

Undertaking a literature review: a step-by-step approach

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Abstract

Nowadays, most nurses, pre- and post-qualification, will be required to undertake a literature review at some point, either as part of a course of study, as a key step in the research process, or as part of clinical practice development or policy. For student nurses and novice researchers it is often seen as a difficult undertaking. It demands a complex range of skills, such as learning how to define topics for exploration, acquiring skills of literature searching and retrieval, developing the ability to analyse and synthesize data as well as becoming adept at writing and reporting, often within a limited time scale. The purpose of this article is to present a step-by-step guide to facilitate understanding by presenting the critical elements of the literature review process. While reference is made to different types of literature reviews, the focus is on the traditional or narrative review that is undertaken, usually either as an academic assignment or part of the research process.

Key words: Analysis and synthesis ■ Literature review ■ Literature searching ■ Writing a review

The reasons for undertaking a literature review are numerous and include eliciting information for developing policies and evidence-based care, a step in the research process and as part of an academic assessment. To many qualified nurses and nursing students faced with undertaking a literature review the task appears daunting. Frequently-asked questions range from where to start, how to select a subject, and how many articles to include, to what is involved in a review of the literature.

The aim of this article is to present a step-by-step approach to undertaking a review of the literature to facilitate student nurses' and novice reviewers' understanding.

What is a literature review?

A literature review is an objective, thorough summary and critical analysis of the relevant available research and non-

research literature on the topic being studied (Hart, 1998). Its goal is to bring the reader up-to-date with current literature on a topic and form the basis for another goal, such as the justification for future research in the area. A good literature review gathers information about a particular subject from many sources. It is well written and contains few if any personal biases. It should contain a clear search and selection strategy (Carnwell and Daly, 2001). Good structuring is essential to enhance the flow and readability of the review. Accurate use of terminology is important and jargon should be kept to a minimum. Referencing should be accurate throughout (Colling, 2003).

Types of literature reviews

Traditional or narrative literature review

This type of review critiques and summarizes a body of literature and draws conclusions about the topic in question. The body of literature is made up of the relevant studies and knowledge that address the subject area. It is typically selective in the material it uses, although the criteria for selecting specific sources for review are not always apparent to the reader. This type of review is useful in gathering together a volume of literature in a specific subject area and summarizing and synthesizing it.

Its primary purpose is to provide the reader with a comprehensive background for understanding current knowledge and highlighting the significance of new research. It can inspire research ideas by identifying gaps or inconsistencies in a body of knowledge, thus helping the researcher to determine or define research questions or hypotheses. Beecroft et al (2006) argue that a sufficiently focused research question is essential before undertaking a literature review. Equally, however, it can help refine or focus a broad research question and is useful for both topic selection and topic refinement. It can also be helpful in developing conceptual or theoretical frameworks (Coughlan

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Table 1. Non-research reasons for undertaking a literature review

- As an assignment for an academic course
- To update current personal knowledge and practice on a topic
- To evaluate current practices
- To develop and update guidelines for practice
- To develop work-related policies

From: Polit and Beck (2006)

et al, 2007). In addition, literature reviews can be undertaken independently of a research study (Polit and Beck, 2006). Some reasons for this are described in *Table 1*.

Systematic literature review

In contrast to the traditional or narrative review, systematic reviews use a more rigorous and well-defined approach to reviewing the literature in a specific subject area. Systematic reviews are used to answer well-focused questions about clinical practice.

Parahoo (2006) suggests that a systematic review should detail the time frame within which the literature was selected, as well as the methods used to evaluate and synthesize findings of the studies in question. In order for the reader to assess the reliability and validity of the review, the reviewer needs to present the precise criteria used to:

- Formulate the research question
- Set inclusion or exclusion criteria
- Select and access the literature
- Assess the quality of the literature included in the review
- Analyse, synthesize and disseminate the findings.

Unlike traditional reviews, the purpose of a systematic review is to provide as complete a list as possible of all the published and unpublished studies relating to a particular subject area. While traditional reviews attempt to summarize results of a number of studies, systematic reviews use explicit and rigorous criteria to identify, critically evaluate and synthesize all the literature on a particular topic.

Meta-analysis

Meta-analysis is the process of taking a large body of quantitative findings and conducting statistical analysis in order to integrate those findings and enhance understanding. Meta-analysis is seen as a form of systematic review which is largely a statistical technique. It involves taking the findings from several studies on the same subject and analysing them using standardized statistical procedures. This helps to draw conclusions and detect patterns and relationships between findings (Polit and Beck, 2006).

