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National Information Platform for Nutrition

Ethiopian Public Health Institute

Fine-tuning NIPN policy questions: A guideline for rapid literature reviews

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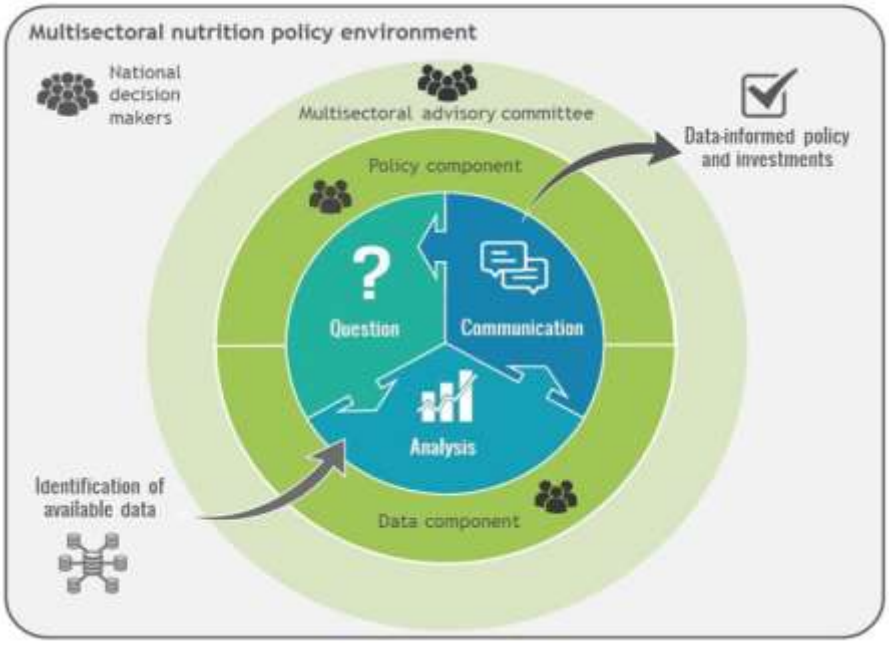
Abbreviations

EPHI	Ethiopian Public Health Institute
EVIDENT	Evidence-informed Decision-making in Nutrition and Health (network)
FNP	Food and Nutrition Policy
GSF	Global Support Facility
IFPRI	International Food Policy Research Institute
MeSH	Medical Subject Headings
NIPN	National Information Platform for Nutrition
NNP	National Nutrition Program
PICO	population, intervention, comparison, outcome
PRISMA	Preferred Reporting Items for Systematic Reviews and Meta-Analyses
PROSPERO	International prospective register of systematic reviews
PQF	policy question formulation
SPIDER	Sample Phenomenon of Interest, Design, Evaluation, Research type
SPICE	setting, perspective, intervention, comparison, and evaluation
SUN	Scaling Up Nutrition
WHO	World Health Organization

1. Background

The National Information Platform for Nutrition (NIPN) is part of a global initiative supported by the European Union, the Bill & Melinda Gates Foundation, and the United Kingdom Department for International Development to support Scaling Up Nutrition (SUN) countries with a high malnutrition burden. The NIPN aims to promote evidence-based decision-making and consists of three operational elements: policy question formulation, identification and analysis of existing data, and communication and outreach on research findings (see Figure 1).

Figure 1: The operational cycle of the NIPN



Source: NIPN, 2018.

NIPN answers policy questions that are identified through a participatory process. To answer these policy questions, NIPN does not collect new data but maximizes the use of existing information and data.[1] The evidence generated by NIPN is communicated to decision-makers to support policy development, program design, and allocation of funds for nutrition.

In Ethiopia, the NIPN was launched in 2018 and works within the general context of the National Nutrition Program (NNP) and the Food and Nutrition Policy (FNP). It is hosted by the Ethiopian Public Health Institute (EPHI) and interacts with key NNP sectors. IFPRI is providing technical support to EPHI to establish the NIPN.

The objective of this guideline

NIPN will carry out several rapid literature reviews to assist with refining broader policy questions and to assess existing evidence in order to respond to policy questions. This guideline provides the NIPN team with the necessary steps it should take to complete a rapid literature review.

How does this guideline fit within NIPN?

A rapid literature review can serve as a "bank" of information that allows NIPN to provide evidence on a specific topic within a relatively short period of time. As part of the implementation of the NIPN operational cycle in Ethiopia, 10 priority policy questions were identified in 2019 through a complex policy question formulation (PQF) process. Responses to most of these policy questions will be based on analysis of existing data, but a rapid literature review will help to refine the policy questions and provide useful information to guide the analysis. The literature review will ensure that the NIPN analysis considers existing global evidence. In addition, some of the policy questions can be answered by a synthesis of existing evidence through a rapid literature review.

How was this guideline developed?

This guideline considers lessons learned during the "learning by doing research project" implemented under NIPN between September 2018 and June 2019. It is inspired by Global Support Facility (GSF) NIPN guidance notes that have been developed for NIPN, as well as specific recommendations for rapid literature reviews.[1,2] It also uses elements of the EVIDENT training on literature review, which was provided to EPHI nutrition experts in 2016.[3] The NIPN training on Scientific Writing and Strategies for Publishing in International Journals conducted by IFPRI in January 2020[4] informed the last sections on writing up the review. And finally, this guideline also uses sample questions from the 2019 PQF process to demonstrate how some of the guidance can be implemented.

2. General concept and scope of literature reviews

NIPN aims to inform evidence-based decision-making for nutrition. When developing policies and programs, it is important that decisions and recommendations be based on the totality of the evidence around a particular question and not based on single studies. A rapid review provides a synthesis and potential evaluation of significant evidence related to a specific topic. It brings together a wide set of

information and provides a comprehensive picture of available information and experiences. It goes beyond a summary of earlier literature on the subject, as it requires an analysis of the relationship among different documents. A review should not merely be a summary of previous findings but also include a critical examination and synthesis of the existing evidence.

