Review Article

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Mastering the Art of Scoping Reviews: A Comprehensive Guide for Public Health and Allied Health students

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Abstract

Background: Scoping reviews systematically map the breadth of evidence on a particular topic, providing a comprehensive overview of the available research. This paper aims to outline the key steps involved in conducting a scoping review and to provide practical guidance for public health and allied health students and researchers. **Methods:** Formulating a research question using the PCC (Population, Concept, Context) framework to develop a clear research question or objective. Setting inclusion and exclusion criteria to guide the selection of studies for inclusion in the review. Conducting a thorough search across relevant databases and sources, including both academic and grey literature. Using a PRISMA flow diagram to document the search and selection process. Extracting and charting relevant data from included studies. Analyzing synthesizing data using descriptive analysis or basic qualitative content analysis. Summarizing and presenting findings in a clear and meaningful way. **Results:** The paper provides a detailed guide for conducting scoping reviews, emphasizing the differences between scoping reviews and systematic reviews. It highlights that scoping reviews address broader research questions and typically do not assess study quality. Practical guidance is provided on developing search strategies and creating data extraction forms. **Conclusions:** This paper serves as a comprehensive guide for public health and allied health students and researchers undertaking scoping reviews, covering key methodological considerations and best practices throughout the review process.

Keywords: Scoping Review, Steps, Guide, Public Health

Introduction

The swift growth in evidence production across various fields, including public health, has necessitated the organisation and synthesis of this evidence by reviews (Verdejo et al., 2021). The appropriate selection of the review type depends on the research question, aim and objectives, though some other secondary factors, such as time and the size of review team, can also play a role (Rodger et al., 2024). Among all these different review types, scoping reviews address the broad research question (Verdejo et al., 2021) and have become increasingly popular (Colquhoun et al., 2014). A scoping review of literature is particularly useful for topics that have not been extensively reviewed before or are complex and diverse in nature (Pham et al., 2014).

Scoping reviews (ScR) are defined as *'a type of evidence synthesis that aims to systematically identify and map the breadth of evidence available on a particular topic, field, concept, or issue, often irrespective of source (ie, primary research, reviews, non-empirical evidence) within or across contexts. Scoping reviews can clarify key*

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concepts/definitions in the literature and identify key characteristics or factors related to a concept, including those related to methodological research' (Munn et al., 2022). Scoping Reviews are usually developed for 'preliminary exploration' and to explain a subject or issue's operational designations and theoretical limitations (Peters et al., 2020). Scoping reviews are beneficial when a body of literature has not been systematically reviewed (Peters et al., 2015). Alternatively, it reveals a complex or diverse characteristic that may not be agreeable to a more accurate ScR of the evidence (Peters et al., 2015). Although ScR is conducted to determine the value and probable scope of a full systematic review (SR), they are also helpful in condensing and propagating research findings, identifying research gaps, meeting various objectives and making proposals for future research (Mitton et al., 2009).

A scoping review may also be referred to as a scoping study, scoping project, scoping exercise, scoping report, scoping method, scoping exercise method, as well as literature mapping, mapping of research, evidence mapping, systematic mapping, literature review, and rapid review (Colquhoun et al., 2014; Pham et al., 2014; Sharma & Goyal, 2023; Verdejo et al., 2021). Scoping reviews can include both empirical research and grey literature such as policy documents and online media and is thus not limited to only peer reviewed literature (Mak & Thomas, 2022; Munn et al., 2022). The purpose of this paper to show the simple steps of conducting a scoping review.

There are several reasons for conducting ScR, which include to explore the breadth and characteristics of existing literature, develop evidence maps and summaries, guide future research and review and to identify gaps in research (Tricco et al., 2016), to examine how research was conducted on a certain topic or field (Munn et al., 2022), to identify a topic area for a future systematic review (Tricco et al., 2016), to develop a deeper level of conceptual understanding of a topic, like when recognising and mapping available tools (Feo et al., 2020), and to provide rapid mapping of the key concepts underpinning a research area, or the key sources and types of available evidence (Mays et al., 2001).

