

Scoping reviews: What they are & How you can do them



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Conflicts of interest

- None to declare.



Learning objectives

1. Describe/explain what scoping reviews are and how they can be applied.
2. Discuss/examine different examples of scoping reviews.
3. Describe the steps to follow when doing a scoping review.



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What are scoping reviews?

Types of knowledge syntheses

1. Systematic reviews
2. Network meta-analysis
3. Scoping reviews ←
4. Overview of reviews
5. Rapid reviews
6. Diagnostic reviews
7. Prognostic reviews
8. Economic reviews

Plus emerging methods



Definition of a scoping review

“Exploratory projects that systematically map the literature available on a topic, identifying key concepts, theories, sources of evidence and gaps in the research”



Canadian Institutes of Health Research, <http://www.cihr-irsc.gc.ca/e/41382.html>



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Why are scoping reviews helpful to knowledge users?

Why do a scoping review? (1)

Arksey and O'Malley (2005) identified 4 reasons:

- 1) To examine the extent, range and nature of available research on a topic or question
- 2) To determine the value of undertaking a full systematic review
- 3) To summarize and disseminate research findings across a body of research evidence (e.g. that is heterogeneous and/or complex)
- 4) To identify research gaps in the literature to aid planning and commissioning of future research.



Why do a scoping review? (2)

Most common reasons for conducting a scoping review*, N = 494	Count (%)
Explore breadth/extent of evidence	336 (68%)
Map and summarize evidence	177 (36%)
Inform future research	103 (21%)
Identify knowledge gaps	84 (17%)
Address knowledge gaps	55 (11%)
Implications for practice and policy	41 (8%)
Advance knowledge/awareness	28 (6%)
Identify key themes	22 (4%)
Develop a conceptual framework/map	15 (3%)
Not reported	22(4.4%)



* Note, categories are not mutually exclusive.

Tricco et al., 2016. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4746911/>

Why/how are scoping reviews useful?

- Help to clarify working definitions and conceptual boundaries of a topic.
- When a body of literature has not been comprehensively reviewed, or exhibits a large, complex, or heterogeneous nature.





Examples of scoping reviews by our center

SYSTEMATIC REVIEW

Open Access



Barriers and facilitators to uptake of systematic reviews by policy makers and health care managers: a scoping review

Andrea C. Tricco^{1,2}, Roberta Cardoso¹, Sonia M. Thomas¹, Sanober Motiwala¹, Shannon Sullivan¹, Michael R. Kealey^{1,3}, Brenda Hemmelgarn⁴, Mathieu Ouimet⁵, Michael P. Hillmer^{6,7}, Laure Perrier⁶, Sasha Shepperd⁸ and Sharon E. Straus^{1,9*}

Abstract

Background: We completed a scoping review on the barriers and facilitators to use of systematic reviews by health care managers and policy makers, including consideration of format and content, to develop recommendations for systematic review authors and to inform research efforts to develop and test formats for systematic reviews that may optimise their uptake.

Methods: We used the Arksey and O'Malley approach for our scoping review. Electronic databases (e.g., MEDLINE, EMBASE, PsycInfo) were searched from inception until September 2014. Any study that identified barriers or facilitators (including format and content features) to uptake of systematic reviews by health care managers and policy makers/analysts was eligible for inclusion. Two reviewers independently screened the literature results and abstracted



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<https://www.ncbi.nlm.nih.gov/pubmed/26753923>

Key findings

- Examined barriers and facilitators to the use of systematic reviews (SR) by health care managers and policy makers, e.g. format and content, to develop recommendations for authors.
 - Findings to inform the preparation of SR, including:
 - Provision of 1-page summaries with key messages, tailored to the relevant audience.
 - Creation of partnerships between researchers and policy makers/managers to facilitate the conduct and use of systematic reviews to enhance relevance of reviews and increase uptake.
- Used to inform 1-page policy brief used by CIHR



BMJ Open Utility of social media and crowd-sourced data for pharmacovigilance: a scoping review protocol

Andrea C Tricco,^{1,2} Wasifa Zarin,¹ Erin Lillie,¹ Ba Pham,¹ Sharon E Straus^{1,3}

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ABSTRACT

Introduction: Adverse events associated with medications are under-reported in postmarketing surveillance systems. A systematic review of published data from 37 studies worldwide (including Canada) found the median under-reporting rate of adverse events to be 94% in spontaneous reporting systems. This scoping review aims to assess the utility of social media and crowd-sourced data to detect and monitor adverse events related to health products including pharmaceuticals, medical devices, biologics and natural health products.