A literature review aids understanding of a specific topic, including what has been researched previously and what are the gaps, as well as inconsistencies and contradictions among different studies. The main purpose of a literature review is to compile existing evidence in order to provide the context with which to inform stakeholders, donors, and policymakers involved in potential demonstration projects and studies.

Defining the scope of the literature review is important. There are different kinds of reviews, such as systematic reviews, scoping reviews, evidence maps, rapid literature reviews, and syntheses of qualitative evidence. These different types of reviews share the same basic elements, which are: (1) stating the purpose of the review; (2) screening and selecting scientific papers that meet specified criteria; (3) carefully reviewing the papers for scientific rigor, statistical procedures, and validity and reliability of data collection; (4) summarizing findings across the studies; and (5) drawing conclusions based on the scientific evidence.[4]

A systematic review is one in which bias has been reduced by the systematic identification, appraisal, synthesis, and, if relevant, statistical aggregation of all relevant studies on a specific topic according to a predetermined, explicit, and replicable method.[5] Carrying out a systematic review can be a lengthy process requiring a year or more.

In contrast, a rapid review can provide relatively quick responses to policy questions. The purpose of rapid reviews is to "provide vital information for decision makers to respond to their health systems and situations in a strategic and evidence-based way in a timely manner."[2] It allows exploration of various synthesized research reviews, policies, and plans, and can help highlight key recommendations and challenges. While rapid reviews can help summarize available evidence within a limited timeframe (about three months or less), conducting such a review still requires good planning. Rapid reviews as opposed to systematic reviews have limitations related to the extent of the literature searches and other review activities.[5]

Rapid reviews and rapid evidence assessments seek to be "'Quick but Not Dirty': they aim to be rigorous and explicit in methodology and thus systematic but make concessions to the breadth or depth of the process by limiting particular aspects of the systematic review process."[5]

3. Guideline for a rapid literature review for NIPN

The main steps of a rapid literature review are listed in Box 1 below, and then described in more detail.[6]

Box 1 Main steps of a rapid literature review

1. **Developing the review question:** clearly stated set of objectives with predefined eligibility criteria for studies
2. **Preparing a protocol** and timetable
3. **Searching for evidence:** systematic search that attempts to identify all studies that would meet the eligibility criteria
4. **Selecting studies:** selecting studies that meet eligibility criteria
5. **Quality appraisal:** assessment of the validity and quality of the findings of the included individual studies
6. **Extracting data**
7. **Combining evidence:** analysis/summary and synthesis of relevant studies
8. **Recommendations:** based on an overall quality appraisal, one interprets results/determines the applicability of results

a. Developing the review question

Getting started on a rapid literature review assumes that a problem has been formulated, or a broad research topic identified, through the NIPN policy question formulation process. To respond to this policy question, it will be important to get acquainted with the subject and assess what is already known about the topic. During this process, the broad topic will be narrowed down to an answerable research question.[1] This process of refining the policy question will be supported by a review of a number of key documents that provide the necessary background information and an overview of the subject and which will lead the team to additional sources of information. PROSPERO[7] is the international register of systematic reviews and should be consulted to identify any existing reviews that might already answer the question. Existing systematic reviews at the global level might be able to help answer policy questions after adaptation of identified pathways and solutions to the Ethiopian context.

The Ethiopian NIPN operational cycle in 2019 involved a policy question formulation process, which was conducted by the NIPN team as part of a lengthy participatory process. The question formulation process involved multiple stakeholders across sectors who all played a crucial role in identifying questions. Once these broad policy questions were identified, the team narrowed the broad issues to formulate relevant policy questions, ensuring their significance for broader nutrition policy. The next step involved ensuring that the policy questions can be answered with available data, capacity, and technical feasibility. Conducting a rapid literature review will be a key element in further refining the policy questions and/or contributing to answering the questions by synthesizing existing evidence.[8]

Broad policy questions need to be unpacked into more specific review questions

To address the overall research topic or problem, it needs to be unpacked and several smaller probing questions identified. The NIPN GSF recommends using the impact pathway model when fine-tuning the research question. This model provides a logical way to organize the different elements (inputs – activities – outputs - outcomes – impact). For example, the NIPN GSF advises that "*the use of an impact pathway approach can be helpful to unpack broad policy questions, which are often related to impact, into sub-questions which are more likely to be answerable with existing data under NIPN….. Following the impact pathway, policy-relevant questions and sub-questions can therefore be formulated with respect to each individual element, the relationship between elements, or the underlying assumptions*."[1]

Policy questions developed as part of the PQF process have been framed broadly and therefore require unpacking as described above. Below in Box 2 is an example of a broad policy issue unpacked and formulated as a relationship between two elements.

Box 2 Unpacking a broad policy issue

As an example, this is a question that was identified as part of the PQF: "What are patterns and drivers of dietary diversity among children under 2, adolescent girls and women of reproductive age in Ethiopia? (considering drivers such as production diversity, season, access to markets, agricultural inputs (irrigation), nutrition interventions (BCC)?"

This question would be too broad to tackle with a literature review, and therefore would need to be narrowed down to only one target group and by limiting the drivers that the review should look into. One suggestion to translate the broad policy question into a review question would be the following: "**How does production diversity influence dietary diversity of children under 2 years in Ethiopia?"**

Deconstructing the review question into concepts

There are different tools to break the question down into individual concepts. Population, Intervention/Exposure, Comparison and Outcome (PICO or PECO is the approach most frequently used for quantitative reviews, and which can be applied to define the review question for the NIPN rapid literature review (Table 1). While the PICO framework can generally be adapted for these reviews, there are many other frameworks that could be appropriate for different types of research questions, such as PICo (Population/Patient, phenomenon of Interest, Context), SPICE (Setting, Perspective, Intervention/phenomenon of Interest, Comparison, Evaluation), and SPIDER (Sample, Phenomenon of Interest, Design, Evaluation, Research type) among others. .

Table 1: Concepts of the PICO/PECO framework

Population	**Who?** Defined in terms of age, sex, ethnic origins, defining characteristics of the patients and the population.
Intervention/Exposure	**What?** This is what is happening to the patient or population.
Comparison(s) or alternative option(s)	**What Else?** With what is the intervention (or population) being compared? This could be a control group.
Outcome or the intended effect	**To Achieve What?** What outcome do you expect to see?

