic. As a practical companion to the previous paper on history of reviews (Hong & Pluye, 2018), this paper

presents a toolkit for planning, conducting and reporting one emergent type of systematic reviews: mixed studies review (MSR).

MSR consists of a type of literature review that includes qualitative, quantitative and mixed methods studies; specifically, MSR integrates qualitative and quantitative evidence that is available in the scientific literature (Heyvaert et al., 2013; Hong et al., 2017; Pluye et al., 2016; Pope et al., 2007). MSR is also called mixed methods review, integrative review, or review synthesizing qualitative and quantitative evidence. By combining different types of studies, MSR can address a qualitative question, or a quantitative question, or complementary qualitative and quantitative questions, such as 'Why does an intervention work?', 'How does the intervention work?', and 'What works for whom in what context?' (Anderson et al., 2013; Hong et al., 2017; Pope et al., 2007). Integrating qualitative and quantitative evidence can be particularly useful to provide in-depth answers to complex questions and address practical clinical concerns (Pluye et al., 2009; Pluye et al., 2016). For example, the synthesis of qualitative evidence (from included qualitative studies) can nicely complete findings from the synthesis of quantitative evidence (from included quantitative studies) in at least three ways; it can (a) provide better understanding of contextual factors associated with impacts of an intervention, (b) identify outcomes that are important for patients, families and the public, and (c) explore the diversity of effects across studies (Dixon-Woods et al., 2005; Pluye et al., 2009).

2. TOOLKIT FOR MIXED STUDIES REVIEW

In 2013, a wiki 'Toolkit for Mixed Studies Reviews' was initially created for sup- porting a graduate course on MSR at McGill University. Since 2013, the authors (three researchers and a librarian) have iteratively designed and incrementally im- proved this wiki for librarians, managers, patient partners, practitioners, researchers and trainees who want to better understand, plan, perform, report and teach MSR, or may need to review protocols and papers reporting MSR. For example, more practical checklists and tools have been developed and added in the wiki to help reviewers formulate their review questions as well as select, appraise and synthesize the included studies. The purpose of this wiki is to provide MSR-specific guidance and suggest tips and tools for planning, conducting and reporting MSR. In addition, wiki-users are invited to provide constructive feedback and contribute to the continuing improvement of the wiki. The wiki is freely accessible to the public and received more than 9,000 visits between November 2013 and September 2018 (http://toolkit4mixedstudiesreviews.pbworks.com). MSR include eight stages. The wiki is structured according to these stages: Question, Eligibility, Source, Identification, Selection, Appraisal, Extraction, and Synthesis (memorisable using the QESISAES acronym) (Pluye & Hong, 2014). It provides wiki-users with guidance for performing MSR, and wiki

navigation tips (Fig. 1). The wiki content is summarized below with MSR-specific educational information for librarians, researchers, clinicians, and students new to mixed methods research and systematic reviews.

2.1. Stage 1.

Formulate a review question In contrast to other types of reviews, MSR can address qualitative question(s), or quantitative question(s), or both qualitative and quantitative question(s). Specifically, the page on stage 1 provides three types of tools that can be of great help for novice MSR reviewers and trainees. First, it gives examples of qualitative and quantitative questions. Second, it provides practical templates for formulating review questions, such as PICOT (population or problem; intervention or issue of interest (e.g., exposure); comparator; outcome; timing of outcome assessment) for quantitative questions and SPIDER (sample, phenomenon of interest, design, evaluation, and research type) for qualitative questions (Cooke et al., 2012; Stillwell et al., 2010). Third, two checklists allow wiki-users to self-assess and improve their review questions: one for qualitative questions, and one for quantitative questions.

2.2. Stage 2. Define eligibility criteria

Eligibility criteria consist of inclusion and exclusion criteria. Inclusion criteria can be easier to decide upfront compared to exclusion criteria because they are directly linked with the specific research questions. MSR-specific criteria concern the types of qualitative, quantitative, and mixed methods studies that are to be included for addressing the review question(s). On this wikipage, examples of inclusion and exclusion criteria are provided.

2.3. Stage 3. Choose sources of information

MSR do not differ from qualitative and quantitative reviews with respect to the sources of information. In common MSR, two or three relevant bibliographic databases are usually sufficient (chosen with librarian guidance). In systematic MSR, multiple relevant sources of information are used in a comprehensive manner up to saturation (such as personal files, experts' files, research networks, specialized journals, existing reviews, reference books, bibliographic databases, and citation tracking, among others). In this wikipage, a list of available sources and recommendations are provided.

