

# What are scoping reviews and why are they important in doctoral dissertations?

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(UPF)  
September 2021



# Credits

- **Title:** What are scoping reviews and why are they important in doctoral dissertations?
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- **Context:** support material for a doctoral seminar in the Information Studies area of the DigiDoc Group. UPF Communication Department.
- **Last edited:** September 30, 2021
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# Abstract and keywords

- **Abstract**

- Presentation of the main characteristics of scoping reviews, in themselves, and also in comparison with systematic reviews. Uses in doctoral theses and in new research. Main protocols. Phases and strategies of application. Advantages and disadvantages. Main references and web resources.

- **Keywords**

- Scoping reviews, evidence synthesis, systematic reviews, doctoral theses, PRISMA ScR, SALSA, PSALSAR, ReSiste-SCH

# What is a scoping review?

- A scoping review is a kind of evidence synthesis.
- The objective of a scoping review is to explore broadly (hence the name) a field or area of knowledge or a sector of scientific research.
- It takes its most important principles from systematic reviews but has its own characteristics.

# Scoping reviews (ScR) according to the PRISMA Group

- Scoping reviews can be conducted to meet various objectives. They may:
  - examine the extent (i.e., size), range (i.e., variety) and nature (i.e., characteristics) of the evidence on a topic or question;
  - summarize findings from a body of knowledge that is heterogeneous in terms of methods or discipline;
  - identify gaps in the literature to aid planning and commissioning of future research
- Source: [PRISMA Extension for Scoping Reviews \(PRISMA-ScR\): Checklist and Explanation](#)

# Based on explicit protocols

- The synthesis of evidence based on systematizing protocols presents at least two categories:
  - Systematic reviews (conventional or proper), dedicated to the analysis of the efficacy of interventions.
  - Scoping reviews, dedicated to the analysis of a field of knowledge.

# What do protocol-based procedures have in common?

- Both scoping and systematic have as a core part of their respective protocols the systematized treatment of these components:
  - Search
  - Evaluation
  - Analysis
  - Synthesis

# What is *different* about the different kinds of reviews?

- The main differences between scoping and systematic occur in:
  - The research question
  - Assessing the evidence base
  - The relative homogeneity of the evidence base



# Research question in systematic reviews

- Systematic reviews are ideal for answering precise research questions, such as those used to determine the success of an intervention in a population. For instance:
  - "What effect does the active principle X have in the prevention of disease Z in the population P"?
  - They are questions that require an intervention of some kind and an affected population.
- When applied to social sciences it is convenient that the question is equally specific. For instance:
  - "Has social theory X been proven in domain Z"?
  - "Are social | educational | etc. programs effective? of type X in populations of type P? ”.

# Research question in scoping reviews

- Scoping reviews have broad research questions, in forms such as the following:
  - "What is the nature of research in the field of knowledge X"?
  - "What methodologies are used in field X"?
  - "What characteristics and gaps or research opportunities are given by field X"?
  - Etc.
- It is easy to see that these are the kinds of questions we ask ourselves when we face a new project, and especially in cases such as doctoral theses or similar academic works.

# Evidence base (1)

- In the two types of reviews the evidence base is similar. Identification is made by searching using similar sources and methods.
- Usual evidence base: research articles in academic journals, although other documents may be used in both types of review, such as gray literature, book chapters, etc.

# Evidence base (2)

- **Source:** databases or other academic information systems widely recognized by the scientific community.
- **Method:** search equations that are adjusted to the research objectives, to avoid selection biases. Eventually, accompanied by exploration methods such as magazine emptying.
- However, there are differences:
  - **Systematic** reviews> the evidence base is usually **homogeneous**
  - **Scoping** reviews> the evidence base is often **heterogeneous**

# Evaluation

- In a systematic review, it is essential to evaluate the quality of the research that forms the basis of the evidence. The use of methods such as RCT (randomized controlled trials), considered the golden rule, of health research is sought.
- In a scoping review instead of evaluation, *only* inclusion and exclusion criteria can be used: date ranges, languages, publications, topics addressed, etc.
- However, depending on the objectives, additional criteria may be applied in relation to the quality of the research: adequate use of methodologies, adaptation of the results to the objectives, exclusion of false positives, etc.

