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Review Article

The Art of Writing & Reporting a Systematic Review

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Abstract

Within the pyramid of evidence, systematic reviews are at the top. Systematic review articles must be carefully crafted if they are to convey the broad range of research activities effectively and briefly. This necessitates close consideration of methodological and statistical components. The Abstract section should provide a concise and organized summary, enabling editorial authorities, peer reviewers, and the audience to quickly understand basic systematic review facets. It is essential to accurately assess internal and external validity quickly and wisely. The Abstract must be self-sufficient, providing a thorough and standalone summary without the need to read the entire document. Systematic reviews and several other types of research manuscripts can be structurally organized using the traditional IMRaD (Introduction, Methods, Results, and Discussion) framework.

For systematic reviewers, navigating the restrictions of word limits imposed by journals may be a difficult and unfair task. The abundance of supplemental online appendices, however, offers the chance to discuss methodological paradigms, empirical findings, and other pertinent aspects, enabling the creation of condensed printed or PDF-rendered articles. Contrary to the task of writing a lengthy exposition, the creation of a concise manuscript requires increased effort and academic rigor. The main goal of the current review is to provide advice to inexperienced systematic reviewers regarding the explicit and implicit standards that support scholarly composition. By incorporating these outlined recommendations, reviewers' scholarly output will be of higher quality, which will advance the field of medicine.

INTRODUCTION

Based on a comprehensive analysis of thoroughly collected study data, a significant increase in the number of systematic reviews is being observed in medical and allied health sciences. As a result, the importance of systematic reviews as a reliable and rigorous source of evidence has increased [1]. The inherent objective of literature reviews is to conduct a thorough and systematic assessment of existing scholarly works, thereby enabling evidence-based clinical decision-making [2]. There has been a noticeable shift towards the adoption of a more accessible writing style to improve the dissemination of clinically effective information. The precise expression of systematic review articles, which entails carefully choosing words to summarize the extensive research scope, is of utmost significance. The act of composing with precision involves a careful focus on small details, specifically in relation to methodological and statistical complexities [3]. The utilization of scientifically established terminology, as illustrated in (Table 1), improves the precision and clarity of communication. An exemplary illustration of such differentiation can be observed in the delineation between "meta-analysis" and "systematic review." The former is specifically focused on statistical analysis, whereas the latter adopts a broader approach. The lack of accuracy in written composition leads to uncertainty and the possibility of misunderstanding [4].

Table 1: Research terminologies.

Terminology	Explanation
Systematic reviews	Academic research involves the synthesis of evidence about a well-defined inquiry using transparent methodologies for identifying, selecting, and evaluating pertinent studies. Additionally, this process entails the extraction, compilation, and presentation of the research findings.
Transparency	The practice of openly and comprehensively reporting reviews with clarity, accuracy, honesty, and completeness. The content encompasses a wide range of subjects, such as the disclosure of funding sources and conflicts of interest.
Meta-analysis	The utilization of a statistical methodology to integrate and consolidate the findings of multiple studies that investigate a common research question, to generate a comprehensive and concise outcome. The inclusion of a meta-analysis is not a necessary component of a high-quality systematic review.
Core outcomes	The minimum collection of crucial and significant outcomes, which have gathered agreement to evaluate what is clinically applicable.
Evidence synthesis	A methodical approach to gathering relevant data to look into a particular research question. In the field of evidence synthesis, guidelines, similar methodologies, and systematic reviews and meta-analyses coexist with umbrella reviews, network meta-analyses, and similar reviews.

Currently, certain systematic review articles are characterized by excessive verbosity, the omission of relevant details, the inclusion of irrelevant data, and occasionally inaccurate titles [5]. The difficulty of this challenge is further exacerbated by

the absence of a universally acknowledged framework for the documentation of articles within this field, primarily due to misunderstandings surrounding the concept of originality. Additionally, it is important to note that different journals may impose varying word limits. For example, reviews published in the Cochrane Library may have more flexibility in terms of length compared to traditional journal submissions, which are often limited by more stringent word count restrictions. Systematic reviews play a crucial role in the research endeavors of emerging scholars, often being incorporated into their postgraduate theses, and their findings are frequently published in peer-reviewed journals [6]. There are instances in which articles submitted to biomedical journals bear a resemblance to chapters found in postgraduate theses, despite the differences in readership between these two types of publications. In comparison, the process of crafting a succinct article requires greater diligence and extended dedication when compared to longer manuscripts. Systematic review authors who invest extra effort in producing manuscripts that exhibit clarity and accuracy are more likely to receive positive reception from editors to readers [7].