Using the example from the PQF process above (Box 2), the proposed question is narrowed down to the following: How does production diversity influence dietary diversity of children under 2 in Ethiopia? Table 2 below shows how this question could be defined in terms of the concepts of the PICO framework.

Table 2: PICO/PECO concepts applied to selected question

Population	Children under 2 years
Intervention /Exposure	Production diversity
Comparison or alternative option	This could be left out or if you want to compare production diversity interventions with, for instance, education campaigns you could put "education campaigns" here.
Outcome	Dietary diversity

b. Developing a review protocol and timeline

A protocol is commonly prepared to ensure a systematic and transparent process and avoid bias, and to serve as a point of reference to avoid (or document) deviations. The protocol could be formally registered on PROSPERO, which for a rapid review is not always necessary. Here is an example of a registered proposal: https://www.crd.york.ac.uk/prospero/display_record.php?RecordID=48650.

Writing the protocol is important to:

- Reduce review authors' biases
- Promote transparency of methods and processes
- Reduce the potential for duplication
- Allow peer review of the planned methods
- Assign clear roles and responsibilities to the team members, avoiding overlap in tasks
- Guide the specific direction of the review by
    - Describing inclusion criteria
    - Identifying the appropriate search sources, selection process, and methods of appraisal, extraction, and synthesis

The protocol should include information on the following:

- Title
- Registration (optional)
- Authors

- Introduction: rationale and objective related to the problem the review is aiming to address
- Methods: eligibility criteria, information sources, search strategy, data management, selection process, data collection process, data items, outcomes and prioritization, risk of bias, data, synthesis

More detailed guidance for developing protocols is available from PRISMA, an evidence-based minimum set of items for reporting in systematic reviews.[9,10] A review of rapid reviews has shown that transparency and reporting are often limited in rapid reviews, and calls for rapid reviews to better comply with reporting guidelines.[11]

Together with the protocol, it is important to prepare a timeline.

The timeline will largely depend on the scale of the review, the human resources available, the scope of the question, funding, and the desired quality of the review. It is important to be realistic in planning the different activities. The timeline should include the following milestones (which should also be reflected in the protocol):

1. Identifying/refining research question
2. Search (scoping searches, identify search engines, full literature search and reference management, obtaining full texts of publications, following up cited references)
3. Selection of publications
4. Appraisal of quality
5. Synthesis of data
6. Analysis of data write up
7. Team meetings/feedback at the beginning and throughout the process

Planning for a rapid literature review should also consider costs of access to databases, access to reference managers, obtaining literature that is not open access, analysis or word processing software, and staff capacities.

c. Selection of the database/search engine

Deciding how to start your search can be daunting, as there are numerous search engines and guides available. The search process should be transparent and documented. Studies can be found using a combination of approaches. Most rapid reviews entail a search of two or more databases and some level of gray literature searching is common.

The EVIDENT course,[3] provided to EPHI in 2015, suggests the following free access databases for EPHI staff: MEDLINE, Cochrane Library, Google Scholar, and Embase as well as any other free evidence-based sources, including those that can be found on WHO websites.

The databases need to be selected carefully based on your review question and the scope of your review.

Examples of databases:

- Cochrane: Cochrane Library contains several evidence-based databases that provide prefiltered or selected high-quality evidence. It also includes resources and databases specifically designed for low- and middle-income countries.
- MEDLINE or PubMed: PubMed is a free resource that provides access to MEDLINE and includes more than 27 million citations for literature from MEDLINE, life science journals, and online books.
- General topic databases: Scopus or Web of Science
- Policy and professional websites: e.g., WHO
- Reference repositories: Google Scholar – scholarly research across many disciplines and sources including articles, theses, books, abstracts, and court opinions, from academic publishers, professional societies, online repositories, universities, and other web sites; and Mendeley – (one of) the world's largest crowdsourced research catalogues

Not all databases and search engines use the same search approach, so you will need to adapt your search strategy for each database. Every database uses different subject-related terms provided in a searchable thesaurus. The terms are usually comprehensive vocabulary for the purpose of indexing journal articles. In PubMed/MEDLINE they are called MeSH terms--"Medical Subject Headings"; other databases use different thesaurus terms. Also, spellings and other issues may differ between databases. Most databases provide tutorials with simple search ideas, such as MEDLINE[i] and PubMed[ii], Cochrane Library[iii], and Google Scholar.[iv]

[i] https://www.youtube.com/watch?v=mq_41OPM8yU
[ii] https://www.nlm.nih.gov/bsd/viewlet/search/subject/;
[iii] https://training.cochrane.org/resource/how-use-cochrane-library
[iv] https://scholar.google.com/intl/en/scholar/help.html; https://scholar.google.com/intl/en/scholar/help.html#searching

d. Conducting the search

"Conducting a thorough search to identify relevant studies is a key factor in minimizing bias in the review process. The search process should be as transparent as possible and documented in a way that enables it to be evaluated and reproduced."[12]

Below are the key steps to consider when planning the search:

A. Dividing your search into a series of concepts: The most reliable form of search construction is called the "building blocks approach." This involves building up the search from each individual concept and then combining the concepts at the end of the search. The advantages of this are that (1) you can more easily spot if the number of references you have identified is lower (or higher) than you expected, and (2) you can add additional alternative terms for a particular concept without confusing the search syntax. In the example given, you would first search all the terms for "children under 2 years." As these are synonyms, you would combine them with the search term OR. Then search for all the "production diversity" terms, then in turn the "dietary diversity" terms and "education campaigns" (if the latter is considered). This approach also means that if one set of terms proves overly limiting, you can do what is known as "drop a concept" which allows you to examine the result set both with and without that particular concept.[13] E.g. if there are few studies looking at both production diversity and education campaigns, you could drop the concept "education campaigns."

B. Thinking of your own terms for each concept: e.g., for "children under 2 years," you could also say "infants" or "small children."