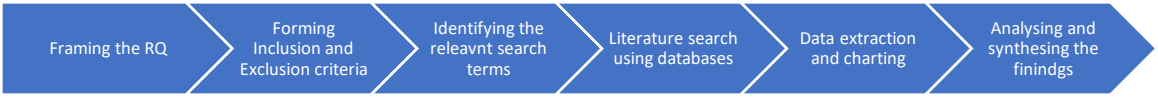
There are differences between scoping and systematic review. Systematic reviews typically search, identify, evaluate and synthesise original studies on a particular topic in an unbiased manner to provide evidence for practice (Kabir et al., 2023), whereas scoping reviews are used to summarise types and quality of literature on a topic, clarify concepts and uncover knowledge gaps (Smith & Duncan, 2022). Scoping reviews can be seen as a hypothesis-generating exercise, while systematic reviews can be hypothesis-testing (Tricco et al., 2016). In ScR, formal quality of assessment of studies can be addressed but this is not a priority, whereas quality assessment and reporting of bias are mandatory for systematic reviews. Lastly, a systematic review should be established on a well-defined, focused research question (Kabir et al., 2024) and hence the right study designs would be determined in advance, whereas a ScR tries to address broader areas while would include multiple study designs (Arksey & O'Malley, 2005).

Systematic reviews are not advised to be included in a scoping review because they are usually regarded as secondary studies. However, including the papers considered by an earlier systematic review would be acceptable.

Steps of conducting a scoping review:

As set out by (Kazi et al., 2021), there are six key steps used to conduct scoping review research.

Figure 1. Steps of a Scoping Review



1. Formulating a straightforward research question or objective

Scoping Reviews are usually developed for 'preliminary exploration ' and to explain a subject or issue's operational designations and theoretical limitations (Peters et al., 2020a). The reviews are beneficial when a literature body has not been systematically reviewed (Peters et al., 2015a). Alternatively, it reveals a complex or diverse characteristic that may not be agreeable to a more accurate ScR of the evidence (Peters et al., 2015). Although ScR is conducted to determine the value and probable scope of a full SR, they are also helpful in condensing and propagating research findings, identifying research gaps, meeting various objectives and making proposals for future research (Grant & Booth, 2009).

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The research question (RQ) is the compass that guides and directs the development of specific inclusion and exclusion criteria, giving control over the research process (Tricco et al., 2016). The RQ will also facilitate the effectiveness of the literature search (Aromataris & Riitano, 2014). Therefore, it is vital to include at least the three components of participants, concept, and context (PCC) in the research question and the literature search (Pollock et al., 2021). It is also essential to have some sub-questions to outline how the evidence will be mapped. Therefore, a preliminary literature search is critical to first understand the literature and enable development of the sub-questions and guides outlining the study protocols. The objective defines what the author is trying to attain. The trajectory and consistency of the review are hinged on a straightforward question, which, in turn, is heavily reliant on the transparency of the study's objectives, typically found in the introduction section of the study (Pollock et al., 2021). Unlike an SR, ScR questions are broad and exploratory. For instance, 'What is good mental health? A scoping review' (Fusar-Poli et al., 2020), 'Public participation in health care priority setting: A scoping review' (Mitton et al., 2009). Afterall, the study's objective must connect with the research question (Pollock et al., 2021).

Research objectives identify, explore, determine, and map the primary investigation (Davis et al., 2009). Objectives mainly relate to the review question; if they do not, the question requires modification. A properly worded research question assists in developing the protocol (Khalil et al., 2016). It guides and directs the development of specific inclusion criteria. The objective also facilitates the effectiveness of the literature search (Ratan et al., 2019). It incorporates sub-questions to outline how the evidence will likely be mapped (Levac et al., 2010). However, in ScR, the objective is sometimes vague, unclear, and lacking in specific detail (Pollock et al., 2021).

Example Review question and objective:

These questions of different studies seek information and knowledge about the subjects' old and new healthcare provision and research areas (Peters et al., 2015a) . The results of ScR may lead to a specific SR and can identify a scarcity of research in that area of interest (Aromataris & Riitano, 2014). Therefore, it is beneficial to articulate the research gaps of any subject matter, which will lead to further research opportunities. Unlike SR, where the PICO, PEO, or Spider framework is used for question formation, ScR requires the PCC framework to outline the question. PCC stands for Population, Concept, and Context (Fernandes Agreli et al., 2019; Pollock et al., 2021). **Participants**: Important characteristics should be detailed, e.g. age, gender, and Ethnicity (Davis et al., 2009). **Concept:** Core concepts examined should be articulated, e.g. interventions, phenomena of interest, outcome, format and contents of included studies (Aromataris & Riitano, 2014). **Context or Setting:** The context or setting varies depending on the objective and question of the review. It relies on the cultural factors of the country or health system's location(Eljiz et al., 2022) .