Methods and analysis: Our review conduct will follow the Joanna Briggs Institute scoping review methods manual. Literature searches were conducted in MEDLINE, EMBASE and the Cochrane Library from inception to 13 May 2016. Additional sources included searches of study registries, conference abstracts, dissertations, as well as websites of international regulatory authorities (eg, Food and Drug

Strengths and limitations of this study

- We will conduct a comprehensive literature search of multiple electronic databases and sources for difficult to locate and unpublished studies (or grey literature).
- Our scoping review will conform to the methodologically rigorous methods manual by the Joanna Briggs Institute.
- Numerous strategies will be used to disseminate our results widely.
- To increase the feasibility of our scoping review, we will limit to English and have one data abstractor and one verifier.

INTRODUCTION

Social media has gained unprecedented popularity worldwide. Currently there are

Conducted for Health Canada, <https://www.ncbi.nlm.nih.gov/pubmed/28104709>



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Key findings (from upcoming manuscript)

- Aimed to characterize the literature on social media for detecting adverse events (AEs) related to health products.
- Some encouraging results; social media data information extraction systems can supplement data from regulatory agency databases, capture rare AEs and identify AEs earlier than the official alert.
- The utility, validation and implementation of social media data information extraction systems remain under-studied.

→ Used to inform Health Canada's development of social media platform



Evaluative Reports on Medical Malpractice Policies in Obstetrics: A Rapid Scoping Review

Roberta Cardoso¹, Wasifa Zarin¹, Vera Nincic¹, Sarah Louise Barber², Ahmet Metin Gulmezoglu³, Charlotte Wilson¹, Katherine Wilson¹, Heather McDonald¹, Meghan Kenny¹, Rachel Warren¹, Sharon E. Straus^{1,4} and Andrea C. Tricco^{1,5*}

Abstract

Background: The clinical specialty of obstetrics is under particular scrutiny with increasing litigation costs and unnecessary tests and procedures done in attempts to prevent litigation. We aimed to identify reports evaluating or comparing the effectiveness of medical liability reforms and quality improvement strategies in improving litigation-related outcomes in obstetrics.

Methods: We conducted a rapid scoping review with a 6-week timeline. MEDLINE, EMBASE, LexisNexis Academic, the Legal Scholarship Network, Justis, LegalTrac, QuickLaw, and HeinOnline were searched for publications in English from 2004 until June 2015. The selection criteria for screening were established a priori and pilot-tested. We included reports comparing or evaluating the impact of obstetrics-related medical liability reforms and quality improvement strategies on cost containment and litigation settlement across all countries. All levels of screening were done by two reviewers independently, and discrepancies were resolved by a third reviewer. In addition, two reviewers independently extracted relevant data using a pre-tested form, and discrepancies were resolved by a third reviewer. The results were summarized descriptively.

Key findings

- Aimed to identify documents evaluating or comparing the effectiveness of medical liability reforms and quality improvement strategies to improve litigation-related outcomes in obstetrics.
 - Only a few litigation policies were evaluated or compared.
- Initiatives to reduce medical malpractice litigation could be associated with a decrease in adverse and malpractice events.
 - Given the heterogeneous settings and reported outcomes, the advantages and disadvantages of initiatives may vary.

→ Used to inform litigation policy strategies in South Africa



Discussion question

Can anyone provide an example of a scoping review that they have done or are currently working on?





Examples of non-health related scoping reviews

Example: scoping review in education

Internet and Higher Education 25 (2015) 85–95



Contents lists available at ScienceDirect

Internet and Higher Education



The use of flipped classrooms in higher education: A scoping review[☆]



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ABSTRACT

There is increasing pressure for Higher Education institutions to undergo transformation, with education being seen as needing to adapt in ways that meet the conceptual needs of our time. Reflecting this is the rise of the flipped or inverted classroom. The purpose of this scoping review was to provide a comprehensive overview of relevant research regarding the emergence of the flipped classroom and the links to pedagogy and educational outcomes, identifying any gaps in the literature which could inform future design and evaluation. The scoping review is underpinned by the five-stage framework Arksey and O'Malley. The results indicate that there is much indirect evidence emerging of improved academic performance and student and staff satisfaction with the flipped approach but a paucity of conclusive evidence that it contributes to building lifelong learning and other 21st Century skills in under-graduate education and post-graduate education.

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Example: scoping review in computer science

Supporting KMS through Cloud Computing: a scoping review

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Abstract - After analyzing 2 to 5 years trends in the latest Gartner hype cycle of emerging technologies, cloud computing appeared to be a viable alternative for the support of Knowledge Management Systems development. A scoping review was carried out to confirm this hypothesis by identifying and analyzing the relevant published information in this area. The present paper describes the mapping of the literature and conceptual issues exploring three scientific databases - Web of Science, IEEE Xplore and EBSCO (MIS Quarterly). The main goal of this work is to identify progress in the application of cloud computing, as a possible support platform for Knowledge Management Systems development.

