

Writing narrative style literature reviews

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Abstract

Reviews provide a synthesis of published literature on a topic and describe its current state-of-art. Reviews in clinical research are thus useful when designing studies or developing practice guidelines. The two standard types of reviews are (a) systematic and (b) non-systematic or narrative review. Unlike systematic reviews that benefit from guidelines such as PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) statement, there are no acknowledged guidelines for narrative reviews. I have attempted to define the best practice recommendations for the preparation of a narrative review in clinical research. The quality of a narrative review may be improved by borrowing from the systematic review methodologies that are aimed at reducing bias in the selection of articles for review and employing an effective bibliographic research strategy. The dynamics of narrative review writing, the organizational pattern of the text, the analysis, and the synthesis processes are also discussed.

Keywords: Narrative review, Systematic review, Search methodology, Review writing

Introduction

A periodic synthesis of knowledge is required because of the huge amount and rapid rate of publications. The need for a review of literature may arise from the abundance of information, divergent views, or a lack of consensus about a topic.^{1,2} Although synthesizing the literature is a challenging task, the interest in reviews is ever-growing. Unlike original articles, literature reviews do not present new data but intend to assess what is already published,^{3,4} and to provide the best currently available evidence. For this reason a review is defined as a 'secondary research' study, meaning that it is based on 'primary research' studies.¹

The two standard types of reviews are (a) systematic (SR) and (b) non-systematic or narrative review (NR). NRs are aimed at identifying and

summarizing what has been previously published, avoiding duplications, and seeking new study areas not yet addressed.^{3,5,6} While PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) provides reporting guidelines for SRs, no acknowledged guidelines are available for NR writing. The task of review writing is frequently assigned to medical writers, for example, on new or completed research projects, synthesis for editorial projects. However, training opportunities on writing literature reviews in the biomedical field are few. The objective of the present study is to identify practice guidelines to improve NR writing on topics related to clinical research.

Comparison of narrative and systematic styles of literature reviews

A recent report stated that NRs form the basis of medical literature synthesis, and their number per year in MEDLINE significantly surpassed that of SRs.⁷ Although NRs and SRs differ in objectives, methods, and application areas, both may include several kinds of studies with different levels of evidence: randomised clinical trials, observational case-control or cohort studies, and case reports. Nevertheless, since NRs and SRs are written retrospectively, both are prone to bias.⁸

The main objective of a SR is to formulate a well-defined question and provide a quantitative and qualitative analyses of the relevant evidence, followed or not by a meta-analysis. The SR strengths are: focus on a unique query, clarity in retrieving articles for review, objective and quantitative summary, and inferences based on evidence.⁹ Nevertheless, SRs have several limitations: heterogeneity in the selected studies, possible biases of single studies (patients selection, performance evaluation, measurement), and even publication biases.^{8,10} Moreover, SRs cannot be continuously updated; the median validity of an SR has been estimated as 5.5 years, but it is 3 years for 23% of reviews and 1 year for 15%, depending on the

therapeutic area.^{10,11} According to some reports on SRs, significant shortcomings of SRs were the lack of: assessment of biases, reporting of key methodological aspects, especially in non-Cochrane SRs,¹² and inclusion of adverse assessments.⁸ Standard methods of collecting data for SRs can be complicated, for example, if the patient and disease characteristics are not well reported,⁷ and it might be difficult to draw conclusions that would be applicable in daily practice. Moreover, there are no rules regarding the sample size requirements.⁸

In contrast to SRs, NRs can address one or more questions and the selection criteria for inclusion of the articles may not be specified explicitly. Subjectivity in study selection is the main weakness ascribed to NRs that potentially leads to biases.⁸ An historical NR is irreplaceable to track the development of a scientific principle or clinical concept; as in fact, the narrative thread could be lost in the restrictive rules of a SR; some issues require the wider scoping of a NR. On the other hand, the rigour of an SR is needed to evaluate, for example, the efficacy of diagnostic or treatment interventions, and the outcomes of natural or therapeutic exposures.⁹ Although these are the key sources of evidence, their technical language and the time needed to identify the key results may deter their application.¹³ Table 1 summarizes the hallmark differences between NRs and SRs.¹⁴

In reality, neither the SRs with their restricted focus, nor the NRs with their distinctiveness completely satisfy the wide range of topics to review.⁹ Hence, new approaches are currently in development such as meta-narrative reviews¹⁵ and realistic syntheses.¹⁶ Once the need for an NR is identified, a glance at the expert opinions on this particular

topic may be useful in improving the method of literature selection and reducing the risk of a suboptimal reporting.

