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IAP Textbook of Research Methodology

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4
CHAPTER

Review of Literature

Farah Naaz Fathima, Suhitha R Das, Suhasini Kanyadi

Literature always anticipates life. It does not copy it but moulds it to its purpose.
—Oscar Wilde

WHAT IS REVIEW OF LITERATURE?

Review of literature is a "survey of **scholarly sources of academic value** on a **specific topic."** It is a search that gives us an overview of the current knowledge on the topic, outlines the relevant theories on the subject, describes the methods used to study the topic and helps us to identify gaps in the existing research thereby giving us pointers on how to design our study. There is no need to search, read and include every source that has been ever published on the topic, but it is important to include all key sources.

Traditional sources of literature include articles published in peer reviewed journals, books and reports by international, national or regional organizations. In addition to these, other sources of literature include conference proceedings, empirical studies, theses/dissertations, blogs, newspaper reports and websites. These are called "grey literature" because they may not have gone through the process of rigorous peer review. Journals, books and reports are the preferred sources of literature for a review. If information is not available on the topic in traditional literature, then information from grey literature can be included.

Need for Review of Literature

A good review of the literature helps us answer three critical questions about the research topic of interest.

1. What do we know about the topic?
2. What open questions and knowledge do we not yet know?
3. Why is this information important?

Reading previously published work provides a background to the research topic of interest. Summarizing this into different categories helps to demonstrate the change in knowledge over time. It helps to clarify areas of controversy and agreement and identifies dominant viewpoints. In the process, the researcher will be able to identify gaps, unexplored areas and unanswered questions that will highlight the need for new research.

When Should Review of Literature be Done?

Review of literature is a continuous and iterative process. It is often the first task undertaken while initiating research and one of the last to be completed. It is intricately linked to every stage of a research study.

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While writing the introduction section of a research protocol or a manuscript, review of literature helps to familiarize yourself with the language, common terminologies, standard abbreviations, current knowledge and the gaps in knowledge.

The methods section of a research protocol draws from existing literature to identify the research design that is best suited to answering the research question of interest. It is critical for the estimation of the sample size required for the current research. It helps in identifying variables that need to be studied and the most appropriate way of measuring them. It also helps in finding validated questionnaires and other standardized tools that can be used for current research.

Review of literature provides inputs to write the discussion section of a study. Results from other studies will help to provide context for the current study and to explain the reasons for similarities or differences between previous findings and current research. It can be used to explain the public health implications and significance of the findings of the current research and the ways in which these results could be translated into changes in existing policy or clinical practice. Review of literature also helps to explain the reasons for the limitations of the current research and the external validity of the findings.

Steps in Review of Literature

The following are the three key steps in conducting a good review of literature:

1. **Search** for relevant literature
2. **Analysis and synthesis—**evaluate sources and identify themes, debates and gaps
3. **Organize and write** your literature review

Step 1: Search for Relevant Literature

This can be done by identifying the "keywords" related to the topic of research. A simple search by entering the keywords on a generic search engine like Google will result in millions of hits. The output will include everything on the topic like news, announcements, advertisements in addition to journal articles and books. Browsing through all of these is unnecessary and time consuming. This can be refined by doing a smart search. Some ways of doing smart search are as follows:

Use Inverted Commas

For example, when you type diabetes mellitus into any search engine, the output will contain all sitesthat contain the terms either diabetes or mellitus. When you use inverted commas (E.g., "diabetes mellitus") at the beginning and end of the term, the output will contain only those sites where both the terms appear as one.

Use Boolean Operators

There are three Boolean operators—**AND, OR, NOT**

1. AND gives only outputs that contain both the keywords. For example, the keywords diabetes AND India will give articles that contain both the terms diabetes and India. Thus, the Boolean operator AND helps in narrowing down the search.
2. OR gives outputs that contain either one of the keywords. For example, the keywords, diabetes OR hypertension will give all articles that contain either diabetes or hypertension. Thus, OR helps in broadening the search.
3. NOT is used to specifically exclude certain articles from your search. For example, the keywords, diabetes NOT type 1 will exclude all articles on type 1 diabetes.

Therefore, the use of Boolean operators helps in refining the search for literature on the research topic of interest.

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Table 1: Creating search strategy in PubMed.