Keywords - KMS, Knowledge Management Systems, Cloud Computing, scoping review

supports KM and allows knowledge to be created, externalized and transferred as information, to be stored and distributed within the organization'[6].

In this context, managing organizational knowledge, aims to facilitate knowledge transfer through the knowledge – information – new knowledge cycle, leading to utilization and innovation (adapted from [7]).

Maier [8] claims that by the beginning of the 21st century, the ever-increasing pace of innovation in the field of information and communication technology (ICT) has delivered numerous instruments ready to be applied in organizations to support managing organizational knowledge. These include intranet infrastructures, document and content



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<http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=5974347&isnumber=5974162>

Example: scoping review in housing policy

Prevalence and Causes of Urban Homelessness Among Indigenous Peoples: A Three-Country Scoping Review

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Human Geography Program, Department of Earth & Atmospheric Sciences, University of Alberta, Edmonton, AB, Canada

(Received April 2013; accepted April 2014)

ABSTRACT *A scoping review was carried out to investigate the prevalence and causes of urban homelessness among Indigenous peoples in Canada, Australia and New Zealand. Relevant information was sought from both academic and grey literatures. Data on prevalence were sourced from homeless count reports. Analysis reveals Indigenous peoples are consistently over-represented within urban homeless populations, often by a factor of 5 or more. Literature addressing causation is limited, with just 35 relevant studies identified. These were reviewed to build a thematic and contextual account of urban Indigenous homelessness. Eight key themes were evident, which encompass different cultural understandings of housing and mobility, as well as complex and often traumatic relationships between settler states and Indigenous peoples. Individually and collectively, these factors greatly complicate Indigenous peoples' access to safe, affordable and adequate urban housing. Broad similarities between the three case study countries suggest opportunities for further comparative research as well as policy transfer.*

KEY WORDS: Homelessness, housing need, migration, Indigenous peoples, scoping review



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Doing a scoping review

Overview of scoping review steps by the Joanna Briggs Institute

Protocol, title, background, review question(s) & objective(s)

Eligibility criteria and comprehensive searching to identify sources of evidence

Selection of relevant sources of evidence (screening)

Extracting and charting the results

Conclusions and implications



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Peters et al., 2015. <https://www.ncbi.nlm.nih.gov/pubmed/26134548>

Scoping review steps by the Joanna Briggs Institute

1. Protocol: The protocol pre-defines the objectives and methods and details the plans. It can be refined, as needed (report any changes).

1. Develop a protocol (*a priori*)

How is the step operationalized in the literature?

Reported in **13%** of N=494 included scoping reviews in Tricco et al., 2016



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Peters et al., 2015. <https://www.ncbi.nlm.nih.gov/pubmed/26134548>, Tricco et al., 2016. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4746911/>

Scoping review steps by the Joanna Briggs Institute

2. Review question/objective:

The objective can be broad, guides the scope. The review question(s) should be consistent with the title and inform the eligibility criteria.

1. Develop a protocol (*a priori*)

2. State your review question/objective clearly

How is the step operationalized in the literature?

Reported in 97% of N=494 included scoping reviews in Tricco et al., 2016



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Scoping review steps by the Joanna Briggs Institute

3. Eligibility criteria: guide the review, and used to make decisions on the sources to include. The rationale for each of the criteria should be clearly explained.

1. Develop a protocol (*a priori*)

2. State your review question/objective clearly

3. Establish your eligibility criteria (with a rationale)

How is the step operationalized in the literature?

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Scoping review steps by the Joanna Briggs Institute

4. Searching databases: The search strategy should be comprehensive. Detail publication date & language limitations, with a rationale.

1. Develop a protocol (*a priori*)

2. State your review question/objective clearly

3. Establish your eligibility criteria (with a rationale)

4. Search >1 database

How is the step operationalized in the literature?

Reported in **93%** of included scoping reviews in Tricco et al., 2016



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Scoping review steps by the Joanna Briggs Institute

5. Reference list scanning: The reference lists of all identified sources should be searched for additional sources.

1. Develop a protocol (*a priori*)

2. State your review question/objective clearly

3. Establish your eligibility criteria (with a rationale)

4. Search >1 database

5. Scan reference lists

How is the step operationalized in the literature?

Reported in 56% of N=494 included scoping reviews in Tricco et al., 2016



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Scoping review steps by the Joanna Briggs Institute

6. Grey literature searching:

If applicable to the review question/objective, include unpublished literature (grey literature) in your search strategy.

6. Search grey literature

How is the step operationalized in the literature?