Meta-synthesis

Meta-synthesis is the non-statistical technique used to integrate, evaluate and interpret the findings of multiple qualitative research studies. Such studies may be combined to identify their common core elements and themes. Findings from phenomenological, grounded theory or ethnographic studies may be integrated and used. Unlike meta-analysis, where the ultimate intention is to reduce findings, meta-synthesis involves analysing and synthesizing key elements in each study, with the aim of transforming individual findings into new conceptualizations and interpretations (Polit and Beck, 2006).

Steps in the literature review process

Given the particular processes involved in systematic reviews, meta-analysis and meta-synthesis, the focus of the remainder of this article is on the steps involved in undertaking a traditional or narrative review of the

Table 2. The literature review process

- Selecting a review topic
- Searching the literature
- Gathering, reading and analysing the literature
- Writing the review
- References

literature (*Table 2*). The first step involves identifying the subject of the literature review. The researcher undertaking a quantitative study may have decided this already. However, for the individual undertaking a non-research based literature review this will be the first step.

Selecting a review topic

Selecting a review topic can be a daunting task for students and novice reviewers (Timmins and McCabe, 2005). A common error for novices is to select a review title that is all encompassing, such as 'pressure ulcers' or 'pain'. Although this may be a useful initial strategy for determining how much literature is available, subjects such as these generate a considerable amount of data making a review infeasible. Therefore, it is advisable to refine this further so that the final amount of information generated is manageable. For example, to focus the topic of interest, consider what aspects of pressure ulcers or pain are of particular significance. Is there a specific element of this topic that is of interest, such as prevention or management? Identifying what exactly is of interest and why can help refine the topic (Hendry and Farley, 1998). Talking to others, such as clinical specialists, or reading around a topic can also help to identify what areas of the subject the reviewer is interested in and may help indicate how much information exists on the topic (Timmins and McCabe, 2005).

Having sufficient literature is also important, particularly when the review is an academic assignment. These academic exercises usually have short deadlines, so having enough literature is key from the perspective of being able to do the review and submit it on time. Attempting to change the topic close to the deadline for submission is usually a recipe for disaster so select an area that will hold your interest and ensure that there is enough data to meet your needs.

Literature reviews that are part of academic coursework usually have strictly enforced word limits and it is important to adhere to that limit. Topics that are too broad will result in reviews that are either too long or too superficial. As a rule of thumb, it is better to start with a narrow and focused topic, and if necessary broaden the scope of the review as you progress. It is much more difficult to cut content successfully, especially if time is short.

Searching the literature

Having selected a topic the next step is to identify, in a structured way, the appropriate and related information. A systematic approach is considered most likely to generate a review that will be beneficial in informing practice (Hek and Langton, 2000). While a narrative or traditional review is not

the same as a systematic review, its principles and structure may be helpful in determining your approach (Timmins and McCabe, 2005). Newell and Burnard (2006) suggest that comprehensiveness and relevance are what reviewers need to consider and add that the more specific the topic or question being searched is, the more focused the result will be.

Nowadays, literature searches are undertaken most commonly using computers and electronic databases. Computer databases offer access to vast quantities of information, which can be retrieved more easily and quickly than using a manual search (Younger, 2004). There are numerous electronic databases, many of which deal with specific fields of information. It is important therefore to identify which databases are relevant to the topic. University and hospital libraries often subscribe to a number of databases and access can be gained using student or staff passwords. Some databases that may be of interest to nurses are shown in *Table 3*.

Keyword searches are the most common method of identifying literature (Ely and Scott, 2007). However, keywords need careful consideration in order to select terms that will generate the data being sought. For American databases, such as CINAHL, the keywords used to identify terms may differ from the British in spelling and meaning (for example, tumour/tumor, paediatric/pediatric, transcultural/multicultural) (Younger, 2004). It is a good idea to consider alternative keywords with similar meanings that might elicit further information (for example, if you are undertaking a review in an aspect of pressure ulcers, you would need to include terms, such as 'pressure sores' and 'decubitus ulcers',

to access older material). Some of these alternative keywords can be gleaned from the database thesaurus (Hek and Moule, 2006). Another strategy is combining keywords. To help with these combinations many databases use commands called 'Boolean operators'. The most common Boolean operators are 'AND', 'OR' and 'NOT' (Ely and Scott, 2007). The purposes of these commands are shown on *Table 4*.