C. Looking for MeSH terms for each concept: Authors might use different terms to describe the same issue: e.g., physical activity or exercise. The use of subject headings (MeSH terms in Pubmed) can help to describe the content of articles and means that you can retrieve all the papers on a subject, regardless of the terminology each author uses, by using a single subject heading. For example, if the population you are interested in is 0-23 months old, you could use the MeSH terms "infant and newborn," which will include the target group of interest.

D. Thinking of alternative terms for each concept by brainstorming with the team, looking at relevant studies indexed within relevant key words/MeSH terms, and seeing how other systematic reviews

that might have used some of your search terms defined them in their search strategy. When looking for **synonyms**, be aware of acronyms (e.g., geographic information systems/GIS), local variations (e.g., maize/corn), and common versus Latin names (e.g., maize/*Zea mays*).

E. Searching for each concept separately: to refine the search, concepts have to be searched separately to understand how many references are identified with each search term.

F. Combining concepts using Boolean terms such as "AND" or "OR": Terms from the same concepts are combined using OR. This is because they represent genuine *alternatives* for the same concept, for example infants OR small children. Concepts that are different are typically combined with AND. In our example, this could be infant AND production diversity AND education campaign AND dietary diversity (see example in Table 3 below).

G. Adjusting your search: If you find too many publications, you might want to narrow your search: you can add limits to publication year or to specified fields such as title, use subject headings for major concepts, add specific outcomes, add extra concepts if appropriate, or use filters (e.g., study design). If you find too few references, you might want to expand the search: you can drop limits for publication year or field restrictions (searching all fields not title abstract [tiab] only), use more synonyms or word variations, more free text or broader terms, fewer concepts, not only subject headings, or check of potential (spelling) mistakes in the search syntax, or choose another database.

H. Limiting your search: Databases often allow you to narrow your search results. For example PubMed allows you to narrow your search results by article types, text availability, publication dates, species, languages, sex, subjects, journal categories, ages, and search fields. Search fields could be for title and abstract, all fields, or other options, which could help limit your search. Typically, you might limit by publication date and language.

I. Keeping track with a "search log" of any changes to the search strategy, e.g., using MeSH term "Diet, food, and nutrition" alone would miss out publications that have not been indexed with that MeSH term, therefore you may have adjusted by adding the free term "diet" during the scoping searches. Keeping track of all these adjustments helps to avoid duplication and allows replication in future. The search log should include date of search, sources searched, number of hits, and details

of strategy. Setting up an account within each database where searches are conducted can help save past searches, but it is always good to keep an offline search log with information on all the databases.

J. **Setting email alerts** related to your searches is a good method to remain updated on new evidence. There are good tutorials online on how to save searches and set email alerts.[v]

K. **Applying supplementary methods to find additional references**: Checking citations and references: once the selection of full texts is completed, check references of all selected papers as well as where they are cited. The latter can be done easily in Google Scholar, using the option "cited by."

The following tables (Tables 3 and 4) and box (Box 3) provide an example illustrating how to divide a search into a series of concepts, using the sample question from above: "How does production diversity influence dietary diversity of children under 2 years in Ethiopia?"

Table 3: Concepts for search terms with some alternatives

PICO	**No**					
P	**#1**	infant	OR	newborn	OR	child
I	**#2**	***"Production diversity"***	OR	"agricultur* production"	OR	"crop diversity"
O	**#3**	***"Dietary diversity"***	OR	food groups	OR	diet*

[v] https://www.youtube.com/watch?v=WbFjV91YNNY; or http://libguides.ucmerced.edu/google_scholar/alerts_save_cite.

Box 3. Combining concepts using Boolean logic

It is advised to use synonyms of your search term in your query. This is important when you know synonyms are often used or when you want to find as much as possible on a specific topic. To search for all the synonyms or related terms of one concept in one go, you can use the Boolean operator "OR" to combine the terms. In this case you will find references containing any or all of the terms that are being OR-ed together. If you are looking for references on pigs, for example, you may want to search with the terms pig, pigs, and swine. Using the Boolean operator OR, this makes: pig OR pigs OR swine. Using this approach, you will end up with a larger set of references than if you had used only one of the terms.

Combining terms with the "AND" operator narrows your search to only those references containing all of the terms. So, if you perform the search combining different concepts with AND, you will end up with a smaller set of results than if you searched for a single concept.

Table 4: Combining concepts with Boolean operators

PICO	No	Search terms
P	**#1**	infant OR newborn OR child
		AND
I	**#2**	***"Production diversity"*** OR "agricultur* production" OR "crop diversity"
		AND
O	**#3**	***"Dietary diversity"*** OR Food groups OR Diet*
	#4	#1 AND #2 AND #3

Or you could summarize your search syntax as: ((Infant OR newborn OR child) AND (***"Production diversity"*** OR "agricultur* production" OR "crop diversity") AND (Food groups OR Diet*))

General tips for the search

Phrase searching: Multiple search terms, such as title words, are searched as an exact phrase if you place them between double quotes. If you type "**dietary diversity"** the terms **diet** and **diversity** must

appear next to each other and in that order for a publication to be retrieved. This will give you more relevant results, but it will also restrict your search.

Wildcards: Use the # (number sign or hash sign) to replace a single character in a search. As # replaces exactly one character, wom#n retrieves woman and women, and colo#r retrieves colour, but not color. Use ? (question mark) to replace 0 to 9 unknown characters in a search term. You can specify the maximum number of unknown characters from 1 to 9 by ?n. For example: re?4tion finds recreation, refraction, relaxation, etc.; behavio?1r, retrieves behaviour and behavior; colo?r retrieves both color and colour.

Truncation: Use the an * (asterisk) to replace a string of characters at the end of a word, which can also be zero. For example: cat* retrieves cat, cats, cattle, catalogue, etc. Placing an * at the end of a search term is especially useful when searching for compound words. However truncations can differ depending on the database. Cochrane provides a useful syntax guide for different databases.[vi]

Note: A minimum of three characters must precede the wildcard or truncation symbol.