Preparation of a narrative review

As yet there is no consensus on the standard structure of an NR. The preferred format is the IMRAD (Introduction, Methods, Results, Discussion), but an NR may be organised in a chronological order, with a summary of the history of a research when clear trends are identified, or presented as a ‘conceptual frame’, where the contents are separated according to dependent or independent variables and their relationships.^{2,17} However, the NRs structure should respect, apart from the author preferences, the journal style, and the conventions followed in the particular field. Table 2 visualizes the general framework of an NR. In this model the central body is partitioned in units (sections), each composed by concepts (key variables), which are discussed and evaluated.²

Literature search

Unlike SRs, the Methods section is not mandatory for NRs (depending on the journal style), but if included, it adds clarity to the key messages of the NRs.^{2,18-20} The literature search (the ‘Methods’) is a critical step in determining the selection bias. If the review query is well-defined, for example, a clinical question, then it would be possible to design an appropriate search strategy in a form suitable for search engines. Hence, a structured approach on the lines of that used for SRs is advisable in literature search for NRs.

Table 1: Main differences between narrative and systematic reviews

	Narrative reviews	Systematic reviews
Main Features	Describe and appraise published articles but the methods used to select the articles may not be described.	The query is well defined [review question, secondary question(s) and/or subgroup analyses]. Clearly defined criteria for the selection of articles from the literature. Explicit methods of extraction and synthesis of the data. Comprehensive research to find all the relevant studies. Application of standards for the critical appraisal of the studies quality.
Uses/applications	General debates, appraisal of previous studies and the current lack of knowledge. Rationales for future research. Speculate on new types of interventions available.	Identify, assess and synthesize the literature gathered in response to a specific query. Collect what is known about a topic and identify the basis of that knowledge. Comprehensive report with explicit processes so that rational, assumptions and methods are open to examination by external organizations.
Limitations	The assumptions and the planning are not often known. Selection and evaluation biases not known. Not reproducible.	The scope is limited by the defined query, search terms, and the selection criteria Usually reader needs to reformulate the alternative questions that have not been answered by the main query.

Table 2: General framework of narrative reviews

Introduction		
<ul style="list-style-type: none"> ● Content: describe the rationale ● Structure: organization of the collected information ● Limits: define the objective(s) and scope 		
<i>Literature search</i>		
<ul style="list-style-type: none"> ● Searching strategy: databases, keywords ● Inclusion/exclusion criteria: types of studies, languages, time periods, others ● Verify the availability of all the selected studies ● Citing and listing the researched references 		
<i>Central body/ Discussion:</i>		
<i>Section 1</i>	<i>Section 2</i>	<i>Added sections</i>
First key concept: <ul style="list-style-type: none"> ● discuss and evaluate ● summarize in relation to the research query 	Another key concept: <ul style="list-style-type: none"> ● discuss and evaluate ● summarize in relation to the research query 	<ul style="list-style-type: none"> ● following the same pattern
<i>Conclusions</i>		
From each summarised section: <ul style="list-style-type: none"> ● highlight the main points ● connect with the research needs ● repeat the meaning for the research design 		
<i>Abstract</i>		
<ul style="list-style-type: none"> ● According to the journal style ● Descriptive or structured (IMRAD pattern) 		

