

3.6

Assessing the problems and developing a scoping review

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3.6.1 Learning objectives

To understand the role of scoping reviews when planning research in health emergency and disaster risk management (Health EDRM), including:

1. Scoping reviews as a research methodology.
2. Application of the methodology, including the steps involved and reporting of findings.
3. Tools that facilitate the scoping review process.

3.6.2 Introduction

A scoping review is a research method which synthesizes the available evidence in a subject area. Although relatively new, it is an increasingly popular approach in health sciences and research (1) and can make an important contribution to Health EDRM. It is used to examine the extent, range and nature of research activity; to determine the value of undertaking a full systematic review (see Chapter 2.6); to summarize and disseminate research findings; and to identify research gaps in the existing literature (see Chapter 3.7) (2).

While scoping reviews are similar to systematic reviews in their utility, a key difference emerges when it comes to the research question or objective. The nature of the scoping review as a 'reconnaissance tool' means that it typically has a broader scope, and so the research question tends to be less focused than in a systematic review. Consequently, the inclusion criteria for scoping reviews are wider and may be defined both a priori and post hoc. Another element that differentiates scoping reviews from systematic reviews is the lack of a formal quality assessment process. This is again linked to the nature of the scoping review for which the main goal is to map the available evidence rather than to produce a response to the research question by synthesizing evidence from critically appraised documents. However, in spite of these differences, like systematic reviews, scoping reviews must adhere to the principles of transparency, validity, and reproducibility.

3.6

This chapter outlines and describes the scoping review methodology and uses two case studies as examples to illustrate the process.

3.6.3 Methods

Arksey and O'Malley (1) first proposed a methodological framework for conducting scoping reviews in 2005. However, since then it has undergone several revisions and modifications. In 2012, Levac and colleagues reviewed and made recommendations on how to improve scoping reviews (2). Subsequently, Peters and colleagues proposed guidance for scoping reviews based on the methodology developed by members of the Joanna Briggs Institute and Collaborating Centers (3). In 2018, Tricco et al, developed an extension to Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) for the reporting of scoping reviews with the aim of improving the quality of the methodology and its reporting (4).

A scoping review can be viewed as a five-step process, which includes:

- i) identifying the research question
- ii) identifying relevant studies
- iii) selecting relevant studies
- iv) charting the data
- v) collating, summarizing and reporting the results.

Arksey and O'Malley also recommend the additional but optional step of carrying out a consultation exercise to inform and validate the findings of the literature review (1).

3.6.4 Identifying the Research Question

The first step of the scoping review process is to create a review team, which should include people with expertise in scoping reviews and where possible, the subject matter, such as Health EDRM. The review team should also include librarians (5) (Chapter 6.2). Co-production and collaboration among people with such a diverse range of skills and experience will ensure that the research proceeds in a logical, scientific manner that is aligned with and builds on the existing knowledge in the subject area.

When the review team has been created, the next step is to identify the objective of the review and, based on this, define the research question (see Chapter 3.5). The scope should be as wide as possible, to allow the review to capture as much of the available evidence as possible, but this should be balanced against practicalities such as feasibility, time and resource constraints (2).

Next, a scoping review protocol should be developed and published. The protocol should contain the rationale for the review, its objectives, detailed information on the methodology, including the inclusion and exclusion criteria, and an account of how the findings will be disseminated (6). This will guide the research process, ensure transparency and help to reduce duplication of efforts by researchers who undertake similar studies in the future.

3.6.5 Identifying Relevant Studies

The next step is to identify the relevant literature, which begins with defining the search strategy and identifying the key concepts in the research question (see Chapter 6.2). This is an activity which should, where possible, be done together with a librarian. Defining the search strategy involves identifying the keywords, subject terms, themes and phrases related to and based on the key concepts as well as their synonyms. When this has been done, other limits such as the type and language of the publication and the period that the review will cover should be defined. Finally, the databases to be searched should be identified. The identified keywords, subject terms, themes and phrases should be combined and applied to each of the selected databases, bearing in mind that such combinations (and the search strategy as a whole) may need to be adapted for the different databases. A good approach is to carry out preliminary searches to test the process, and refine it if necessary, before undertaking the definitive search. The search should include searches of protocol registries and be followed by hand-searching of key journals and checking the reference lists of relevant articles, in order to minimize the possibility of missing relevant documents.