2.4. Stage 4. Identify potential relevant studies

In systematic MSR, this stage is usually performed by more than one specialized librarian to design, test and review search strategies, which leads to come up with a proper strategy. The wikipage

presents six steps to follow for identifying potential relevant studies. It provides MSR-specific tools that are filters for searching qualitative, quantitative, and mixed methods studies. In particular, the toolkit presents a search filter to identify all types of empirical studies in bibliographic databases, which is performant with high sensitivity and specificity (El Sherif et al., 2016).

2.5. Stage 5. Select relevant studies

In MSR, all types of empirical studies (using qualitative, quantitative, and mixed methods) can be selected according to eligibility criteria. The selection is usually performed in two steps: (a) selecting relevant records based on information provided in titles and abstracts, and (b) selecting relevant studies based on full-text papers. The toolkit presents a tool to reduce the number of irrelevant records to screen: the Automated Text Classifier of Empirical Research (ATCER) (Langlois et al., 2018). The ATCER automatically categorizes publications indexed in bibliographic databases into (a) empirical studies (using qualitative, quantitative and mixed methods), and (b) non-empirical work (commentary, editorial, literature review, method paper, pro- gram description, and professional guideline, among other examples). In common MSR, the selection and appraisal of included studies, and the extraction and synthesis of data (stages 5 to 8) can be performed by only one reviewer (vs. at least two independent reviewers at each step in systematic MSR).

2.6. Stage 6. Appraise the quality of studies

This toolkit presents some existing critical appraisal tools that were developed to appraise the quality of several study designs. More information about one critical appraisal tool that was developed specially for use in MSR is provided in another paper of this series (Hong et al., 2018): the Mixed Methods Appraisal Tool (MMAT) (version 2018).

2.7. Stage 7. Extract data

In MSR, all types of results (derived from qualitative, quantitative, and mixed methods) of included empirical studies are extracted to address the review question(s). The quantitative data extraction is usually performed using a predefined structured questionnaire (data extraction form), while qualitative data can be copy- pasted (passages of text). In this wikipage, the tool provides examples of extracted data, and recommendations for performing a reliable extraction. For example, ordinary Excel software can be sufficient for extracting data from a small number of studies (10 or less). However, specialized software is necessary for managing a large set of studies (100 and more), such as DistillerSR, EPPI-Reviewer, and NVivo for extracting quantitative and qualitative data, and producing data reports

in tabulated and textual format.

2.8. Stage 8. Synthesize included studies

Synthesizing studies in MSR is challenging because different study designs are included. The toolkit presents four synthesis designs that can be used to integrate qualitative and quantitative evidence: (1) data-based convergent synthesis design, (2) result-based convergent synthesis design, (3) parallel-result convergent synthesis design, and (4) sequential synthesis design. These synthesis designs were developed from a review of 459 MSRs (Hong et al., 2017).

2.9. Report mixed studies reviews

This wiki page provides a generic template to report MSR. This template was adapted from the PRISMA statement (Moher et al., 2009). Our generic template has been iteratively designed for/with graduate students who used it. For each section, the template is especially useful as MSR reviewers can simply read recommendations, and replace with content pertaining to their work. It includes specific recommendations for reporting MSRs. It also refers to other existing reporting standards such as those for realist synthesis and meta-narrative synthesis (Wong et al., 2013a, 2013b) .

3. CONCLUSION

In conclusion, the 'Toolkit for Mixed Studies Reviews' consists of a practical free public toolkit that provides a step-by-step guidance. Published as a wiki, it is a collaborative toolkit aimed at developing a network of people interested in MSR, and providing continuous updates on the science of MSR. All librarians, managers, patient partners, practitioners, researchers, and trainees interested in MSR can contribute to the continuous development of this wiki toolkit, post comments on it, or email new or revised content to the MSR wiki toolkit editors.