Existing literature reviews and systematic reviews can also be important sources of data. They can offer a good overview of the research that has been undertaken, so that the relevance to the present work can be determined. They also offer the bibliographic references for those works that can be accessed (Ely and Scott, 2007). Manual searches of journals that are specifically related to the topic of interest or those that are likely to cover the topic can also be performed. This can be a slow but often rewarding way of sourcing articles (Hek and Moule, 2006). As with all of the above search methods, a maximum time frame of 5–10 years is usually placed on the age of the works to be included. This is usually determined by the amount of available information. Seminal or influential works are the exception to this rule (Paniagua, 2002).

When undertaking a literature search an important question in determining whether a publication should be included in your review is defining the type of source. The four main types of sources are outlined in *Table 5*.

Generally, journals are regarded as being more up-to-date than books as sources of information. Books can be dated due to the length of time it takes for publication. However, this does not mean they should be excluded as they are an acceptable and valuable source of information.

In conducting the literature search it is important to keep a record of the keywords and methods used in searching the literature as these will need to be identified later when describing how the search was conducted (Timmins and McCabe, 2005). Another consideration is how much time to allocate to the search (Younger, 2004), as the searching and identifying of data are early steps in the process and reviews conducted as part of academic assignments have limited timeframes.

Analysing and synthesizing the literature

At this point of the process, what has been determined as appropriate literature will have been gathered. While the focus of the literature may vary depending on the overall purpose, there are several useful strategies for the analysis and synthesis stages that will help the construction and writing of the review.

Initially, it is advisable to undertake a first read of the articles that have been collected to get a sense of what they are about. Most published articles contain a summary or abstract at the beginning of the paper, which will assist with this process and enable the decision as to whether it is worthy of further reading or inclusion. At this point, it may also be of benefit to undertake an initial classification and grouping of the articles by type of source (*Table 5*).

Once the initial overview has been completed it is necessary to return to the articles to undertake a more systematic and critical review of the content. It is recommended that some type of structure is adopted

Table 3. Databases that may interest nurses

Database	Main Content
British Nursing Index	Nursing journals in the English language (mainly UK)
CINAHL (Cumulative Index of Nursing and Allied Health Literature)	Journals related to nursing and health related publications
Cochrane Library	Systematic reviews of the literature on medicine, nursing and professions allied to health
Maternity and Infant Care (MIDIRS)	Journals related to mother and baby care
Pubmed / MEDLINE	A service of the National Library of Medicine and additional life science journals
PsycINFO	Literature related to psychology

Table 4. Examples of Boolean operators and their purpose

Command	Purpose
AND	Look for articles that include all the identified keywords
OR	Look for articles that include any of the identified keywords
NOT	Exclude articles that contain this specific keyword

during this process such as that proposed by Cohen (1990). This simple method is referred to as the preview, question, read, summarize (PQRS) system and it not only keeps you focussed and consistent but ultimately facilitates easy identification and retrieval of material particularly if a large number of publications are being reviewed.

Following the preview stage, a reviewer may end up with four stacks of articles that are deemed relevant to the purpose of the review. Although some papers may have been discarded at this point, it is probably wise to store them should you need to retrieve them at a later stage.

In the question stage, questions are asked of each publication. Here several writers have suggested using an indexing or summary system (or a combination of both) to assist the process (Patrick and Munro, 2004; Polit and Beck, 2004; Timmins and McCabe, 2005; Burns and Grove, 2007). Although there are slight variations in the criteria proposed in the indexing and summary systems, generally they are concerned with the title of the article, the author, the purpose and methodology used in a research study, and findings and outcomes. It is also useful to incorporate comments or key thoughts on your response to the article after it has been reviewed. For the purpose of good record keeping, it is suggested that the source and full reference are also included. It can be very frustrating trying to locate a reference or a key point among a plethora of articles at a later stage.

As it is likely that not all of the articles will be primary sources, you may wish to adapt your summary system to accommodate other sources, such as systematic reviews or non-research literature. Possible headings, adapted from appraisal tools for various types of literature are outlined in Table 6.

Although it may be laborious at times, each article should be read while trying to answer the questions in the grid. It is worth noting, however, that if any aspect of the appraisal is not clear, it may be beneficial to access more detailed tools or checklists that facilitate further analysis or critique. While most research textbooks contain tools for critique, novice reviewers can find them difficult to negotiate given their complexity. In recognition of the different types of questions needed to appraise research studies, the critical appraisal skills programme (CASP) within the public health resource unit (www.phru.nhs.uk) has several checklists that enable users to make sense of qualitative research, reviews, randomized controlled trials, cohort studies and case control studies, among others.

