Practical guide to undertaking scoping reviews for pharmacy clinicians, researchers and policymakers.

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Practical guide to undertaking scoping reviews for pharmacy clinicians, researchers and policy makers

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Abstract

What is known and Objective

Scoping reviews are a valuable evidence synthesis methodology. They can be used to map the evidence related to any topic to allow examination of practice, methods, policy, and where (and how) future research could be undertaken. As such, they are a useful form of evidence synthesis for pharmacy clinicians, researchers and policy makers to review a broad range of evidence sources.

Comment

This commentary presents the most comprehensive and up to date methodology for scoping reviews published by Joanna Briggs Institute (JBI). This approach builds upon two older approaches by Arksey and O'Malley, and Levac. To assist reviewers working in the field of pharmacy with planning and conducting scoping reviews, this paper describes how to undertake scoping reviews from inception to publication with specific examples related to pharmacy topics.

What is new and conclusion

The JBI scoping review methodology is a valuable evidence synthesis approach to the field of pharmacy and therapeutics. This approach can assist pharmacy clinicians, researchers, and policy makers to gain an understanding of the extant literature, to identify gaps, to explore concepts, characteristics and to examine current practice.

Keywords

Evidence synthesis, mapping, methodology, scoping reviews

What is known and Objective

Scoping reviews have increased in popularity since the publication of the proposed framework by Arksey and O' Malley in 2005 [1]. This was followed by an extension of the work by Levac et al in 2010 to address some inconsistencies in the earlier methodology.[2] While these methodologies provided guidance to researchers, they lacked clarity in some of the steps for undertaking scoping reviews. This led to the development of a working group of methodological experts (the Joanna Briggs Institute (JBI) Scoping Review Methodological working group). In 2015, this group developed the methodology further and published guidance for undertaking scoping reviews, with a further update released in 2020.[3-6]. The aim of both the 2015 and 2020 JBI guidance was to further clarify some of the inconsistencies raised by researchers and provide a user-friendly resource for prospective reviewers.

To date, there are more than 380,000 citations referring to scoping reviews in Google Scholar. Scoping reviews are therefore a popular approach for evidence synthesis. They are used to map evidence to enable in-depth examination of the literature for practice, policy and research relevant to a particular topic, identify where future research is required, and clarify key concepts/ definitions in the literature and identify key characteristics or factors related to a concept, including those related to methodological research.[6-8]

While scoping reviews appear to be increasingly common, concerns have been raised about the rigour and quality of the available methodologies and the lack of consistency of some of the published scoping reviews in terms of their methodology and reporting.[9-11] In this commentary, we will present the steps in undertaking a scoping review based on the 2020 JBI methodology, using an example recently published in a pharmacy related topic. The authors have published several pharmacy related scoping reviews.[12-15] This commentary will outline the various stages of a JBI scoping review as applied to a review of the characteristics and the outcome measures used to assess the effectiveness of medication safety programs in acute care (See Table 1).[15]

Comment

It is important to differentiate between the purposes of conducting a scoping review as opposed to a systematic review.[16, 17] Systematic reviews aim to produce synthesised evidence to inform clinicians and policy makers about the feasibility, appropriateness, meaningfulness and effectiveness of a particular strategy, intervention or approach.[18] Scoping reviews are used to map the evidence relevant to a particular topic, and this can also include the methodological approaches used, concepts, and/or characteristics. Scoping reviews are then able to guide where further research is needed.[19, 20] There are now several resources that reviewers can use to help decide what review is right for them, such as an online tool (https://whatreviewisrightforyou.knowledgetranslation.net/), or a decision-making tree as seen in Pollock et al (2021) article. [21]

Scoping reviews are similar to systematic reviews in that they should be systematic by starting with the formulation of a question, detailing the inclusion and exclusion criteria, searching for

the evidence, extracting data, mapping and summarising the evidence.[22] The main difference between the methodologies is the absence of the requirement for critical appraisal or risk of bias assessment in scoping reviews (although some scoping reviews may include it) and a formal synthesis (such as statistical meta-analysis). The decision to use critical bias in scoping reviews is dependent on the research question. For example, authors may have conducted a scoping review to map the evidence in the field and they want to know the quality, and allow for a structured critical examination of all that evidence and discuss what original researchers need to do to improve that quality. In that situation, critical appraisal of the included evidence source could be justified. As such, scoping reviews are not often used to support recommendations for practice; however, they can be used to identify areas of future research. [19]