# Analysis

- In both types of reviews, previous analysis schemes defined in the protocol must be used.
- Main differences:
  - In systematic reviews, the data that is extracted is usually quantitative.
  - In scoping reviews, the data that is extracted is usually qualitative, of a conceptual / narrative type, although quantitative data is also usually extracted.

# Synthesis

- In **systematic** reviews, quantitative syntheses are usually made (meta-analysis with statistical techniques), although there are qualitative systematic reviews. Syntheses, even qualitative ones, tend to be of an **aggregative** type given the homogeneity of the evidence base.
- In **scoping reviews**, narrative syntheses usually occur, given the need to synthesize concepts and constructs, accompanied by tables and graphs. Syntheses are usually **interpretive**, given the heterogeneity of the evidence base.

# Difficulty (1)

- Systematic reviews are not necessarily more difficult, nor are scoping easier. It all depends on each project.
- For example, the systematic can be done with only two different investigations (= two articles).
- On the other hand, scoping needs a much larger base: between one and several tens. They may even have a hundred or more items to handle.
- Systematics need to assess the quality of the evidence base but have the advantage of homogeneity.
- Scoping is only required to apply inclusion and exclusion criteria but has the disadvantage of heterogeneity.



# Difficulty (2)

- The systematic ones generate compact documentation, possibly manageable with a spreadsheet.
- Scoping generates much more documentation, generally of a narrative type, in addition to also needing to handle data in spreadsheets.
- Systematics can be limited to examining only the results.
- Scoping needs to examine at least several parts of each investigation, and therefore generally requires reading entire documents.
- In short: some are not more difficult than others, they are different.

# What are scoping reviews suitable for?

- The format of the research question makes scoping reviews ideal for:
  - Academic works:
    - Support academic works such as TFM and doctoral theses.
  - New research:
    - Elaboration of theoretical or methodological frameworks to design new research projects.
    - Preparation of the theoretical framework and construction of the case in case studies.
    - Preparation of reports to request project financing.
  - Impact journals:
    - Examine previous literature in preparing manuscripts for academic journals.
  - Training of new researchers:
    - Train new researchers in the management of scientific articles and to demonstrate their ability to develop analysis and synthesis works and the management of research protocols.

# The idea in synthesis

- Scoping reviews are a methodology that elevates literature reviews to the category of full-fledged scientific research.
- They provide authors with the theoretical foundation that peer reviewers of scientific journals hope to find.
- They provide researchers with a sophisticated and powerful discourse in their area of knowledge.
- It is the safest way to generate theoretical and methodological frameworks capable of solidly guiding any new research.
- They provide research opportunities by being able to detect research patterns and gaps.

# Advantages and disadvantages of ScR

- Advantage

- Scoping reviews are fully recognized as a research method by the main centers and experts in international methodology.
- They are perfectly suited to objectives related to broad research questions aimed at understanding the characteristics of an area of knowledge.
- They have very operational and detailed protocols.

- Disadvantages

- They are still little known. Researchers may have trouble with article evaluators (peer reviewers) knowing little about systematic reviews and scoping reviews.
- This adds an additional effort in manuscript writing, where the rationality of scoping and the protocol used must be presented in an especially effective way.

# Protocols

- Common for the synthesis of the evidence:
  - SALSA
  - PSALSAR
  - PRISM
  - Resiste-CSH
- Specific for scoping reviews:
  - Arksey and O'Malley (2005)
  - PRISMA ScR
  - In addition, organizations such as the Cochrane Collaboration and the Joanna Brigs Institute also provide specific protocols, very similar to the previous ones.

# SALSA, PSALSAR and ReSiste SCH

- SALSA
  - Search
  - Appraisal
  - Synthesis
  - Analysis
- PSALSAR
  - Protocol
  - Search
  - Appraisal
  - Synthesis
  - Analysis
  - Report
- SALSA is a clarifying proposal of great influence in the systematizing current, but it does not present detailed procedures. PSALSAR adds a two components (Protocol and Report) and it is a bit more operability.
- ReSiste-SCH develops SALSA with concrete procedures for social sciences and humanities.