There are many formats for developing research questions and guiding information inclusion and exclusion in review studies; however, only the PCC format is recommended for ScR (Peters et al., 2020). It is vital to mention the RO and RQ. Sometimes, the RO may be broad, leading to a better enquiry scope (Ratan et al., 2019). However, the RQ must be aligned with the title, which directs the development of exclusive inclusion criteria for specific studies (Peters et al., 2020). For example, in the exemplar scoping review, ‘Large scale healthcare facility redevelopment: A scoping review’ by (Eljiz et al., 2022), the review's objectives were focused on 'how to encourage the acceptance of the redevelopment and actively manage stakeholder dynamics'.

Once the review question is determined, it is essential to identify the critical terms conveyed in the question (Pollock et al., 2021). After that, the protocol, logic grid, or concept map must be created. The Logic Grid represents the effectiveness of the concept, and each column demonstrates the discrete concepts of Participants, Concept, and Context (Fusar-Poli et al., 2020). Table 1 demonstrates the Logic Grid of the study ‘Large-scale healthcare facility redevelopment: A scoping review’ by Eljiz et al. (2022). Another example of a scoping review is, 'Public Participation in Health Care Priority Setting: A Scoping Review' by Mitton et al. (2009); the analysis of the Research Question, Research Objective and PCC Format by the Inclusion Criteria is presented in Table 1.

The Research Objective: Much literature articulates the need for Public Engagement (PE) in healthcare decision-making; however, there needs to be more evidence and consent on when and how PE should be used. Therefore, the objective of ScR was to determine when and how PE is used in priority setting and to determine the actual uses of PE during decision-making and resource allocation.

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Table 1. Example of Relation between review objectives and questions and a logic Grid for the PCC framework based on the study by Elliz et al. (2022)

Authors	Objective	Review Question	Population	Concept	Context
(Eljiz et al., 2022)	How To integrate expertise and evidence-based establishment to build a robust governance framework integrating diversity. How to build effectual relationships among internal and external stakeholders. How can we encourage the acceptance of the redevelopment and actively manage stakeholder dynamics? How to commit appropriate resources, including time, workforce, technology, and finance	What empirical knowledge sources are available that involve the large-scale restoration of healthcare facilities	Patients, consumers, frontline healthcare workforce, policymakers, stakeholders	Synthesise the empirical knowledge base on the redevelopment of healthcare facilities.	Healthcare settings, consumers' residences, healthcare educational institutions, policymaker places

Research Question: What public engagement practices are used in priority settings and resource allocation processes?

People: Formal public participation in Healthcare Priority Setting (HPS) and resource allocation activity seems constrained. Public input in HPS is scarce, and more attention needs to be given to the precision of the methods.

Concept: Public Engagement (PE) during healthcare policymaking, managerial, or administrative procedures needs to be deeper and easier to infer due to the lack of literature and resources. The healthcare industry faces many challenges during decision-making due to a lack of public engagement and poorly designed guidance, resources, and evidence. PE guidance in HPS also results in clarity, cost, and adequate settlement among the stakeholders.

Context: The lack of constructive PE in HPS has resulted in a rare systematic source for comparison. There is hardly any apparent consensus in the literature demonstrating the serviceability of public engagement or how to incorporate public assignation by decision-makers into priority setting and resource allocation processes.

Table 2. Represents the Logic Grid of the ScR by Mitton et al. (2009)

Research question	Participants	Concept	Context
What public engagement practices are used in the priority setting and resource allocation?	General people, Patients, Consumers, Stakeholders	Public Engagement (PE) during healthcare policymaking, managerial or administrative procedures.	Healthcare priority setting

2. Setting inclusion and exclusion criteria

As with systematic reviews (SR), inclusion criteria provide a guide to understanding the reviewers' proposals and, more importantly, a guide for the reviewers to decide on the sources to be included in the SR (Skinner, no date) (Peters et al., 2015). However, the inclusion criteria for ScR are broader than those for SR, as one has to search for what has already been done, how many studies are available, and what kind of study designs are available (Munn et al., 2018). The rationale or justification for each inclusion criterion should be explained clearly and thoroughly in the background (Pollock et al., 2021).