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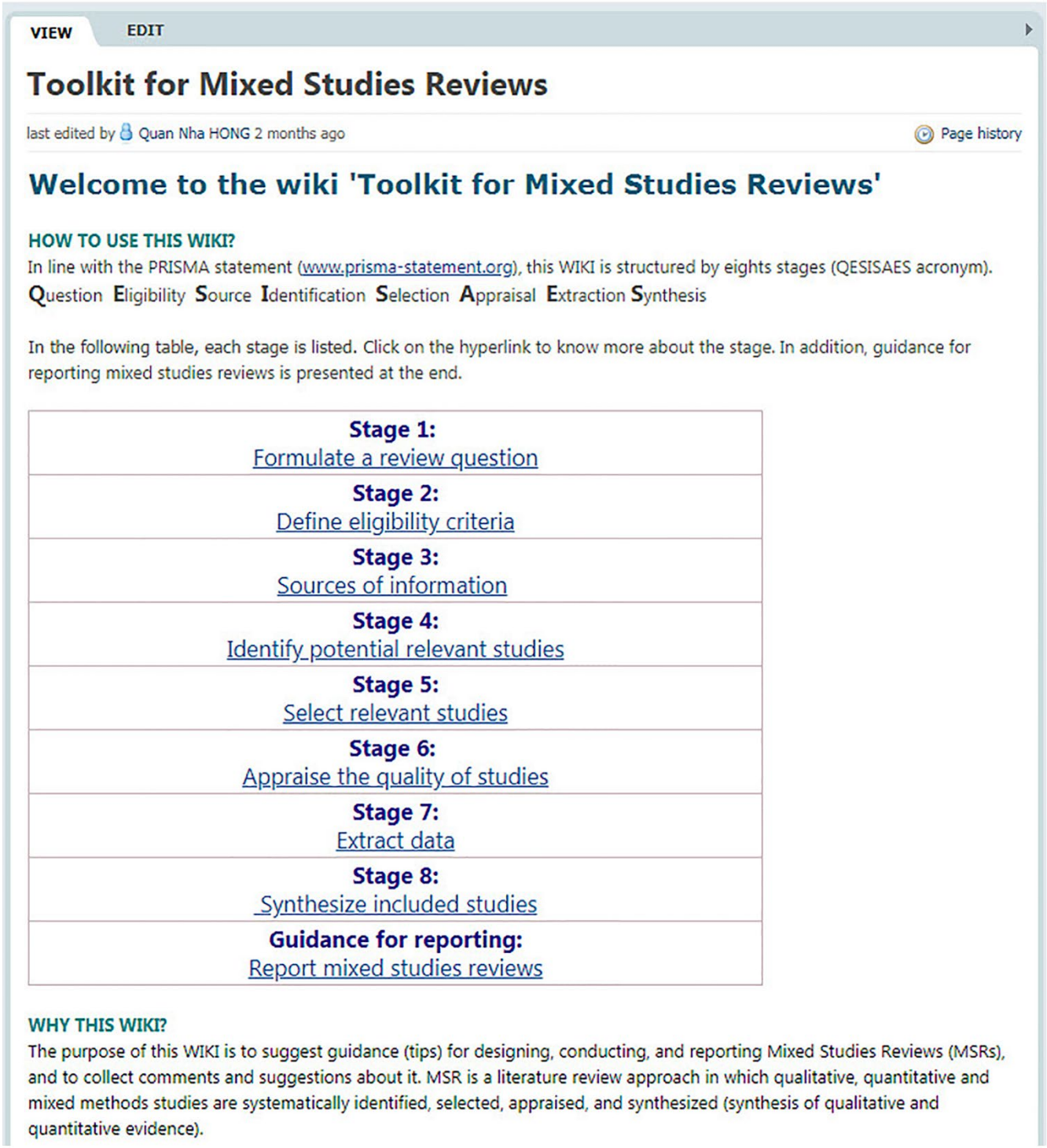
TABLES AND FIGURES

Fig. 1. The MSR wikitoolkit homepage.



VIEW EDIT

Toolkit for Mixed Studies Reviews

last edited by Quan Nha HONG 2 months ago Page history

Welcome to the wiki 'Toolkit for Mixed Studies Reviews'

HOW TO USE THIS WIKI?

In line with the PRISMA statement (www.prisma-statement.org), this WIKI is structured by eights stages (QESISAES acronym).

Question **E**ligibility **S**ource **I**dentification **S**election **A**ppraisal **E**xtraction **S**ynthesis

In the following table, each stage is listed. Click on the hyperlink to know more about the stage. In addition, guidance for reporting mixed studies reviews is presented at the end.

Stage 1: Formulate a review question
Stage 2: Define eligibility criteria
Stage 3: Sources of information
Stage 4: Identify potential relevant studies
Stage 5: Select relevant studies
Stage 6: Appraise the quality of studies
Stage 7: Extract data
Stage 8: Synthesize included studies
Guidance for reporting: Report mixed studies reviews

WHY THIS WIKI?

The purpose of this WIKI is to suggest guidance (tips) for designing, conducting, and reporting Mixed Studies Reviews (MSRs), and to collect comments and suggestions about it. MSR is a literature review approach in which qualitative, quantitative and mixed methods studies are systematically identified, selected, appraised, and synthesized (synthesis of qualitative and quantitative evidence).