Search terms

As the search terms (keywords) define the limits and the nature of the literature search, these should be established in a comprehensive way in order to permit selection of all the related articles, and at the same time, eliminate those that are not relevant. The key concepts are transformed into keywords, choosing only the most distinctive terms.^{2,18} Thesaurus systems such as the MeSH (Medical Subject Headings) terms of the National Library of Medicine, which are used to index articles for PubMed, may be referred to for selecting the appropriate keywords directly related to the topic of interest.^{1,3,18}

Selection criteria

Defining the inclusion/exclusion criteria for literature selection can be helpful in focusing on the relevance of the studies to the topic. The exclusion criteria may be identified according to the pertinence of the search objective, whereas the inclusion criteria may define the fundamental factors of the review.²

In the first step it is useful to mark the date, keywords, and their combination with the number of records retrieved during each search. The process may continue selecting manually other publications that are cited in the articles retrieved during the first search. Then the cycle can be repeated till reaching a 'saturation point'.¹⁷

It is advisable to include a variety in the information sources, for example consult different

databases, and limit citations of the same research group or the same journal, even though these may be authoritative.¹⁸ Original articles are preferable over other NRs on the same topic. In addition to reports of randomized clinical trials and observational studies, editorials by key opinion leaders may also be included.¹

Once a primary bulk of articles is obtained, the selection may be refined and process may be recorded in a 'Summary table' or using 'Reference cards';¹⁸ it is useful to sort the articles and file these with the bibliographic references in an appropriate citation style.

Critical assessment

Evaluating the fitness of an article for the review may prove to be a complex task that concerns different issues related to the journal, author's(s') reputation, accuracy of methods, analysis and coherence.⁶ In general, each article should be critically evaluated according to the following:³

- key results
- limitations
- suitability of the methods used to test the initial hypothesis
- quality of the results obtained
- interpretation of the results
- impact of the conclusions in the field

The studies with the best contributions should be synthesized³ highlighting the possible

inconsistencies among the results. Moreover, it may be opportune to integrate new articles in case of missing evidence.

Crafting the text

Drafting an NR text rarely follows a linear pathway, as it is a dynamic process.¹ The starting point is the data retrieved – visualized in figures and tables – which are the cornerstones of the NR; in fact, each section should refer to the gathered data.²¹

In the preparation of the NR, the Introduction should be written after the Results and Discussion sections are finalised; in fact, the NR analysis of the retrieved articles allows a better understanding of the results, and facilitates a meaningful discussion and conclusions.^{2,21,22} Moreover, retracing the text backwards enables elimination of points that may be redundant or irrelevant to the main discourse.²¹ The drafting of the Discussion should follow the

critical assessment process: the previous sections are re-assessed, the results are evaluated and interpreted referring to the initial query, highlighting the meaning and validity of the conclusions.¹⁸

The writing of conclusions, title, and abstract of an NR follows the criteria of other manuscripts.^{2,18,19,23} A particular attention should be paid to the title and keywords since these are used by databases for indexing the article. The title may include text from the abstract, and should mirror the essence of the whole article. The title should also be attractive enough to persuade readers to read the abstract and then the article.^{18,21,22} Informative titles, which state the relevant elements of the manuscript conclusively are considered better than indicative titles. Definitions such as ‘A review’ or ‘Clinic review’, ‘Updated review’, ‘Clinical evidence’ in the titles do not add value,¹⁸ whereas the indication ‘literature or narrative review’ or ‘review of the