The process described above generally identifies peer-reviewed literature but may omit important documents like grey literature – that is, information produced and found outside of traditional publishing and distribution channels, such as presentations, reports, theses, conference proceedings, policy statements and working papers produced by government, inter- and nongovernmental organizations, professional networks or other organizations. Therefore, the peer-reviewed literature search should, where possible, be reinforced by a grey literature search, in order to ensure a more comprehensive capturing of the evidence and reduce the risk of reporting bias. Grey literature can be found through searches using online search engines and targeted searches on the websites of relevant and related organizations.

The search process and results of the searches conducted should be documented as meticulously as possible, in order to maximize recall, and to ensure that it can be reported and reproduced accurately. It is important to keep a record of the databases searched, the dates each search was done, and the results that were produced. Data management tools such as spreadsheets and bibliographic software packages such as Reference Manager or Endnote, can be useful for this. The search strategy should be included in the review report.

3.6.6 Study Selection

The third step in the scoping review process is the selection of relevant articles and studies, which is performed by a team of people who screen the articles retrieved in the search. This begins with a definition of the inclusion and exclusion criteria based on the scoping review's research question and objectives and involves describing the characteristics that eligible studies must possess. These criteria may be defined before or after the search, but a good approach is to draw up a preliminary list of criteria which can be reviewed and refined after the initial search and emerging themes become more apparent. The criteria will guide the people

3.6

screening the articles for inclusion and ensure consistency in decision-making around the selection of articles to be included in the review.

Study selection should be carried out by at least two screeners, each of whom document and report their decision making. This should begin with a rapid screening of the titles and abstracts, to eliminate irrelevant studies or those which do not respond to the eligibility criteria. This can be done manually or might be helped through the use of software tools such as Abstrackr, Covidence, SRA-Helper for EndNote, Rayyan and RobotAnalyst, DistillerSR: details of these tools and others can be found online (7). Using software can facilitate, speed up and improve the efficiency of the abstract screening process (8). In most cases, the search results can be uploaded to the screening platforms either directly from databases, or from bibliographic management tools and spreadsheets. They also allow labels to be attached to processed references, which are indicated and displayed to each member of the screening team. This enables collaborative and concurrent work among multiple screeners, with each being able to make independent decisions about which articles should be included or excluded.

Following the initial selection, the full texts for the articles should be obtained and checked against the review's inclusion and exclusion criteria. This requires a reading of each article and a decision about whether it should be included in the review. The final selection should be done independently by at least two people to minimize bias and error. In case of disagreement, decisions should be evaluated and discussed as a team until consensus is reached (2). This may involve seeking the input of a more senior team member. Any deviations from the scoping review protocol should be documented and reported.

3.6.7 Charting the Data

This is the process of recording the characteristics of the reviewed documents and keeping a record of the extracted information, in a systematic way. Such records should include general information such as the article's authors, title, type and date of publication and country of origin; study characteristics including the aim and objectives of the study; design and methodology; population characteristics; intervention; outcomes or results; subject areas or themes; and other relevant notes. The extracted data can be stored in simple spreadsheets such as Excel, but dedicated software is also available, including those mentioned above to help with screening as well as Sysrev (9), SRDR (10), the Joanna Briggs Institute's System for the Unified Management, Assessment and Review of Information (JBI SUMARI) (11), TableBuilder (12). To minimize error, everyone working on data extraction and charting should use a standardized extraction sheet which has been designed collaboratively.

3.6.8 Collating, Summarizing and Reporting the Results

In this stage, the review process should be summarized and presented in a comprehensible manner. The information can be organized and displayed using tables and flow charts such as the PRISMA diagram (9), which illustrate the search and selection processes.

The results should be synthesized, analysed and used to generate responses to the research questions for the review. The findings should be collated and presented in a format that facilitates easy understanding for readers and the report should also contain information on the data analysis and synthesis methods used (13).

Guidance on good reporting of scoping reviews are available in a special extension to the PRISMA guideline, which includes a checklist, as well as examples and explanations of best practices for reporting the findings of scoping reviews (4).