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Developing Eligibility Criteria

Papers included in the review undergo a process called Eligibility criteria (EC). EC must be balanced (Peters et al., 2020). The volume of the included paper will become too heavy if the EC is too broad; contrarily, if the EC is too narrow, many valuable papers can be left out, which might have been vital for the review (Levac et al., 2010). EC is directly linked with RO and RQ (Munn et al., 2018). The inclusion and exclusion criteria are determined by the PCC framework, which is initially used to dictate the RO and RQ (Kynoch et al., 2019). The purpose of using the PCC framework consequently leads to the literature search strategy (Pollock et al., 2021). The study should clearly articulate the reasons for selecting or rejecting studies (with specific Inclusion and Exclusion criteria) (Tricco et al., 2016). For example, the type of literature (only SR or peer-reviewed articles), publication year (studies within last ten years), geographical location (Country, region or continent), and population group (Gender, Age group, Ethnicity) will be included. This information will contribute to the authenticity and transparency of the study. The Eligibility Criteria for the study by (Mitton et al., 2009) are as follows:

Participants: Public participation and public engagement processes in health care priority setting.

Concept: Public Engagement (PE) during healthcare policymaking, managerial or administrative procedures. The healthcare industry faces challenges during decision-making due to a lack of public engagement and poorly designed guidance, resources, and evidence. The lack of PE guidance in HPS also results in confusion, cost, and inadequate settlement among the stakeholders.

Context: Healthcare priority settings.

3. Identifying relevant search term

Identifying relevant search terms is a crucial step in conducting a scoping review, as it directly influences the comprehensiveness and relevance of the collected data. In the field of public health, this process begins with a clear understanding of the research question and objectives, which help define the scope and boundaries of the review. For instance, if the review aims to explore the impact of social determinants on mental health outcomes, researchers should start by identifying key concepts like "social determinants," "mental health," "socioeconomic status," and "health disparities." It is also important to consider synonyms and related terms such as "psychological well-being," "income inequality," and "access to healthcare." Utilizing Boolean operators (AND, OR, NOT), truncation, and wildcards can further refine the search strategy, allowing for the inclusion of various forms and combinations of keywords. A well-structured search strategy ensures that the review captures a wide range of relevant studies, preventing the omission of crucial information due to overly narrow search terms.

Moreover, it is essential to iterate and refine the search terms throughout the review process. This iterative process involves testing the initial set of terms in selected public health databases, reviewing the results for relevance, and adjusting the terms accordingly. For example, if an initial search using "mental health" and "socioeconomic status" yields limited results, expanding the search to include terms like "psychosocial factors" or "social class" might capture additional relevant studies. Researchers should be flexible and willing to adapt their search terms as they encounter new concepts and keywords during the initial phases of the search. Additionally, documenting the search strategy, including the rationale behind chosen terms and modifications, is vital for transparency and reproducibility. Using established guidelines and frameworks, such as the PRISMA-ScR (Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews), can help ensure a systematic approach. Ultimately, the careful identification and selection of relevant search terms enhance the quality and validity of the scoping review, providing a solid foundation for mapping the existing literature and identifying gaps for future research in public health.

4. Conducting the Literature Search

The first step of conducting a literature review is identifying relevant databases and sources. Academic Databases contain the primary research on the relevant subjects and are easy to access (Jacobsen, 2012). Library databases include trustworthy content and potent search tools to discover appropriate outcomes (Lachal et al., 2017). Databases provide more control over the research with powerful search tools (Babey, 2020). The number of articles can be narrowed down by using keywords, authors' names, Boolean operators or by limiting publications to the date and full text. It lessens time intensity and discovers improved evidence to support the investigation (Gould et al., 2017).

Evidence search should be in a broad range of related databases. These may include Medline, CINAHL, OVID Emcare, Cochrane, Joanna Briggs Institute EBP, and Nursing and Allied Health databases for nursing and

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midwifery. Electronic searches can be conducted from different Databases such as Pubmed, Pubmed Central, CINAHL Plus, Cochrane Library, Embase, Web of Science, Science Direct, Directive of Open Access Journal (DOAJ), Trip Database, Web of Science, Scopus, Eric, Hinari, Psych Info, JBI, Cochrane Library, Prospero, Google Scholar for the articles. The search can be conducted for the last five years. Australian and New Zealand Clinical Trial Registry (ANZCTR) is suitable for clinical trial studies. ProQuest Dissertations and Theses databases are good sources for Theses Studies.