Like primary sources, not all reviews classed as secondary sources are the same. For example, systematic reviews follow strict criteria and are appraised on those (Parahoo, 2006). However, there are reviews that simply present a perspective on a topic or explore the relevance of a concept for practice. Some theoretical papers, such as concept, analysis may fall into this bracket. If appraised against the criteria for evaluating systematic reviews, these publications would be found lacking in this area. Therefore, an important first step in the appraisal of a review is to determine its original purpose and perspective. In this way it will be possible to determine appropriate evaluation questions.

Table 5. Defining the types of sources for a review

Source	Definition
Primary source	Usually a report by the original researchers of a study
Secondary source	Description or summary by somebody other than the original researcher, e.g. a review article
Conceptual/theoretical	Papers concerned with description or analysis of theories or concepts associated with the topic
Anecdotal/opinion/clinical	Views or opinions about the subject that are not research, review or theoretical in nature. Clinical may be case studies or reports from clinical settings

From: Colling (2003)

Table 6. Summary of information required in review

Primary sources	Secondary sources – reviews	Non-research literature
Title:	Title:	Title:
Author and year:	Author and year:	Author and year:
Journal (full reference):	Journal (full reference):	Journal (full reference):
Purpose of study:	Review questions/purpose:	Purpose of paper:
Type of study:	Key definitions:	Credibility:
Setting:	Review boundaries:	Quality:
Data collection method:	Appraisal criteria:	Content:
Major findings:	Synthesis of studies:	Coherence:
Recommendations:	Summary/conclusions:	Recommendations:
Key thoughts/comments, e.g. strengths/weakness:	Key thoughts/comments, e.g. strengths/weakness:	Key thoughts/comments, e.g. strengths/weakness:

Evaluating non-research and non-review publications can be complex. These publications can extend from papers claiming to address issues of theoretical importance to practice, research or education, personal opinion or editorials, case studies and reports from clinical practice, to name but a few. As with the other types of sources, a key factor is to determine the purpose of the paper and evaluate the claims to significance that are being made. Hek and Langton (2000) focussed on the criteria of quality, credibility and accuracy when appraising this type of literature. Quality and credibility encompassed issues related to the journal, the processes of peer review, the standing of the author(s) and the claims being made. In addition, content is judged for its accuracy and its coherence with what is already known on the subject.

The final stage of appraisal is to write a short summary of each article and may include key thoughts, comments, strengths and weaknesses of the publication. It should be written in your own words to facilitate your understanding of the material. It also forms a good basis for the writing of the review.

Writing the review

Once the appraisal of the literature is completed consideration must be given to how the review will be structured and written. The key to a good academic paper is the ability to present the findings in such a way that it demonstrates your

Table 7. Framing the review

Approach	Definition	Advantages/disadvantages
Dividing the literature into themes or categories	Distinct themes from the literature are discussed	Most popular approach. Allows integration of theoretical and empirical (research) literature. Care must be taken in ensuring that the themes are clearly related to the literature
Presenting the literature chronologically	Literature divided into time periods	Useful when examining the emergence of a topic over a period of time
Exploring the theoretical and methodological literature	Discussion of theoretical literature followed by exploration of methodological literature that would give some indication of why a particular research design might be appropriate for investigating the topic	Useful when the body of literature is largely theoretical with little or no empirical (research) literature. Can be used to identify the need for qualitative studies
Examining theoretical literature and empirical literature in two sections	Where the topic has both theoretical and empirical literature and each is discussed separately	May tend to be a description rather than a critical review

From: Carnwell and Daly (2001)

knowledge in a clear and consistent way. The basis of good writing is to avoid long and confusing words and keep jargon to a minimum. Sentences should be kept as short as possible with one clear message and spelling and grammar should be accurate and consistent with the form of English being used. Many universities provide facilities for developing and improving writing skills and it is a good idea to try to attend such a course. Study skills books, such as that of Ely and Scott (2007), offer some good tips for writing competently.

The organization of material in an objective manner and the structure of the review are crucial to its comprehensiveness. To some extent, the structure will depend on the purpose of the review. For example, systematic reviews have a clear structure that must be followed and that will dictate for the most part how the writing should be undertaken. However, for most students or practitioners a review is either part of a coursework assignment, research proposal or research dissertation, and as such, there is some freedom in how the writing is structured. Nonetheless, it is important to be logical and there are some key elements that need to be included in all literature reviews.

Primarily, the written report should include an introduction, body and conclusion (Burns and Grove, 2007). The length of literature reviews vary and word limits and assignment criteria must be considered in the overall construction. If it is a stand alone review, an abstract may also be necessary. An abstract is a short summary of the findings of the review and is normally undertaken last (Hendry and Farley, 1998).