Reported in 52% of N=494 included scoping reviews in Tricco et al., 2016



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Scoping review steps by the Joanna Briggs Institute

7. Level one screening:

Screen titles and abstracts of the identified sources, ideally by 2 or more reviewers (independently).

6. Search grey literature

7. Screen titles & abstracts (by ≥ 2 reviewers)

How is the step operationalized in the literature?

Reported in **36%** of N=494 included scoping reviews in Tricco et al., 2016



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Scoping review steps by the Joanna Briggs Institute

8. Level two screening:

Screen the full texts of the identified sources, ideally by 2 or more reviewers (independently).

6. Search grey literature

7. Screen titles & abstracts (by ≥ 2 reviewers)

8. Screen full-texts (by ≥ 2 reviewers)

How is the step operationalized in the literature?

Reported in **29%** of N=494 included scoping reviews in Tricco et al., 2016



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Scoping review steps by the Joanna Briggs Institute

9. Charting form: record of the characteristics of the included studies and the key information relevant to the review question(s). Can refine as needed.

6. Search grey literature

7. Screen titles & abstracts (by ≥ 2 reviewers)

8. Screen full-texts (by ≥ 2 reviewers)

9. Have a pre-defined charting form (can refine it)

How is the step operationalized in the literature?

Reported in **43%** of N=494 included scoping reviews in Tricco et al., 2016



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Scoping review steps by the Joanna Briggs Institute

10. Charting: extract relevant data from the included sources, ideally by 2 or more reviewers (independently).

6. Search grey literature

7. Screen titles & abstracts (by ≥ 2 reviewers)

8. Screen full-texts (by ≥ 2 reviewers)

9. Have a pre-defined charting form (can refine it)

10. Chart data (by ≥ 2 reviewers)

How is the step operationalized in the literature?

Reported in **30%** of N=494 included scoping reviews in Tricco et al., 2016



Scoping review steps by the Joanna Briggs Institute

11. Present results: use diagrams, tables, and/or a descriptive format that aligns with the objective/review question(s).

11. Present results in diagrams, or tables

How is the step operationalized in the literature?

Reported in **83%** of N=494 included scoping reviews in Tricco et al., 2016



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Scoping review steps by the Joanna Briggs Institute

12. Flow diagram: shows the decision process, including search results, selection process results, additions from reference searching, etc. and the final number of included sources

How is the step operationalized in the literature?

Reported in **47%** of N=494 included scoping reviews in Tricco et al., 2016

11. Present results in diagrams, or tables

12. Present flow diagram



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Scoping review steps by the Joanna Briggs Institute

13. Research implications:

Following the conclusion(s), identify recommendations for future research based on gaps identified (including conduct of a systematic review).

How is the step operationalized in the literature?

Reported in 84% of N=494 included scoping reviews in Tricco et al., 2016

11. Present results in diagrams, or tables

12. Present flow diagram

13. Identify implications for research



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Scoping review steps by the Joanna Briggs Institute

14. Implications for practice:
if applicable, depending on the focus of the review, practice implications may be specified.

How is the step operationalized in the literature?

Reported in **54%** of N=494 included scoping reviews in Tricco et al., 2016

11. Present results in diagrams, or tables

12. Present flow diagram

13. Identify implications for research

14. Identify implications for practice



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Relevant work: scoping review methods

- **Methods papers on scoping reviews:**

- A scoping review on the conduct and reporting of scoping reviews by Tricco et al., <https://www.ncbi.nlm.nih.gov/pubmed/26857112>
- Advancing scoping study methodology: a web-based survey and consultation of perceptions on terminology, definition and methodological steps by O'Brien et al., <https://www.ncbi.nlm.nih.gov/pubmed/27461419>

- **Upcoming reporting guideline:**

- An extension of the PRISMA statement is for scoping reviews is underway: PRISMA-ScR. <http://www.equator-network.org/library/reporting-guidelines-under-development/>





Polling questions

Poll #1

When doing a scoping review, should you plan to conduct a meta-analysis?

Yes

No

Unsure



Poll #2

When doing a scoping review, should you plan to appraise the risk of bias of included sources?

Yes

No

Unsure



Summary

- Scoping reviews are conducted to map the literature available on a topic in a systematic way.
- Scoping reviews are useful when an area of research is new or emerging, heterogeneous and/or complex.
- Scoping reviews can be conducted using the Joanna Briggs Institute guidance.



Learning Objectives

1. Describe/explain what scoping reviews are and how they can be applied.
2. Discuss/examine different examples of scoping reviews.
3. Describe the steps to follow when doing a scoping review.



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Questions

Do you have any questions about today's presentation?



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Thank you for your attention!

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