Protocol development and review questions

It is recommended that scoping reviews follow an a-priori protocol similar to systematic reviews in order to avoid ad-hoc decision making that can lead to selection and publication biases. Scoping reviews protocols can be registered with Fig Share (https:// figshare.com/) and Open Science Framework (https://osf.io/). PROSPERO do not currently register scoping review protocols [19]. The protocol can also be published in content-specific or methodological journals (such as JBI Evidence Synthesis and BMJ Open). Publications of protocols allow for peer-review and feedback prior to the formal search being conducted. [23, 24]

Developing review objectives and questions is a critical step in any review. The objective guides what the review authors are proposing to achieve in the review. The review questions detail what the objective(s) are in detail and should directly relate to the stated objective(s)[4, 6]. The review questions in scoping reviews are generally broader and hypothesis generating than in systematic reviews. JBI methodology on scoping reviews recommends the use of the PCC mnemonic, where the **P**opulation, **C**oncept and **C**ontext are described. There are times when a scoping review question will not have the full PCC mnemomic, and may only have the Concept and Context. Table 1 details the objective, research questions and the inclusion criteria in few pharmacy related scoping reviews using JBI methodology and you can note the alignment between the objectives and the review questions.

Eligibility criteria are crucial in setting the boundaries for the scoping review. The development of a clear objective and research question based on the PCC mnemonic can help in formulating a concise inclusion and exclusion criteria, which in turns assists in the development of the search strategy (see below). Reasons should be provided for exclusion criteria and should be consistent with the review question.[19]

Example review:

In the example provided in the table relating to medication safety programs[15], the eligibility criteria for this review included any interventions that qualified as a medication safety program. The authors included a clear definition of what constitutes a program. Exclusion criteria included single interventions undertaken in practices where they were not included as part of an initiative to reduce medications errors. [15]

Searching

Searching the evidence should occur in a systematic and broad format to capture the relevant evidence sources. Scoping reviews can include a wide range of study types and evidence such as peer reviewed journal articles, news articles, government reports, commentaries and letters to the editors, if appropriate to the review's objective and question. There needs to be a balance between the search specificity and sensitivity in capturing the relevant citations. A detailed methodology for how to create a search strategy and undertake searches has been published by Aromataris and Riitano (2014). The use of concept maps and logic grids to identify key words relevant to the review can be a helpful starting point for reviewers in the development of a search strategy.[25] Reviewers should seek the support of a librarian during this stage.

Searching for the evidence should be broad and undertaken in relevant databases. Pharmacy related databases may include the following: Medline, CINAHL, or OVID Emcare, Cochrane, JBI, and Nursing and Allied Health databases. Additional searches of clinical trial registries such as the Australian and New Zealand Clinical Trial Registry (ANZCTR) may be relevant. The PsycInfo database can also be useful for questions which combine pharmacy practice with mental health, psychological, and social science concepts. Grey literature can also be a valuable data source in scoping reviews as they provide valuable insight into new areas of research and emerging topics where little has been published.[25] Grey literature can be searched on various databases, such as Google Scholar or Scopus. However specific consideration on how to manage the search needs to occur as grey literature is often not appropriately indexed and offers little specificity.

Selecting the evidence is based on the eligibility criteria that should be clearly articulated in the protocol stage. There should be a process identified to manage any disagreements between reviewers. Two or more reviewers may undertake this step depending on the resources available for the review. It is recommended that piloting of the selection processes for title and abstract and then full text screening is undertaken to ensure consistency and agreement amongst all reviewers. Various softwares are available to manage this step of the scoping review including Covidence®, Endnote™, SUMARI and Excel®.[4, 26]