Singular or Plural: Searching in CAB Abstracts for *forest* (singular term) or *forests* (plural term) will give different hits. This means that you will miss out on a lot of references when you use a single term instead of both terms (or if you do not use the truncation: forest*). Several search systems such as Scopus anticipate this and search automatically for both terms even if you entered the singular or plural form only.

e. Screening and selecting publications

Managing references is an important step since multiple references are required for any literature review. References also should be retrieved quickly and easily and in sortable form, for instance by exclusion criteria. This will help for the preparation of the publication.

Bibliographic software packages can help you manage references that you accumulate in a systematic and orderly way. From PubMed you can import 500 records at a time into different software packages. However, other databases may have limits, requiring multiple exports. This is important since you will need a comprehensive list of references when developing your review. Specialist software

[vi] https://epoc.cochrane.org/sites/epoc.cochrane.org/files/public/uploads/Resources-for-authors2017/database_syntax_guide.pdf

packages enable you to store, manipulate, and add notes (as well as pdfs) to your references. These software programs also allow for removing duplicates.

Importing references can be done directly in the reference software from the search engine itself, but might involve multiple steps, depending on the search engine.

What software exists?

- Free software: Mendeley or Zotero
- Licensed: Endnote, Reference Manager, RefWorks

Screening/selection of references

Once articles have been identified from a literature search, reviewers must decide which of these studies meet the eligibility criteria (which should have been clearly defined at the stage of defining the review question). For rapid reviews, it is common to only use a single reviewer. However, using two or more reviewers at this stage, and during full-text screening, could provide an opportunity to discuss reasons for disagreement and clarify discrepancies.

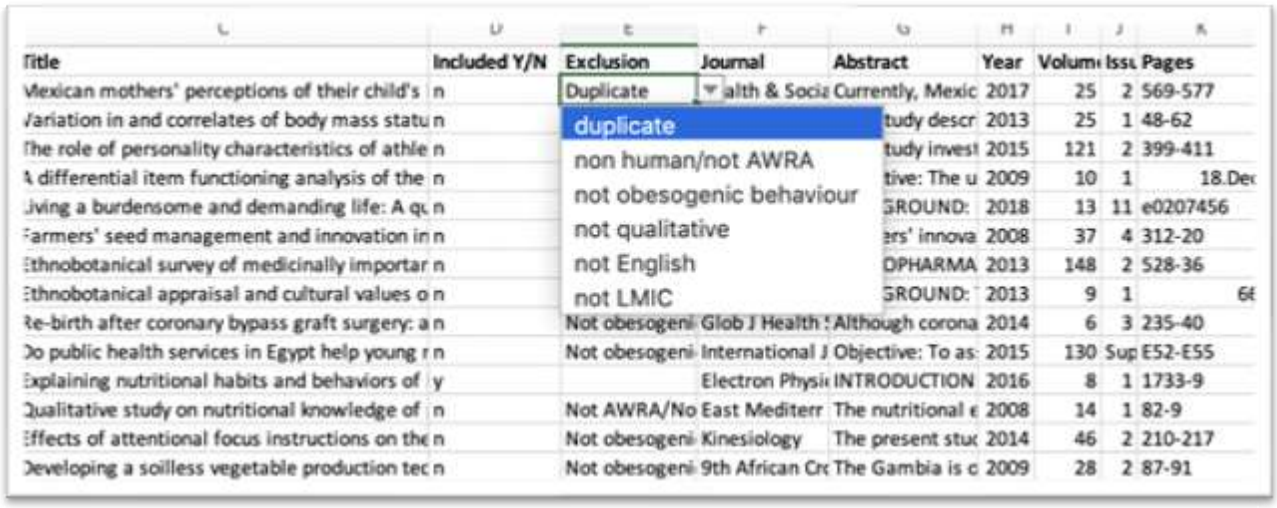
The screening of articles based on the eligibility criteria could be done in the reference manager software by using codes for exclude/include or specifying the exclusion criteria: e.g., not target group, not target intervention, etc.

Alternatively, this could be done by exporting references from the reference manager to Excel and adding a column with exclude/include and the exclusion criteria as a dropdown menu (see Figure 2 below)

Screening will be done in two or three stages: 1. Title, 2. Abstract (if few references, title and abstract stage could be combined) and Full text