Case Studies 3.6.1 and 3.6.2 provide examples of scoping reviews of the evidence base for disaster management in low- and middle-income countries (LMIC) and primary research in public health emergency preparedness (PHEP). The first study (14) reviewed existing evidence on emergency planning in health for LMIC settings with a particular focus on studying how it differs from high-income countries. The focus was mainly on searching the literature. In the second review (15), the aim was to get a comprehensive overview of PHEP stakeholders were therefore consulted to ensure that no crucial areas or documents were overlooked. The consultation exercise also served to validate the findings from the literature based on the stakeholders' knowledge and experience. This highlights how scoping reviews are not a 'one size fits all' activity, but rather an exercise that should be closely aligned with and adapted to the research question and objectives.



3.6

Case Study 3.6.1

Disaster management in LMICs: scoping review of the evidence base

This study reviewed the evidence on emergency planning in health for LMIC settings with a particular focus on studying how it differs from high-income countries.

A search strategy was developed by compiling the themes and topics relevant to the topic and using them to generate search terms that were then applied in a pilot search. The search strategy was then adapted and applied to six electronic databases: Embase, The Medical Literature Analysis and Retrieval System Online (MEDLINE), PsycINFO, Biosis, Science Citation Index, Cumulative Index of Nursing and Allied Health Literature (CINAHL) and the Cochrane Library. The search was limited to articles published between 1990 and 2011.

The citations generated were downloaded into a reference manager database and duplicates were excluded, resulting in 2652 articles to be screened. A title and abstract review and thematic coding was done by the members of the reviewing team; disagreements regarding the relevance or categorization of articles were resolved through discussion and collective reviewing until a consensus was reached. 1545 articles were eventually selected for review. The characteristics of the reviewed documents, as well as extracted information from the studies themselves were recorded. This included a categorization of the results according to country of origin of articles, type of report and type of disaster, and thematically according to income classification and phase of the disaster management cycle (14).

Case Study 3.6.2**The evidence base of primary research in PHEP: a scoping review and stakeholder consultation**

This scoping review explored existing research on PHEP and identified knowledge gaps. In consultation with a library specialist, the reviewers developed a search strategy with search terms relevant for public health, emergencies or disasters, emergency preparedness or emergency management and evidence or evaluation. This search strategy was applied to MEDLINE, Embase, BIOSIS, PsycInfo and Ebsco (CINAHL, Academic Search Premier, Health Business Elite, Environment Complete and SocINDEX). The search was restricted to the years 1998-2013 but designed to include key emergency events. In a second phase, the reference lists of included articles were checked for further articles. Finally, a Google search was done and other relevant sources were consulted to find grey literature.

The database search produced 3631 citations, which after duplicate and title screening, resulted in 322 articles for the selection stage of the review. Together with the 74 results generated from the other searches, two researchers independently reviewed all the articles for possible inclusion based on the following inclusion criteria:

- Does the article specifically include the actions of Public Health (local, province/state or national level)?
- Does the article include public health actions in aspects of emergency management such as prevention/mitigation, preparedness, response, and/or recovery?
- Does the article include an evaluation of public health actions during an emergency event (whether based on qualitative or quantitative data) OR propose emergency management-related standards or best practices that have been derived from a process with clear methods?

The characteristics of the studies were charted, and the information extracted was coded and analysed using the thematic analysis approach.

The next stage was a consultation with key informants which began with a survey to elicit their feedback on the key themes identified during the document review, and the identification of any themes or relevant documents that had been overlooked in the review. The consultation stage was concluded with a face-to-face working group meeting to validate the findings of the previous stages of the review (15).



3.6

3.6.9 Consultation Exercise

Although there is some debate around the necessity of having a consultation stage such as that noted in Case Study 3.6.2, it is recommended that this stage of the process be included where possible. It should include subject experts and other key informants. The information generated from such an exercise allows for triangulation with the findings from the literature and so helps to validate the findings of the scoping review.

3.6.10 Conclusions

This chapter has described the general principles of the scoping review methodology. More information is available in the suggestions for further reading. A more in-depth explanation of how to apply the methodology in health policy and systems research in both routine and emergency contexts has also been prepared by Tricco and colleagues (16).

3.6.11 Key messages

- **Scoping reviews map and synthesize the available evidence in a given subject area.**
- **They can be used to gauge the extent, range and nature of research activity, determine the value of undertaking a more formal systematic review, identify research gaps and develop a research agenda.**
- **While scoping reviews differ from systematic reviews, they are not substandard systematic reviews, rather, they are a research methodology in their own right. They should therefore adhere to good research principles of transparency, validity and reproducibility.**

3.6.12 Further reading

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