Concept (what do you want to search)	*Keyword (your keywords)*	*Mesh term (corresponding terms from mesh data base)*	*Search inputs (Combination of terms using boolean operators)*	*Number of articles*

PubMed Search (Table 1)

PubMed is a search engine maintained by the National Library of Medicine (NLM) at the National Institutes of Health, USA for its MEDLINE database. It is available free of cost for use by researchers all over the world. Medical subject headings (MeSH) terms are controlled vocabulary terms in PubMed.

Researchers should check the MeSH database to identify the MeSH terms for the "keywords" for their current topic of research. The MeSH terms may or may not be the same as the keywords. For example, the MeSH term for cancer is neoplasm. MeSH terms can be combined with Boolean operators to develop a search strategy. Prepare a summary **Table 1** like the one depicted below for your search.

Step 2: Analysis and Synthesis

Analysis and synthesis are complementary processes while doing a review of the literature. Analysis is the systematic breakdown of relevant literature into its constituent parts. It is similar to zooming in to get to see the individual components. In practical terms, this involves identifying articles related to different sub-topics under the main research topic. For example, a researcher could search the articles on different aspects of diabetes like complications, prevalence, control rates, adherence, rural and urban differences, quality of life, etc. Each of these components would have a separate search strategy.

Synthesis, on the other hand involves making connections between the different components identified during analysis. It is similar to zooming out to see the bigger picture. In this process, the researcher can examine the connections between the different articles and to identify trends and patterns, recurring themes, areas of debates, conflicts and contradictions and pivotal publications on the topic. During synthesis, the researcher will be able to identify areas where lots of literature is available and also areas where there are literature gaps.

Analysis and synthesis are twin processes that happen simultaneously during the literature review process. At the end of this step, the researcher should be able to produce a working "literature review matrix". This matrix will help the researcher to get a good grip on the situation at a glance and appreciate the change in findings based on the sample size and the setting. The researcher needs to break down the main research topic into subheadings and prepare a matrix for each subheading.

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Table 2: Literature review matrix template.

Author	*Year*	*Location*	*Target population*	*Study design*	*Sample size*	*Findings*	*Comments*

The literature review matrix is a table that depicts the name of the author, year of publication, location, target population, study design, sample size, main findings and the researcher's own comments on the study. Summarizing the information in this format will help the researcher in getting a bird's eye view of the available literature which will help in designing the current study and in writing the discussion section of the final manuscript. A sample literature review matrix is depicted below in **Table 2**.

Step 3: Organization and Writing

A structure is essential while writing the review of literature section. This structure consists of an introduction, a body and a conclusion.

The introduction should establish the focus and purpose of the review. This should be aligned with the objectives of the study.

It is preferable to divide the body of the review into subsections. The classification of the subsections may be chronological or the matic or methodological. Chronological subdivisions help us to trace the evolution of the evidence on the topic over time. Thematic subdivisions depend on the identification of the main threads under which the topic can be discussed. Methodological subdivision is a classification based on the study designs generating the evidence in the review.

The conclusion section provides a summary and the main take home messages from the review.

Plagiarism

Plagiarism refers to representing another author's work as one's own original work. This may include use of language, thoughts, ideas or expressions and is done without giving due credit to the original source. Plagiarism is a moral, ethical and a legal issue that authors must be aware of.

There are many plagiarism detection software that is available. All researchers should run their manuscripts through one of these before final submission. Commonly used plagiarism detection software includes ithenticate, Turnitin and plagiarism detector.

Some Tips for Good Writing

- Plan the outline of the review before beginning. This can be done by outlining the main themes and then adding subthemes for each point to be discussed.
- Construct well-structured paragraphs. Begin each paragraph with a topic sentence that captures the overall essence of what you want to convey. Use transition words to connect your thoughts.

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- Use standard abbreviations and consistent terminology throughout the manuscript.
- Add your own interpretations and explanations in your own words to explain findings.
- Write short simple sentences. Avoid long, complicated and difficult to understand sentences.
- Check grammar, punctuation, spelling and meanings. Install software (E.g., grammarly) if English is not your native language.

KEY POINTS

- Review of literature is a continuous and iterative process which shapes all stages of research.
- Learn skills to do a smart PubMed search using MeSH terms and Boolean operators.
- Prepare a literature review matrix.
- Technology has made our lives easier. Use software for plagiarism check, reference management and grammar.
- Strive to improve with every paper that you write.

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- Easy-to-read with plenty of examples, figures and flowcharts explaining the processes and concepts.


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