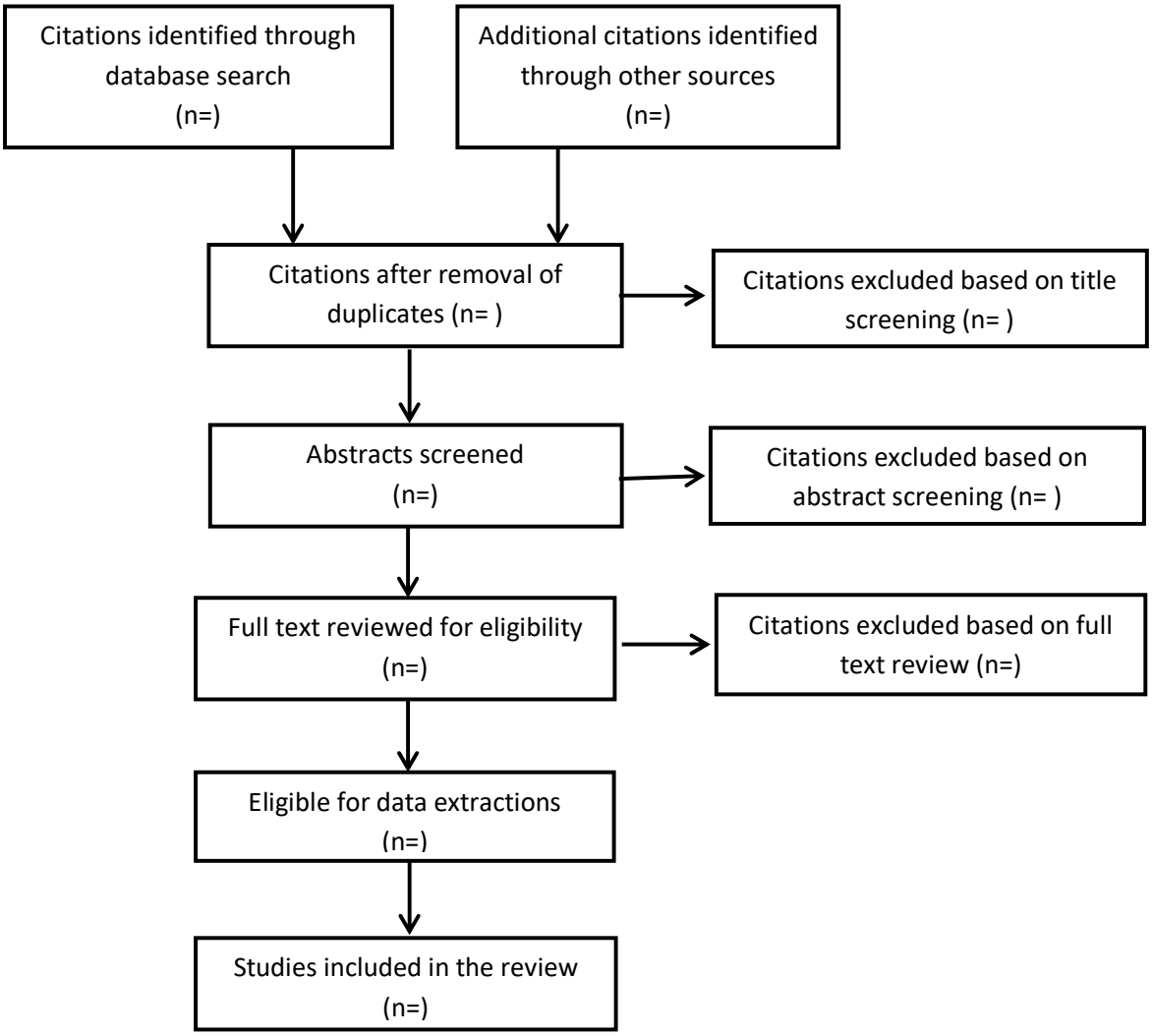
At every stage you need to keep track of the number of excluded references and reasons for exclusion (e.g., at full-text stage, *x* references excluded because they are not on your target group such as infants, but on elderly instead). See Figure 3 for a flow chart template to record exclusion criteria and selection of studies at every stage.

Figure 2: Example of screening titles in Excel with dropdown menu for exclusion criteria



Title	Included Y/N	Exclusion	Journal	Abstract	Year	Volum	Issu	Pages
Mexican mothers' perceptions of their child's	n	Duplicate	alth & Socia	Currently, Mexic	2017	25	2	569-577
Variation in and correlates of body mass statu	n			tudy descr	2013	25	1	48-62
The role of personality characteristics of athle	n			tudy invest	2015	121	2	399-411
A differential item functioning analysis of the	n			tive: The u	2009	10	1	18.Dec
Living a burdensome and demanding life: A qu	n			GROUND:	2018	13	11	e0207456
Farmers' seed management and innovation in	n			ers' innova	2008	37	4	312-20
Ethnobotanical survey of medicinally importar	n			OPHARMA	2013	148	2	528-36
Ethnobotanical appraisal and cultural values o	n			GROUND:	2013	9	1	6E
Re-birth after coronary bypass graft surgery: a	n	Not obesogeni	Glob J Health S	Although corona	2014	6	3	235-40
Do public health services in Egypt help young r	n	Not obesogeni	International J	Objective: To as	2015	130	Sup	E52-E55
Explaining nutritional habits and behaviors of	y		Electron Physi	INTRODUCTION	2016	8	1	1733-9
Qualitative study on nutritional knowledge of	n	Not AWRA/No	East Mediterr	The nutritional e	2008	14	1	82-9
Effects of attentional focus instructions on the	n	Not obesogeni	Kinesiology	The present stuc	2014	46	2	210-217
Developing a soilless vegetable production tec	n	Not obesogeni	9th African Cr	The Gambia is c	2009	28	2	87-91

Figure 3: Flowchart showing the selection of studies at different stages



f. Quality appraisal

References selected for inclusion will undergo quality appraisal. Quality appraisals assess the quality of study methods to determine if findings are trustworthy and meaningful. For most rapid reviews, some risk-of-bias or quality assessment of included studies is conducted by a single reviewer, with or without verification.

The use of credible and high-quality sources will improve the quality of the literature review. Before using a source, it is important to evaluate the quality of the source.[vii] Peer-reviewed articles are

[vii] See video on http://guides.library.jhu.edu/evaluate

considered high-quality publications, and most of the research articles in scholarly journals are peer-reviewed. However, it is not always necessary or possible to use peer-reviewed sources. In that case, the quality of the source can be assessed through several other methods. The date of publication is also important, a high quality but old publication is likely to be outdated. Also, the accuracy of the information provided in the document can highlight the quality of the source. Indicators for accuracy include the description and quality of the research methods, and the quality of the sources listed in the bibliography of the document. In addition, it is important to assess the author's potential bias.

Quality assessment refers to the assessment of the risk of bias in included studies (e.g., the risk that the study may overestimate or underestimate the true intervention effect), as well as the critical appraisal of included studies (e.g., an investigation of the extent to which study authors conducted their research using the highest possible standards)

Quality assessments are used to evaluate: (1) performance bias, with studies having objective outcomes rather than subjective outcomes; (2) selection bias and performance bias, with studies designed for comparative effectiveness evaluation rather than studies with other designs; and (3) selective reporting bias, with effectiveness evaluation studies rather than studies evaluating other hypotheses such as testing causal associations (24). Different tools exist to appraise quality. Below are two examples.

Critical Appraisal Skills Program (CASP)[14]: The core CASP checklists (randomized controlled trial and systematic review) suggests 11 questions to asses randomized controlled trials.

1. Did the trial address a clearly focused issue?
2. Was the assignment of patients to treatments randomized?
3. Were patients, health workers, and study personnel blinded?
4. Were the groups similar at the start of the trial?
5. Aside from the experimental intervention, were the groups treated equally?
6. Were all of the patients who entered the trial properly accounted for at its conclusion?
7. How large was the treatment effect?
8. How precise was the estimate of the treatment effect?
9. Can the results be applied to your context (or the local population)?
10. Were all clinically important outcomes considered?
11. Are the benefits worth the harms and costs?