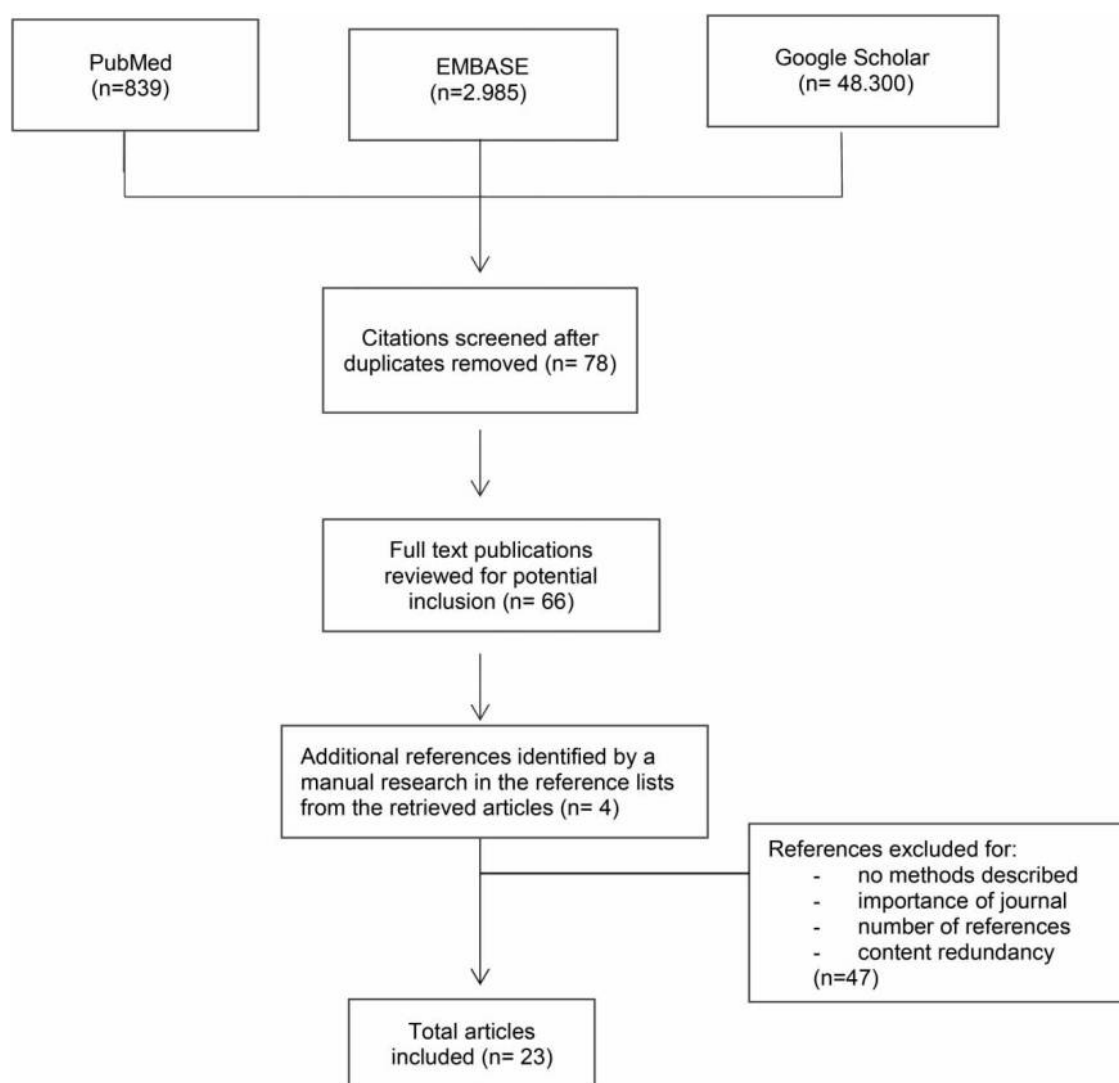


Figure 1: Flow chart of the literature selection process for the present article.

literature' is helpful in clarifying the research design. An example of good title is: *Injuries Associated with Soccer: A review of Epidemiology and Etiology*.²

Literature search for the present article

As an example, a literature search was performed for the present study on the lines of searches for an NR, but including features of SR methodology (Figure 1). The electronic search included three databases, PubMed, EMBASE and Google Scholar, and used three search terms: 'medical literature review writing', 'medical narrative review writing', and 'medical systematic review writing'. The inclusion criteria were: all types of articles, articles published in PubMed, and related only to humans. The exclusion criteria were: articles for which full text was not available, were not in English, or were grey literature. From the articles retrieved in the first round of search, additional references were identified by a manual search among the cited references (Figure 1).