It is anticipated that inexperienced individuals conducting systematic reviews will incorporate both the overt and covert criteria for publication-quality outlined in this discussion [8]. Adherence to these guidelines enhances the likelihood of manuscript acceptance upon initial submission, thereby reducing the cycle of rejection and subsequent resubmission. Biomedical journals of a diverse nature present discernible variations in terms of word limits and requirements for manuscript formatting [9].

Reporting of Systematic Review and Avoiding Plagiarism

The length of the manuscript is constrained by specific limitations. In current scholarly conventions, limitations may be imposed on the inclusion of tables and figures in a printed manuscript, typically presented in the form of a PDF file. Publishers endeavor to achieve a harmonious equilibrium between the dissemination of relevant information and the management of costs associated with printing and electronic production. Respondents commonly express satisfaction with the practice of augmenting printed manuscripts through the utilization of appendices to provide supplementary information. Prospective registration involves the act of pre-registering a study or research project before its implementation, as opposed to registering it retrospectively [10]. All systematic reviews should undergo pre-registration to prevent duplication of efforts among various research teams. The purpose of such registration is to ensure compliance with the original protocol and requires the disclosure of any deviations from the protocol in the manuscript that is published, thereby enhancing transparency. Hence, it is imperative to provide a thorough explanation of the registration process in the manuscript. Prospero and OSF are digital platforms that provide opportunities for user registration [11].

Maintaining a high level of vigilance in preventing plagiarism is of utmost importance. Plagiarism refers to the act of presenting someone else's written work as one's own, particularly when the subject matter overlaps with that of the primary sources being referenced [12]. The implementation of electronic plagiarism detection tools can effectively address this issue by assessing the level of similarity between manuscripts before their submission. Numerous scholarly publications utilize automated plagiarism detection software such as CrossCheck or iThenticate to identify instances of replicated material. The extensive inclusion of plagiarized content frequently results in the rejection of a manuscript before undergoing the peer review process [5,13].

Abstract Section

The Abstract holds a position of utmost importance in the manuscript, as it is consistently the section that receives initial attention from editors, peer reviewers, and the broader readership. Consistent with the frequently referenced saying, a favorable first impression has long-lasting effects [14]. Acknowledging the significant importance of the Abstract in the manuscript, it is advisable to avoid delaying its composition until the last moment before submission. Instead, a prudent strategy entails giving priority to the creation of the Abstract from the beginning and continuously improving it in conjunction with the progression of the primary manuscript content [15]. The usual practice in contemporary scholarly literature involves the adoption of a structured abstract.

The incorporation of this element aligns with the structure of the main body of the document, allowing the initial Abstract to serve as a fundamental element for the progression of the primary text [16]. To enhance the accessibility and effectiveness of understanding the central message, it is advisable that the Abstract exclusively encompasses the principal discoveries and concluding remarks. It is advisable to include details about prospective registration within the Abstract [17]. It is crucial to acknowledge that the Abstract should have the capacity to operate autonomously, enabling full understanding without the need to consult the main body of the article [18].

INTRODUCTION SECTION

It is usual for the main content of such manuscripts to follow the established organizational structure used for original articles, which consists of the IMRAD structure. The integration of subheadings within the sections of Methods, Results, and Discussion can enhance the organization and structure of academic writing, leading to a reduction in repetitive content. The primary objective of the Introduction section is to furnish a thorough and inclusive synopsis of the clinical matter addressed in the article while emphasizing its importance [19].

The purpose of this section is to present a rationale for undertaking the systematic review. If a prior review about the same subject matter has been disseminated, the Introduction section must explicate the underlying reasons for the need to conduct a revised review. This may involve incorporating

recent and significant studies that have been published after the previous review [20]. Considering the profusion of existing literature on the topic, it is essential to undertake a rigorous assessment of preceding reviews. The Introduction section of the document does not allocate adequate space for a comprehensive description of the evaluation. Hence, it is advisable to incorporate an appendix that provides a tabulated evaluation of the preceding reviews utilizing methodologies such as AMSTAR-2 or ROBIS [21].

To effectively conclude the Introduction section academically, it is advisable for the authors to clearly articulate the research question utilizing a structured format, while concurrently establishing the health outcomes in advance [22]. The primary focus of the main article will be on core outcomes, which are the essential and significant outcomes that are considered clinically relevant by both patients and practitioners. Appendices will be utilized to report non-core outcome data [23].