A significant advantage of ScR is that a variety of literature can be added, including Grey literature such as conference abstracts, theses, government reports, patents, and clinical practice guidelines (Aromataris & Riitano, 2014). This is predominantly advantageous in emerging matters where peer-reviewed articles are scarce (Aromataris & Riitano, 2014). Grey literature also enables the identification of available resources for consumers, patients, or relatives (Pollock et al., 2021). Grey literature is readily available through search engines such as Google, Bing, Yahoo, and Public Health sites. Including grey literature in a scoping review can be beneficial for various reasons. For example, (Gamble et al., 2021) included policy documents in their scoping review on hospital accreditation in midwifery care.

There is a detailed outline of how to search grey literature through OpenGrey.eu, Greylit.org or Grey Matters by Aromataris and Riitano (2014). Grey literature can also be retrieved from the CADTH, showing how to retrieve information in a most comprehensive and documented approach. Grey literature searching can be challenging because it is not necessarily structured or indexed like peer-reviewed articles in academic databases (Pollock et al., 2021). Balancing the sensitivity and specificity of the search with resource limitations, particularly time restrictions, is challenging. It is compulsory to establish and validate a grey literature search if it is conducted (Aromataris & Riitano, 2014).

Developing and implementing a search strategy occurs in the following stages, and cooperation with a research librarian is essential. These stages include:

1. Initial search: Article Search for the review topic in relevant databases and identify words and phrases found in the title, abstract and index of papers most likely to be included in the final search strategy.
2. Further search: The initial search's identified words, phrases and terms can then be used to guide different databases and grey literature sites. Documentation is necessary for these searches for inclusion in the final PRISMA flow chart (Tricco et al., 2018).
3. Additional Reference list search or snowballing: Further studies can be derived from the reference list of initial and further search research papers, from full-text articles and the related review articles. Although this process is quite time-consuming, many helpful articles and papers can be derived from this method. Scanning the article's reference list is beneficial and more manageable. Scanning the reference list identified in the search can also be helpful. The librarians are practical at this stage as they have the 'Peer Review of Electronic Search Strategies (PRESS) checklist to evaluate the search strategy. The Peer Review of Electronic Search Strategies (PRESS) is a checklist developed by librarians and a helpful tool (Sampson et al., 2009). At this stage, it is essential to analyse the titles of the articles and check whether they align with the review's inclusion criteria. Then, the details of the number of the identified articles should be included in the PRISMA flow chart (Tricco et al., 2018).

Table 3: Examples of using MeSH terms

("Diabetes Mellitus, Type 2"[MeSH] OR "Type 2 Diabetes") AND ("Disease Management"[MeSH] OR "Management" OR "Treatment")
("Breast Neoplasms"[MeSH] OR "Breast Cancer") AND ("Mammography"[MeSH] OR "Mammogram") AND ("Early Detection of Cancer"[MeSH] OR "Early Detection")
("Hypertension"[MeSH] OR "High Blood Pressure") AND ("Lifestyle"[MeSH] OR "Lifestyle Changes" OR "Diet" OR "Exercise")

The second step of conducting a literature review is creating a Database Search Plan. A precise and targeted research question is essential for your search. Connect the terms in your review question. Using Medical Subject Headings (MeSH), enumerate all pertinent keywords and subject headings. Using both subject headers and keyword searches is recommended practice for searching. one database at a time (start with Medline and work your way up to Ovid/CINAHL/PUBMED), also investigate a single idea at a time (Scheinfeld, 2024). To run your search, Enter the required subject headings (MeSH). Give each one a separate line if you have more than one. Type one or more keywords here. Next, combine these lines with OR to create a "overall set line" for that PCC (Population, concept and context) element. For every PCC element, repeat these steps.

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Lastly, use AND to join all your "overall set lines." All your PCC aspects will be addressed in the outcome (Peters et al., 2020b). The example of using MeSH term in presented in Table 3 above.