# ReSiste-CSH

- It presents detailed guidelines and procedures for the four phases of SALSA and redirects the last two, presenting the phases in the **SEAS** mode more in line with the intuitive ideas in the analysis-synthesis relationship:
  - **Search**
  - **Evaluation**
  - **Analysis**
  - **Synthesis**
- In addition, it proposes procedures to carry out narrative syntheses.
- Pending the ScR version that will explicitly incorporate PRISMA ScR

# ScR protocols

- The most influential specific protocols for ScR:
  - Arksey and O'Malley (2005)> so far the most cited and the one with the greatest theoretical influence. It is the seminal article that began the process of recognition of the ScR as a form of synthesis of the systematized type of evidence.
  - PRISMA ScR> increasing importance, recommended by the main international centers dedicated to the synthesis of evidence:
    - Cochrane Collaboration
    - Joanna Briggs Institute (JBI)



# Arksey y O'Malley 2005 (A&M 2005)

- The proposal of these authors for the ScR contemplates these phases
  - Identifying the research question
  - Identifying relevant studies
  - Study selection
  - Charting the data
  - Collating, summarizing and reporting the results
- Map to perfection with SALSA (even more so in its SEAS version)
- The A&M 2005 protocol proposes procedures or general theoretical foundations for each of the previous steps. But they are relatively non-operational (= not very detailed).
- Their authority and influence is based on being the first to argue the need to systematize the ScRs.

# PRISMA ScR

- Compared to A&M 2005, it proposes a “fine-grained” frame, as it is made up of 21 points:
  - Points 1 to 4 are dedicated to presenting the project: title, summary, objectives, etc.
  - Points 5 to 18 are dedicated to the execution phases: search, selection, analysis and synthesis, specifically using the expression Synthesis of results in point 18.
  - Finally, points 19 to 21 are devoted to discussion, as part of the presentation of the results.
- Use forms to:
  - Document compliance with the 21 points
  - Document the evidence base selection process

## Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) Checklist

SECTION	ITEM	PRISMA-ScR CHECKLIST ITEM	REPORTED ON PAGE #
<b>TITLE</b>			
Title	1	Identify the report as a scoping review.	
<b>ABSTRACT</b>			
Structured summary	2	Provide a structured summary that includes (as applicable): background, objectives, eligibility criteria, sources of evidence, charting methods, results, and conclusions that relate to the review questions and objectives.	
<b>INTRODUCTION</b>			
Rationale	3	Describe the rationale for the review in the context of what is already known. Explain why the review questions/objectives lend themselves to a scoping review approach.	
Objectives	4	Provide an explicit statement of the questions and objectives being addressed with reference to their key elements (e.g., population or participants, concepts, and context) or other relevant key elements used to conceptualize the review questions and/or objectives.	

<b>METHODS</b>		
Protocol and registration	5	Indicate whether a review protocol exists; state if and where it can be accessed (e.g., a Web address); and if available, provide registration information, including the registration number.
Eligibility criteria	6	Specify characteristics of the sources of evidence used as eligibility criteria (e.g., years considered, language, and publication status), and provide a rationale.
Information sources*	7	Describe all information sources in the search (e.g., databases with dates of coverage and contact with authors to identify additional sources), as well as the date the most recent search was executed.
Search	8	Present the full electronic search strategy for at least 1 database, including any limits used, such that it could be repeated.
Selection of sources of evidence†	9	State the process for selecting sources of evidence (i.e., screening and eligibility) included in the scoping review.

Data charting process‡	10	Describe the methods of charting data from the included sources of evidence (e.g., calibrated forms or forms that have been tested by the team before their use, and whether data charting was done independently or in duplicate) and any processes for obtaining and confirming data from investigators.
Data items	11	List and define all variables for which data were sought and any assumptions and simplifications made.
Critical appraisal of individual sources of evidence§	12	If done, provide a rationale for conducting a critical appraisal of included sources of evidence; describe the methods used and how this information was used in any data synthesis (if appropriate).
Synthesis of results	13	Describe the methods of handling and summarizing the data that were charted.