Joanna Briggs Institute (JBI) Critical Appraisal checklists:[viii] Appropriate for different types of studies (case control studies, cohort studies, randomized controlled trials, etc.) and reviews, JBI Critical Appraisals are designed to assess the methodological quality of a study and determine the extent to which a study has addressed the possibility of bias in its design, conduct, and analysis. As an example, the checklist for case control studies consists of 10 questions that can be answered with yes, no, unclear, or not applicable.

1. Were the groups comparable other than the presence of disease in cases or the absence of disease in controls?
2. Were cases and controls matched appropriately?
3. Were the same criteria used for identification of cases and controls?
4. Was exposure measured in a standard, valid and reliable way?
5. Was exposure measured in the same way for cases and controls?
6. Were confounding factors identified?
7. Were strategies to deal with confounding factors stated?
8. Were outcomes assessed in a standard, valid and reliable way for cases and controls?
9. Was the exposure period of interest long enough to be meaningful?
10. Was appropriate statistical analysis used?

Risk-of-bias assessment: Examines the quality of the methods employed for each included study and is a standard element of systematic reviews.[15] The Cochrane risk-of-bias tool suggest five domains to assess potential bias for randomized trials.[16]

1. Bias arising from the randomization process
2. Bias due to deviations from intended interventions
3. Bias due to missing outcome data
4. Bias in measurement of the outcome
5. Bias in selection of the reported result

While gray literature, such as evaluation reports from government or development partners, might not fulfill these quality criteria, it might still provide useful information for a review. Instead of excluding such gray literature based on the poor-quality appraisal, it could be treated differently or secondarily in

[viii] https://joannabriggs.org/ebp/critical_appraisal_tools

the synthesis to assess if it adds any additional or different knowledge to what has been identified from the evidence of high-quality studies.

g. Extracting data

As for screening and study selection, the number of independent reviewers employed to extract study data for a rapid review can vary. The most common approach is single-reviewer extraction, although it has been observed that around 25 percent of rapid reviews include verification of a random sample by a second reviewer and nearly as many use dual extraction with two reviewers.[2,17]

For this stage, you need to prepare a data extraction form, which could be done in Excel. The type of data you extract depends on your research question, but should include the following elements:

- Authors of paper
- Year of publication
- Age of study population
- Sex of study population
- Country/Region
- Setting (e.g., rural/urban)
- Ethnicity of target population
- Socio-demographics
- Objective of the study
- Methodology/Intervention description: RCT, doses, timing, inclusion/exclusion criteria for participants, dropouts, compliance, length of treatment, etc., or for production or dietary diversity, how was it measured, what score was used?
- Outcomes: only extract data on outcomes of interest, define unit of measure (e.g., for dietary diversity different cutoffs/food groups could have been used or data could be presented in average dietary diversity scores or percentage of children consuming the minimum number of food groups), key conclusion from author, quality of evidence

A data extraction table is a useful tool to organize and summarize the sources and citations. When completed, the summary and evidence table allows for further exploration of the research topic and provides a deeper understanding of issues. Additional tables can be created to group data according to: (1) population, (2) intervention, or (3) outcomes.

Grading strength of evidence

The Grading of Recommendations Assessment, Development and Evaluation (GRADE) can be done as part of rapid reviews to rate the quality based on the confidence in the synthesized evidence to strengthen the recommendation that might be made to policymakers. However, it can be time-intensive, and the GRADE system works best for trials and where the number of outcomes is limited. Elements considered within GRADE are bias, inconsistency, indirectness, imprecision, and publication bias.[ix]

h. Synthesizing the findings

Final reports often include discussion of implications, recommendations for policy, and discussion of research limitations.

After evaluating and summarizing the information sources, the team needs to understand how they relate to each other. This is a very important step in the process and can be done by arranging the information in a theme-based synthesis matrix.

Developing a theme-based synthesis matrix involves three steps. First, identify the thematic areas. Second, for each thematic area, define additional sub-themes or questions. And third, fill out all the information in the synthesis matrix: for example, for the proposed above review question, one theme could be "distance from market": production diversity has the strongest influence on dietary diversity when the child lives far from the market.

A synthesis matrix is an important step in the writing process. It is used to record the main findings from each source related to each thematic area, and document how sources relate to each other. By arranging the sources in a matrix by theme, it is relatively easy to assess how the sources relate to each other. This supports the process of writing, as it allows you to understand how these different sources can be brought together and how to create the narrative.

During this phase, a synthesis of the results will be written, integrating the information from the different sources. This will allow the creation of a narrative on the topic, focusing on the patterns of the gathered information and trying to connect them. Below is an example of how to construct and use a synthesis matrix. Choose your research question, then make a list of the authors who may contribute to

[ix] https://www.gradeworkinggroup.org

valid evidence and/or pathways to support your research. Then in your own words, summarize by paraphrasing what the author(s) have to say.

Table 5: Synthesis matrix

	Author 1	Author 2	Author 3	Author 4
Theme 1a				
Theme 1b				

i. Summarizing the findings

Below are suggestions for structuring a report of a rapid review. For publication in a scientific journal, it will be crucial to review the guidelines specific to the respective journal, which might differ and provide more detail than the below suggestions.

Rapid literature review outline:

1. The introduction describes the information that is already available and the rationale for the literature review. This provides a quick overview to the topic.
2. The methodology section explains how the review was conducted (a well-written protocol at the beginning of the process will make this section easy to write).
3. The results section includes the new synthesis or conclusions reached in the review based on the compiled literature.
4. The discussion puts the results into context within the broader field of study.
5. The conclusion sums up the main findings of the literature review and highlights the research gaps along with suggesting areas for future research.

Developing a clear narrative is important for making the report more readily understood and accepted by your reader. At this point, it will be important to verify that the outline allows the report narrative to be communicated in a logical and understandable manner. To do so, follow these steps:

- Refer back to the draft outline. Verify if the outline arranges your information in such a way that it defines the narrative of the report, and that all questions, sub-questions, or probing questions will be answered in a logical approach.