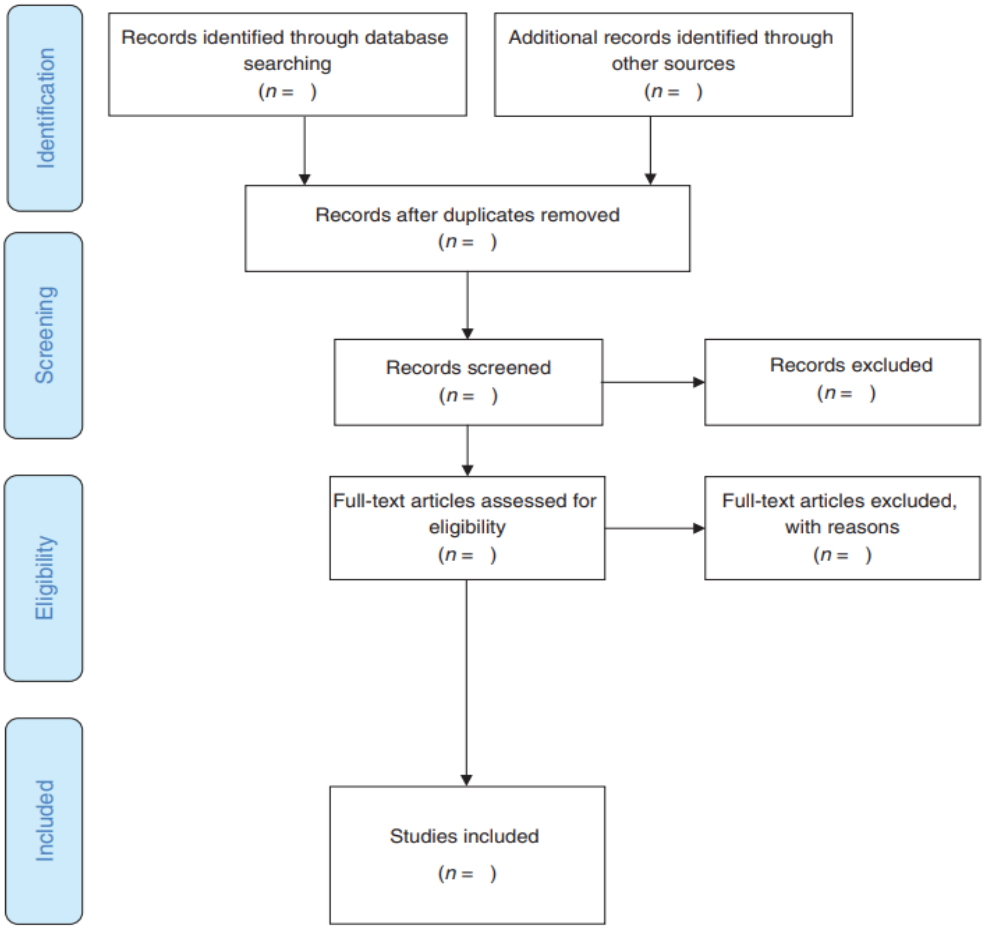
PRISMA:

PRISMA flow diagram visually illustrates the diverse stages of the systematic review. It draws out the number of studies identified, included and excluded and the causes for eliminations (Page et al., 2021). PRISMA diagram improves the transferability and reproducibility of an SR. It ensures the consistency of the study results in reaching the AIM and objectives of a paper (Tricco et al., 2018). Many scoping reviews are being conducted, but their methodological and reporting quality needs improvement (Tricco et al., 2018).

Facilitating, complete and thorough reporting is essential to improving ScR's methodological quality and transparency (Tricco et al., 2016). Therefore, the PRISMA-ScR intends to help readers better understand appropriate terminology, principal concepts, and critical objects to report for scoping reviews. Systematic reviews allow answers to clearly defined questions (for example, “What is the effect of an intervention on a specific group of people compared to the non-experimented group?”). On the contrary, scoping reviews are beneficial for responding to broader questions, for example, “What evidence is available for the efficacy of a particular treatment or invention?”.

There is a fundamental difference in objectives and methodological approach between SR and ScR. Subsequently, some PRISMA items in SR may not be appropriate for ScR, while other vital factors may be missing (Macaskill et al., 2010); therefore, different essential reporting items from systematic reviews for ScR are vital. Hence, a PRISMA extension for ScRs was vital to offer the recording of search strategy, study protocol and guidance (McInnes & Bossuyt, 2015). This expansion is also crucial when applied to evidence maps (Schmucker et al., 2013) . Hence, this shares similarities with scoping reviews and systematically searches a body of literature to identify knowledge gaps, with a visual representation of results (such as a figure or graph (Tricco et al., 2016). A PRISMA flow chart is presented in Figure 2 below.

Figure 2. PRISMA for scoping review process



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5. Data Extraction and Charting

Charting the outcomes is the term used to describe the data extraction procedure in scoping reviews. This procedure gives the reader a clear and concise synopsis of the findings that is in line with the scoping review's goal and/or question(s).