Introduction

The introduction should include the purpose of the review and a brief overview of the 'problem'. It is important that the literature sources and the key search terms are outlined.

Any limits, boundaries or inclusion/exclusion criteria should be clearly described. Some comment on what was found in the literature should be offered, that is, whether there was a dearth or wealth of literature on the topic. This gives the reader some insight into the breadth and depth of the literature sourced and also facilitates some judgement as to the validity of the claims being made.

Main body

The main body of the report presents and discusses the findings from the literature. There are several ways in which this can be done (see Table 7).

Regardless of the manner in which the main body of the review is framed, there are key points that must be considered. Literature that is central to the topic should be analysed in-depth here. When discussing empirical or research literature a critical review of the methodologies used should be included. Care must be taken, however, that the review does not end up just as a description of a series of studies. In addition, it is best to avoid broad sweeping statements about the conclusiveness of research studies. Polit and Beck (2006) suggest that when describing a study's findings it is best to use language that indicates the tentativeness of the results rather than making definite statements about the research. Similarly, it is necessary for the reviewer to remain objective about the literature and personal opinions about the quality of research studies should not be included. Neither should it be a series of quotes or descriptions but needs to be written succinctly in the writer's own words.

The reader should know that the reviewer has understood and synthesized the relevant information, rather than merely describing what other authors have found. The review should

read like a critical evaluation of the information available on the topic, highlighting and comparing results from key sources.

If using a thematic approach, the account should flow logically from one section or theme to the next, to maintain continuity and consistency (Beyea and Nicholl, 1998). This can be achieved by summarizing each theme or section and outlining how it is related to the ensuing one.

In respect of theoretical literature, consensus or difference regarding the topic should be outlined. Sometimes, where the theoretical literature dominates and there are few studies undertaken in the area of interest, the review may include an analysis of methodologies used across the studies.

Inconsistencies and contradictions in the literature should also be addressed (Colling, 2003) as should the strengths and weaknesses inherent in the body of literature. The role of the reviewer is to summarize and evaluate evidence about a topic, pointing out similarities and differences and offering possible explanations for any inconsistencies uncovered (Polit and Beck, 2006).

Conclusion

The review should conclude with a concise summary of the findings that describes current knowledge and offer a rationale for conducting future research. In a review, which forms part of a study, any gaps in knowledge that have been identified should lead logically to the purpose of the proposed study. In some cases, it may also be possible to use the developed themes to construct a conceptual framework that will inform the study. In all reviews, some recommendations or implications for practice, education and research should be included.

References

The literature review should conclude with a full bibliographical list of all the books, journal articles, reports and other media, which were referred to in the work. Regardless of whether the review is part of a course of study or for publication, it is an essential part of the process that all sourced material is acknowledged. This means that every citation in the text must appear in the reference/bibliography and vice versa. Omissions or errors in referencing are very common and students often lose vital marks in assignment because of it. A useful strategy is to create a separate file for references and each time a publication is cited, it can be added to this list immediately.

Some universities offer their students access to referencing systems, such as Endnote, and while they may initially appear difficult to learn they are worth the effort later in terms of ensuring the reference list is accurate. Remember, the reference list may be a useful source of literature for others who are interested in studying this topic (Coughlan et al, 2007), and, therefore, every effort should be made to ensure it is accurate.

Conclusion

A literature review is central to the research process and can help refine a research question through determining inconsistencies in a body of knowledge. Similarly, it can help inspire new research innovations and ideas while creating greater understanding about a topic. It can enable a novice

researcher to gain insight into suitable designs for a future study, as well as providing information on data collection and analysis tools. Whether the approach is qualitative or quantitative will often dictate when and how it is carried out. Various types of literature reviews may be used depending on the reasons for carrying out the review and the overall aims and objectives of the research. Writing a review of the literature is a skill that needs to be learned. By conducting them, nurses can be involved in increasing the body of nursing knowledge and ultimately enhancing patient care through evidence-based practice. **BIN**

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KEY POINTS

- Undertaking a literature review is a key feature in many courses of study, an essential step in the research process, and is fundamental in the development of clinical practice and policy.
- Types of literature reviews include narrative or traditional; systematic review; meta-analysis and meta-synthesis.
- Undertaking a literature review includes identification of a topic of interest, searching and retrieving the appropriate literature, analysing and synthesizing the findings and writing a report.
- A structured step-by-step approach facilitates the production of a comprehensive and informed literature review.

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