Conclusions

The international debate over reviews is far from being dampened. However, NRs are still the cornerstone for synthesis of medical literature, with functions and applications different from those of SRs. The preparation of NRs can benefit from applying the methodological rigour of SRs. As suggested here, restricting the focus on well-defined issues, establishing clear inclusion and exclusion criteria for literature search, concentrating on a specific set of studies and establishing a relevance criteria of selection would help improve the quality of NRs. A methodological approach to NRs is essential because inadequate reporting influences the interpretation, the translation and the application of published research.

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References

- Bolderston A. Writing an effective literature review. *J Med Imag Radi Sci* 2008;39:86–92.
- Green BN, Johnson CD, Adams A. Writing narrative literature reviews for peer-reviewed journals: secrets of the trade. *J Chiropractic Medicine* 2006;5:101–117.
- Derish PA, Annesley TM. How to write a rave review. *Clin Chem* 2011;57:388–391.
- Pautasso M. Ten simple rules for writing a literature review. *PLoS Comput Biol* 2013;9:e1003149.
- Grant MJ, Booth A. A typology of reviews: an analysis of 14 review types and associated methodologies. *Health Info Libr J* 2009;26:91–108.
- Cronin P, Ryan F, Coughlan M. Undertaking a literature review: a step-by-step approach. *Br J Nurs* 2008;17:38–43.
- Bastian H, Glasziou P, Chalmers I. Seventy-five trials and eleven systematic reviews a day: how will we ever keep up? *PLoS Med* 2010;7:e1000326.
- Yuan Y, Hunt HR. Systematic reviews: the good, the bad, and the ugly. *Am J Gastroenterol* 2009;104:1086–1092.
- Collins JA, Fauser CJMB. Balancing the strengths of systematic and narrative reviews. *Hum Reprod Update* 2005;11:103–104.
- Moher D, Liberati A, Tetzlaff J, Altman DG. Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. *PLoS Med* 2009;6:e1000097.
- Shojania KG, Sampson M, Ansari MT, Jun JI, Doucette S, Moher D. How quickly do systematic reviews go out of date? A survival analysis. *Ann Intern Med* 2007;147:224–233.
- Moher D, Tetzlaff J, Tricco AC, Sampson M, Altman DG. Epidemiology and reporting characteristics of systematic reviews. *PLoS Med* 2007;4:e78.
- Opiyo N, Shepperd S, Musila N, Allen E, Nyamai R, Fretheim A, *et al.*. Comparison of alternative evidence summary and presentation formats in clinical guideline development: a mixed-method study. *PLoS ONE* 2013;8:e55067.
- Systematic reviews of health promotion and public health intervention-Cochrane Collaboration Handbook 2005-Unit One: Background to systematic reviews. Available from: <http://www.vichealth.vic.gov.au/cochrane>.
- Wong G, Greenhalgh T, Westhorp G, Buckingham J, Pawson R. RAMESES publication standards: meta-narrative reviews. *BMC Med* 2013;11:20.
- Wong G, Greenhalgh T, Westhorp G, Buckingham J, Pawson R. RAMESES publication standard: realistic syntheses. *BMC Med* 2013;11:21.
- Randolph JJ. A guide to writing the dissertation literature review. *Practical Assessment, Research & Evaluation* 2009;14:1–13.
- Gasparyan AY, Ayyvazyan L, Blackmore H, Kitas GD. Writing a narrative biomedical review: considerations for authors, peer reviewers, and editors. *Rheumatol Int* 2011;31:1409–1417.
- Liumbruno GM, Velati C, Pasqualetti P, Franchini M. How to write a scientific manuscript for publication. *Blood Trans* 2013;11:217–226.
- Murphy CM. Writing an effective review article. *J Med Toxicol* 2012;8:89–90.
- O'Connor TR, Holmquist GP. Algorithm for writing a scientific manuscript. *BAMED* 2009;37:344–348.
- International Committee of Medical Journal Editors. Preparing for submission. Available from: <http://www.icmje.org/recommendations/browse/manuscript-preparation/preparing-for-submission.html>.
- Guimaraes CA. Structured abstracts. Narrative review. *Acta Cir Bras* 2006;21:263–268.

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