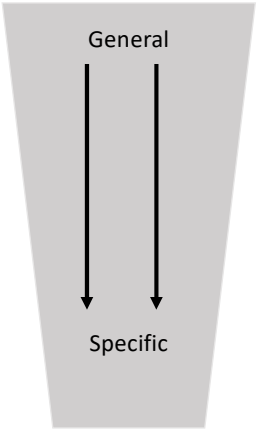
- Verify if the report titles will effectively respond to the review question, bringing together meaningful groupings of information on a specific topic, and allow for setting up a logical narrative for the report.
- Every paragraph should have a purpose to advance this narrative and should relate to the topic of the title. The paragraphs should form meaningful groupings, setting up a logical story line about the topic. An easy approach to ensure this is by defining a topic sentence for each paragraph. The topic sentences should summarize your ideas before giving the details.
- Examine and confirm the logical relationships between the different paragraphs. When ideas turn out to be repetitive, combine or eliminate paragraphs. Review the logical relationships between the paragraphs. Use transition words to move from one idea to the other, such as: In addition, consequently, furthermore, moreover.

Introduction section

The main aim here is to stimulate the readers' interest in the subject and provide them with enough information to understand the context.

Below is a suggestion of how to structure the introduction section, starting with more general comments and ending with specific statements:[18]

1. Statements about the field of research to provide the reader with a setting or context for the problem and to claim its centrality and importance
2. More specific statements about the aspects of the problem already addressed by other reviews, laying the foundation of information already known
3. Statements that indicate the need for this review, creating a gap
4. Very specific statements giving the purpose/objective of the review



Methods section

Based on a well-written protocol, writing this section should be relatively straightforward. If a protocol is used for this section, it is important to remember to put the verb forms into past tense.

The main elements that need to be included are the search methods (which databases were used, what was the search strategy?), eligibility criteria for including articles in the review and how the selection

process was done, quality appraisal (what criteria were used?), data extraction and synthesis/analysis (what data even if only descriptive was extracted ,and how was data synthesized/analyzed).

Main section/synthesis of findings

The results section should highlight the important findings/themes and provide the figure(s) or table(s) where the results can be found. In this section, the identified themes need to be presented in a comprehensive manner by including all the important findings from the synthesis without wandering off into discussing the results.

Discussion section

The discussion needs to clearly connect with the issues raised in the introduction by putting the findings of the review into the context of the broader field. The discussion should provide a clear answer to the review question posed in the introduction and explain how the results support the conclusion. The discussion section should be fair and balanced, acknowledging limitations.

The following main elements for the discussion section have been suggested:[19]

- A reference to the main purpose of the review
- A statement or review of the main themes identified by the review
- Explanations for the identified themes and putting them into context with findings from other reviews that might have been mentioned in the introduction
- Limitations of the review in terms of the methodology
- Recommendations for future reviews or future research that could fill research gaps or methodological issues identified by the review

Concluding section

The conclusion is intended for the reader to understand the summation of the research. This section is normally short in comparison with the rest of the document. The conclusion should provide a summary of the findings and how they relate to the review question; express an opinion the author has in relation to the evidence provided; describe any strengths or weaknesses of the review, address the gaps, and end with an open discussion for policymakers/stakeholders for further research in the field of study. This is the final culmination of all your literature research.

Overall recommendations for writing up your review

1. Keep the literature review policy report concise.
2. Define your key message and recommendations. What is it that you want to say? What is the story you want to tell?
3. Choose the right messages and work closely with the policymakers.
4. Work as a team. Define roles. Elect a team leader to help synthesize your information. Choose an editor to work with you to ensure the report incorporates all the elements needed. Every person working on the report should be familiar with its contents.

j. Importance of paraphrasing and avoiding plagiarism

During this process, it is important to put the findings in your own words (no copy/paste) to prevent the risk of plagiarism. The best way to avoid plagiarism is to learn how to paraphrase.

Box 4 What is paraphrasing?

A paraphrase is rewriting a piece of text in your own words, while retaining the meaning. It is usually similar in length to the original text.

Strategies for paraphrasing:

- First, make sure you understand the source itself. Check the definitions of any keywords if you are unsure.
- Next, put the reading aside and make some notes from memory.
- Then compare your notes with the reading to make sure you have included all the key information. Redraft your paraphrase if necessary.
- Place quotation marks around any unique phrases you have borrowed directly from the source. Note that it is fine not to change technical words, as there often will not be appropriate synonyms for these.
- Make sure to note down the full details of the source so you can properly cite the material.

Paraphrasing is both a technique for using evidence and an academic skill in itself.

Some strategies to help you through the process:

- Imagine that you are explaining the material to a friend who doesn't understand it well.

- Break down complex ideas into smaller pieces.
- Identify relationships between the pieces, e.g., cause/effect or contrast. Write the paraphrase using words that signal the relationship, e.g., because, therefore, however.
- Put the information in a new order.
- Change the expression from active to passive voice, or passive to active.
- Use different vocabulary. Consult a thesaurus if necessary, then consult a dictionary to make sure the new words are synonymous.
- Transform words into different parts of speech, e.g., decision–>decide.
- Be clear that the ideas presented are clearly attributed to the author. (TIP: Check a manual for acceptable citation styles.)
- Plagiarism software/check?

Further reading

- Effective Literature Searching in PubMed and Google Scholar http://www.lshtm.ac.uk/library/guidance/lit_search/foundation_2.pdf
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- Bauer DC. Ten Simple Rules for Searching and Organizing the Scientific Literature. Nature Precedings. 2009 October;(713). Available from: http://dx.doi.org/10.1038/npre.2009.3867.1.
- SURE Guides for Preparing and Using https://epoc.cochrane.org/sites/epoc.cochrane.org/files/public/uploads/SURE-Guides-v2.1/Collectedfiles/sure_guides.html

Important links

- Mendeley http://www.mendeley.com/
- Reference Manager http://www.refman.com/
- Zotero http://www.zotero.org/
- PROSPERO https://www.crd.york.ac.uk/PROSPERO/.

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