To document the essential details of the source, including the author, reference, and any conclusions or findings pertinent to the review question or questions, a draft charting table or form should be created at the protocol stage. At the review stage, this might be further improved, and the charting table updated accordingly. The following are some essential details that reviewers may decide to chart:

a) Author(s)
b) Year of publication
c) Origin/country of origin (where the study was published or conducted)
d) Aims/purpose
e) Study population and sample size (if applicable)
f) Methodology/methods
g) Intervention type, comparator and details of these (e.g. duration of the intervention) (if applicable)
h) Duration of the intervention (if applicable)
i) Outcomes and details of these (e.g. how measures) (if applicable)
j) Key findings that relate to the scoping review question/s (Arksey & O'Malley, 2005, Levac et al., 2010)

Table 4. Example of Charting the Results

Author(s)	Year	Design	Population	Intervention/ Exposure	Outcomes	Key Findings
Arafat et al	2016	RCT	200 patients	Drug A vs. Placebo	BP reduction	Drug A significantly reduced BP compared to placebo.
Kar and Syed	2021	Cohort	600 patients	Lifestyle intervention	Weight loss	Significant weight loss observed
Parsa and Kabir	2022	Cross-sectional	280 adults	Dietary choices	Nutrient intake	Dietary habits were positively
Haniya and Divya	2017	Case control	100 patients vs. 100controls	Physical activity	Cardiovascular health	Higher physical activity levels associated with better cardiovascular health.

6. Analysing and synthesising the data

Generally, the data analysis performed in scoping reviews is much simpler than that usually carried out in systematic reviews. Since the main goals of scoping reviews do not include either synthesis of results or outcomes of included sources, in most cases, a basic descriptive analysis is sufficient to achieve satisfactory results (Pollock et al., 2023). The common frequencies typically include the distribution of various study

designs and the contexts in which the evidence was generated. This might encompass the number of evidence syntheses, randomized controlled trials (RCTs), and surveys conducted. Additionally, scoping reviews often categorize the geographical locations or specific contexts where the studies were carried out, such as healthcare settings, educational institutions, or community environments. Understanding these frequencies helps to identify research patterns and gaps, providing a comprehensive overview of the existing evidence base (Pollock et al., 2023).

Multiple software programs can be utilized during the data extraction, analysis, and presentation phases of a scoping review. These include (but are not limited to) google sheets, Microsoft Excel (Redmond, Washington, USA) and NVivo (QSR International, United Kingdom). Furthermore, data visualization programs such as Microsoft Power BI (Salesforce, California, USA), EPPI-Mapper (Digital Solution Foundry and EPPI-Centre, London, UK), and EndNote (Clarivate Analytics, PA, USA) may be used. It is generally recommended that authors use software which they are familiar with as this helps facilitate data extraction, analysis, as well as presentation of results (Pollock et al., 2023).

If a scoping review is looking at characteristics, concepts, barriers, or facilitators, then a basic qualitative content analysis may be required. Descriptive quality techniques, such as the basic coding of data to categories, may be a useful approach in some scoping reviews, particularly when the purpose is to identify or clarify concepts or definitions within a field or to identify key characteristics related to a concept (Pollock et al., 2023). If a basic qualitative content analysis is required, then the guidelines laid down by JBI (Peters et al., 2020), can be followed. This type of analysis is a descriptive approach and simply involves a process of open coding to categorize concepts or characteristics. Additionally, this approach can be followed for any evidence source or study design and is not limited to primary qualitative studies. This process of conducting analysis of qualitative data has been described in a comprehensive table by the JBI (Pollock et al., 2023).

For primary qualitative content analysis, three steps are described (Elo and Kyngäs., 2008): (1) Preparation, (2) Organizing (3) Reporting. For the preparation step, the scoping review authors will determine if there is a need for a basic qualitative analysis; if the aim of a review is to describe or explore the influences or effects of a specific issue, then a systematic review (qualitative) may be more appropriate (Munn et al., 2018). Following that, it should be determined whether an inductive or deductive approach is needed for the scoping review during the protocol stage. An inductive approach is typically used when there is a lack of sufficient evidence on a topic, or if the goal is to develop a conceptual framework (Elo & Kyngäs, 2008). In contrast, the deductive approach is appropriate when the authors need to map the data to an already formed framework or theory within literature. Occasionally, such as if no suitable theory or framework is found, a deductive approach may be used (Pollock et al., 2023). In such cases, the review team should select a suitable framework during the protocol stage after consulting.