Example review

The three pharmacy specific reviews included in this commentary have all included appendices to list the search strategies they used. They all used a combination of key words from the PCC components and searched. [12, 14, 15] All scoping reviews discussed in this commentary searched electronic databases such as (PubMed, Ovid Medline, Embase, Cochrane Library, Scopus and Cumulative Index to Nursing and Allied Health Literature). Examples of grey literature searched were Scopus and Google Scholar. [17, 18, 20, 22]

Data extraction and Presentation of Results

Reviewers may develop data extraction tools (usually a table) to facilitate standardised extraction of relevant information from included sources. It is recommended that data extraction tools are piloted at the protocol stage and undergo further iterative refinement in

the review, if deemed necessary. Data extraction should be relevant to the objective of the review and align with the questions. While the type of data to be extracted must be based on the particular review, examples of typical data extracted include study details, countries, study types, methodology/methods, data specific to the PCC, study findings, and definitions.[3, 7] Best-practices asks that two reviewers conduct data extraction on each evidence source.

Presentation of the results can consist of a variety of styles including tabular where the PCC, other extracted data (such as methodological approaches), and other findings that are important to address the review question. There are several examples of presenting results depending on the type of data analysed including bubble charts, histograms, pie charts amongst others. These visual presentations should all be developed so to be easily understood by readers and supported by a narrative description of the results.[19] Scoping reviews do not synthesise the results into a meta-analysis or qualitative thematic synthesis (including meta-aggregation, meta-ethnography or other approaches). JBI methodology on scoping reviews recommends descriptives, such as frequencies, or for qualitative data a basic content analysis, that involves the organizations of findings into high-level categories. These can potentially be developed into theoretical frameworks.

Example review

Examples of presentation of results in the pharmacy specific reviews discussed include tabular formats, flow charts and diagrams. [14, 27]

Discussion and writing a report

Summarising the evidence and discussion of the findings should align to the review objective and questions the scoping review is seeking to address. Discussion about the findings of the review should be presented to highlight evidence gaps, including further areas of research, such as future evidence synthesis, or primary studies. [21]

The discussion should highlight the strengths and limitations of the scoping review. Scoping reviews can provide implications of their findings for policy, practice and research. However, for practice these implications are often limited[6, 19, 21].

Example review

Examples of implications that some scoping reviews listed included adopting a multi-stakeholder approach to the development of quality indicators (Qis) and evaluation of the effect of the introduction of QIs on patient outcome.[28] Another example of implications included the need for a uniform reporting of outcomes related to medication safety programs to compare their effectiveness across studies.[15]

Reporting and publication

Publication of scoping reviews require the same transparency and rigour of reporting as systematic reviews. Many journals require authors to complete a checklist for the Preferred

Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA).[29] PRISMA is an evidence-based set of items for reporting in systematic reviews and meta-analyses.[29] PRISMA primarily focuses on the reporting of reviews evaluating the effects of interventions, but can also be used as a basis for reporting systematic reviews with objectives other than evaluating interventions (e.g. evaluating aetiology, prevalence, diagnosis or prognosis). The use of PRISMA aims at supporting authors to improve the reporting of systematic reviews and meta-analyses. PRISMA-ScR has been developed to guide authors about the items required for full reporting of scoping reviews. Overall, there are 20 items that are essential for reporting scoping reviews and are all discussed above. [30]

Stakeholder engagement and consultation

Stakeholders' consultation is discussed in the three available methodologies of scoping reviews. Arksey and O'Malley (2005) proposed that consultation is optional whereas Levac et al. (2010) described it as an essential component to the development of scoping reviews. The JBI guidance recommends 'consultation of information scientists, stakeholders and/or experts (such as practitioners, patients, consumers, etc) throughout, including in the topic prioritization, planning, execution and dissemination'[4, 31]. However, consideration of including all stakeholders relevant to pharmacy practice and the review topic area should be considered in the planning stage of the scoping review process to ensure all views are represented and the findings are of value to them.