SECTION	ITEM	PRISMA-ScR CHECKLIST ITEM
<b>RESULTS</b>		
Selection of sources of evidence	14	Give numbers of sources of evidence screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally using a flow diagram.
Characteristics of sources of evidence	15	For each source of evidence, present characteristics for which data were charted and provide the citations.
Critical appraisal within sources of evidence	16	If done, present data on critical appraisal of included sources of evidence (see item 12).
Results of individual sources of evidence	17	For each included source of evidence, present the relevant data that were charted that relate to the review questions and objectives.
Synthesis of results	18	Summarize and/or present the charting results as they relate to the review questions and objectives.

<b>DISCUSSION</b>		
Summary of evidence	19	Summarize the main results (including an overview of concepts, themes, and types of evidence available), link to the review questions and objectives, and consider the relevance to key groups.
Limitations	20	Discuss the limitations of the scoping review process.
Conclusions	21	Provide a general interpretation of the results with respect to the review questions and objectives, as well as potential implications and/or next steps.
<b>FUNDING</b>		
Funding	22	Describe sources of funding for the included sources of evidence, as well as sources of funding for the scoping review. Describe the role of the funders of the scoping review.

# Compatibility mapping

- SALSA / PSALSAR marks the main and common phases to any evidence synthesis system, including ScR, but they are not very detailed.
- ReSiste-SCR develops SALSA for the case of the social sciences and humanities and systematic reviews that are not dedicated to examining the efficacy of interventions. It naturally adapts to the nature of ScR but does not mention these kinds of reviews.
- Arksey and O'Malley (2005) propose the theoretical foundations for the ScR to be carried out in a systematic way, through phases equivalent to SALSA.
- PRIMSA ScR proposes reasoned and detailed “fine-grained” schemes to develop and apply ScR
- There is a deep unity between all the proposals that shows its adaptation of the SALSA framework



# ScR in the case of doctoral theses and academic works ·

## Application proposal and frameworks

- Apply scoping reviews to develop:
  - Theoretical frameworks
  - Methodological frameworks
  - States of the art
- Base and prepare case studies or any other kind of quanti/quali methodology.
- Take SALSA as an orientation of the nuclear phases of the process.
- Take Arksey and O'Malley (2005) as the foundation and conceptual support.
- Consider, optionally, but highly recommended, the use of PRISMA ScR templates to document the overall process.

# ScR for academic works (2) · Proposal of Phases

- **Preparation**
  - Determination of the research framework: objectives, research questions
  - Protocol design: search equations, sources, inclusion and exclusion criteria and eventually evaluation criteria
  - Design of the analysis schemes: at least two types of schemes> referential data + specific schemes depending on the project
  - PRISMA ScR check for the specification and development of the following phases
- **Development**
  - Search: execution and monitoring of searches, documentation and management of references and complete documents
  - Evaluation: application of selection criteria> document bank. Recommended documentation of the process with the PRISMA template
  - Analysis using predefined schemes, which can be eventually redefined in view of the evidence base. Reading the documents. Preparation of structured summaries applying schemes.
  - Synthesis: presentation of results through tables, graphs and narrative synthesis.
- **Report**
  - Presentation of the final report, following IMRyD and considering the use of PRIMSA ScR to document the whole process

# PRISMA ScR application

- PRISMA ScR is recommended to the extent that the ScR report is going to be published as an investigation in itself and / or to achieve a higher level of formalization.
- Note: not all the 21 points of PRIMSA ScR are always applicable in all cases.
- Requires at least two authors to review data extraction. Typical example:
  - An author performs the reading of the documents and produces the summaries following predefined schemes in order to process all the documents in the same way.
  - Another author verifies the data extraction.
  - Possible disagreements are resolved by consensus of the authors or the intervention of a third investigator is required.

# Conclusions

- Scoping reviews are a class of evidence synthesis methodology guided by internationally accepted protocols.
- They are applicable to a wide range of research situations and contexts, and especially to academic work such as master's thesis or doctoral thesis.
- For this reason, they are one of the advisable methodologies to base new investigations and projects, therefore, they are advisable in an early phase of it.
- They help in the training of new researchers, because they can be their first and challenging contact with academic literature and their first and demanding exercise in the production of a scientific synthesis.

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# Web resources

- [PRISMA](#)
  - [Plantillas](#)
- [PRISMA ScR](#)
  - [Plantillas](#)
- [Resources guide Temple University](#)
- [Authors site](#)