The second stage (organizing) is dependent on the chosen approach of the scoping review authors. In any case, the first step is to thoroughly go through the data including reading and understanding all including evidence sources and how the data is relevant to the research question(s) laid out initially (Elo and Kyngäs., 2008). Lastly the reporting step includes various activities, including presentation of the finding in a sophisticated way that the reader could grasp the finding of the report. Data presentation should, like data extraction and analysis, be pre-specified when creating the protocol, and again, it can be refined upon review of the contents of the available included evidence. The researchers should consider the best approach to stating the outcome or product of the study and how the scoping study findings will be articulated to the readers (e.g. through themes, a framework, or a table of strengths and gaps in the evidence). This product should be tied to the purpose of the scoping review (Peters et al., 2020).

The results section should contain two distinct sections. The first one will describe the results of the search and selection process, and a PRISMA flow diagram should be included. The other essential part is a section which provides the key information or results relevant to the objectives or questions for the scoping review (Peters et al., 2020). In this section, authors can present the findings in several different ways. Using detailed, comprehensive tables may be a good approach in many cases since they can summarize a large amount of data whilst explaining the process of extraction, the communication of results to a wider community should be considered. Furthermore, large scoping reviews with many evidence sources may result in tables that are too large to easily present in the standard fashion. The researchers should consider the best approach to stating the outcome of the study and how the scoping study findings will be articulated to the readers (e.g. through themes, a framework, or a table of strengths and gaps in the evidence). This product should be tied to the purpose of the scoping review. Many creative approaches may be followed such as word clouds, honeycombs to visualize outcomes of included evidence sources. A world heat map may be created indicating how many evidence sources were conducted in a specific country, a tree graph showing the categories, waffle charts, and iconography can also be utilized. In addition, a supporting narrative must be included that describes the results.

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The PRISMA-ScR checklist for reporting scoping reviews can be used, which provides guidelines to report extraction/data charting, analysis, as well as presentation of data. A completed PRISMA-ScR checklist which documents page numbers addressing these actions should be included as a supplementary file.

Discussion and Implications

The discussion section, as is the case with systematic reviews, should include a thorough explanation of the scoping review's results and any limitations of the sources used should be included in this section. The results of the charting stage within the framework of existing research, practice and policy should be clearly explained and elaborated on (Peters et al., 2015). While interpreting the findings, it is essential to remember that any conclusions drawn should match the review objective/question. The significant themes which have emerged from the synthesized literature should be stated and explained. Comments can be made about the future conduct of potentially beneficial systematic reviews, or primary research that should be conducted in an area of interest (Peters et al., 2015). It is essential to not just simply repeat the results section, but to expand upon it and comprehensively discuss what the data means. Results can be discussed in the context of current literature and gaps in literature. Since a scoping review usually does not include critical appraisal, quality of the research conducted should not be commented upon.

For instance, (Archer et al., 2011) scoping review on Personal Health Records describes its objective as follows: 'to review the literature on PHRs, and to describe the design, functionality, implementations, applications, outcomes and perceived and real benefits of PHRs, with an emphasis on experience in the USA and Canada.' The discussion starts with comments on the amount of the research being conducted, and it is stated that while there is some evidence for the inclusion of certain functionalities in PHR systems, clinical effectiveness and cost effectiveness of PHR interventions have not been adequately synthesized.

Another useful example for reviewers is (Henni et al., 2023) study on oral health and oral health-related quality of life among older adults receiving home health care services (HHCS). The discussion section discusses the data gathered in detail and mentions that there is a dearth of knowledge regarding this demographic, and further research needs to be conducted on how oral health affects the quality of life of these older adults. Furthermore, most of the studies selected were conducted in high-income, well-developed countries such as Netherlands, USA and Sweden, which indicates that more research needs to be conducted in lesser developed countries.

Conclusion:

The scoping review is an important option available to researchers and students wishing to conduct a review. This type of review is especially valuable when the topic of review has been under-explored previously or has a degree of complexity which would make other methods such as systematic review particularly labor intensive and time consuming and thus potentially unfeasible with finite resources and research capacity. Scoping reviews, while following a methodical approach to reduce bias in much the same way as systematic reviews, are primarily focused on identifying and mapping evidence on a topic for subsequent researchers to investigate further. This paper has detailed the processes involved in conducting and writing up scoping reviews and provides structured guidelines for researchers and students to follow to ensure preparation of good quality manuscripts ready for publication.

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