Example review

An example of a consultation process in scoping reviews took place between two pharmacists, an epidemiologist, a neurologist, and a librarian on the review team to provide internal consultation in these key disciplines. A stakeholder group of 10 members with expertise in evidence synthesis, research implementation, pediatrics, mental health, epilepsy, pharmacoepidemiology, and pharmaceutical outcomes were periodically consulted to further characterize paediatric polypharmacy and finalise the review.[32]

Further Resources

Further resources to support reviewers in the conduct and reporting of their scoping reviews are including within this list:

- The JBI Scoping Review Working Group Website (scopingreviews.jbi.global; accessed 05 August 2021)
- JBI reviewer's manual, Chapter 11: Scoping Reviews (https:// wiki.jbi.global/display/MANUAL/Chapter+11%3A+Scoping+reviews; accessed 05 August 2021).
- UniSA Scoping Review website (https://guides.library. unisa.edu.au/ScopingReview; accessed 5 August 2021)
- JBI YouTube channel (https://www.youtube.com/channel/UCEWhJYFQityaRhV-BGCklCQ)
- PRISMA-ScR resources (https://knowledgetranslation.net/portfolios/the-prisma-scr2/) (accessed 5 August 2021).

What is new and conclusion

The JBI scoping review methodology presents pharmacy clinicians, researchers and policy makers with a valuable resource that can be applied to many pharmacy related questions. This approach to evidence synthesis is increasing in popularity with many researchers to explore/map topics and identify new areas for primary research or subsequent systematic reviews. The method of how to conduct a scoping review from inception to publication has been described in this commentary to facilitate clarity of the methodology to pharmacy stakeholders.

Conflict of interest

None to declare

Data Availability Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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Table 1. Scoping review stages with reference to Khalil et al., 2017.

Parameter	**Requirements**
Objective and research questions development Inclusion and Exclusion criteria	PCC mnemonic (Participants, Context, Concept) Study design/time of searches/no relevance to Objective of the review
Protocol development	Registration in either https:// figshare.com/) and Web of Science (webofknowledge.com)
Database searching	Three step searches
Studies selection	Based on Inclusion/Exclusion criteria Tracking selection Reporting selection using PRISMA flow diagram
Data extraction	Relevant to data to PCC
Charting the data	Using various tabular formats and diagrams
Summarising and reporting the data	No synthesis of results Limitations Implications for Research
Consultation with stakeholders	Optional
PRISMA-ScR	Publication (20 item checklist)

Table. 2 Examples of pharmacy related scoping reviews using JBI guidance

Authors	Review Objective	Review questions	Participants	Concept of Interest	Context
Khalil et 2017 (15)	To examine the characteristics of medication safety programs in the primary care setting	What are the types of medication safety programs in the primary care setting described in the literature? What are the outcome measures reported in studies addressing medication safety programs in the primary care setting that assesses patient safety?	Participants of any age with any condition using care provided by any primary care service.	Characteristics of the medication safety programs, and the outcome measures used to measure the effectiveness of these programs on patient safety	Primary care settings, primary healthcare organizations, general practitioner clinics, outpatient clinics and any other clinics that do not classify patients as inpatients
Hoppe et al., 2020 (14)	To investigate the attitudes and practice strategies of community pharmacists towards drug misuse management	What medications and medication classes do community pharmacists perceive as being misused? What are the attitudes of community pharmacists towards their knowledge concerning drug misuse topics such as addiction, pain management and conflict resolution?	Community pharmacists	Types of misused medications, reasons for misuse and associated treated conditions, pharmacists' number of years of practice experience, pharmacists' knowledge, pharmacists' training and education, pharmacists' attitudes towards drug misuse and practice strategies used by pharmacists to manage drug misuse.	Primary care and hospital settings. These included community pharmacies, general practice clinics and hospital pharmacies.

Khalil et al., 2020 (13)	To provide a detailed map of the most common adverse drug reactions (ADRs) experienced in primary healthcare settings	What are the type of ADRs reported in primary care the major What are the drug classes associated with the reactions? What are the causes of ADRs and their prevalence as well as consequences of experiencing ADRs in primary care?	Participants of any age and any condition treated and/or managed from any primary care services.	The type of adverse drug reactions experienced by patients and the classes of medications associated with these adverse drug events.	Primary care setting. These include; primary health care organizations, general practitioner clinics, pharmacies, outpatient clinics and any other clinics that do not classify patients as inpatients. We only excluded hospital patients.