METHODOLOGY SECTION

The Methodology section should begin by including the relevant registration information and describing the specifications used for reporting purposes. The development of the search strategy is predicated upon the establishment of well-structured questions [24]. The documentation and reporting of the precise combination of search terms employed, as well as the databases that were queried, in conjunction with their respective dates, are of utmost importance. The degree of reproducibility at this level guarantees that the search process can be faithfully replicated and validated by external parties [25]. It is essential to present a comprehensive description of the criteria for inclusion and exclusion of articles in the systematic review. It is essential to provide a comprehensive description of the instrument utilized to assess the study's quality, along with the methodology employed for data extraction. Furthermore, it is imperative to record the methodology employed in resolving any inconsistencies among the systematic reviewers [26].

REPORTING OF RESULTS

Assessing and recording the level of agreement among systematic reviewers holds significant importance. The manuscript ought to incorporate a comprehensive account of the statistical methodologies utilized, including but not limited to data pooling, sensitivity analysis, subgroup analysis, and assessment of bias [27]. If public participation has been integrated into the review process, it is essential to include this information in the Methods section of the report. It is important to understand that any changes made to the systematic review after its initial registration, such as a switch to a scoping review as a result of new information learned during the review process, must be fully justified in the study's Methods section [28]. Supplementary appendices are of paramount importance in augmenting the comprehensiveness of reporting by offering supplementary information, including the search strategy, rationales for excluding specific studies, and the checklist employed for data extraction and quality assessment. If deemed necessary, these specificities can undergo additional examination by peer reviewers and readers [29].

The inclusion of a flow chart in the Results section is recommended to visually depict the sequential steps involved in the article search process, as well as the subsequent inclusion and exclusion of articles in the systematic review. Furthermore, it is imperative to furnish a succinct overview of the incorporated articles. The incorporation of studies within the analysis allows for the evaluation of the comprehensiveness of the literature search by peer reviewers and readers. Additionally, it enables an assessment of the extent to which the findings from the review can be applied to external contexts [28,30]. The data can be effectively communicated by employing a 100% stacked bar chart, which visually depicts the distribution of studies based on their specific characteristics. The generation of this chart can be conveniently facilitated through the utilization of spreadsheet software. The chart prominently displays the absolute quantity of studies associated with each feature, effectively represented within the bars. To enhance spatial efficiency, it is recommended to incorporate tables that encompass distinct study attributes and evaluations of quality as supplementary materials [31].

The main results should be presented as the primary outcomes, with subsequent findings related to secondary outcomes presented thereafter. It is advisable to incorporate Forrest plots for the main outcomes. The provision of a succinct report on the results obtained from sensitivity or subgroup analyses, along with an assessment of potential publication bias, holds significant importance. Moreover, all results obtained from these analyses must be presented in the appendices. This will enable individuals who are concerned with maintaining the integrity of the review to comprehensively analyze the findings [32]. The titles of appendices, tables, and figures need to provide sufficient information so that they can be easily understood and stand alone. By employing this methodology, the systematic review can be effectively presented in its entirety within the limitations of the accepted article without surpassing the allowable print space [33].

DISCUSSION SECTION

The recommended length for the Discussion section is generally limited to a maximum of four to five paragraphs. The introductory paragraph of the systematic review should offer a succinct overview of the main findings and any pertinent clinical implications for healthcare practice [34]. Following this, a comprehensive examination of the advantages and limitations of the systematic review shall be provided [35]. The succeeding passage should analyze the implications of the conclusions in light of the existing body of literature about the subject matter [36]. While the primary emphasis of the systematic review may not be centered on cost-effectiveness, it is crucial to acknowledge that any examination of the results should incorporate a concise evaluation of this factor [37]. The following section should include an analysis of the potential impact on clinical practice and recommendations for future research [38,39].

CONCLUSION SECTION

The concluding paragraph should encapsulate the systematic review's findings pertaining exclusively to the predetermined primary outcome(s) discussed earlier. Writers should exercise caution when exaggerating the findings of a review, especially when combining data from different studies [35].

The principles of integrity and transparency hold significant importance across diverse domains. To ensure adherence to the principles of transparency and uphold public trust in scientific research, it is crucial to provide comprehensive disclosure of the authors' roles and contributions, potential conflicts of interest, acknowledgments, sources of funding, and any other pertinent information [35]. The dedication to transparency is consistent with the prioritization of fostering public confidence in the scientific community. The enhancement of transparency in reporting is achieved by comprehensively presenting the aforementioned information while adhering to the criteria and forms established by the International Committee of Medical Journal Editors. If deemed necessary, these criteria and forms may be included as appendices. It is advisable to include reporting checklists as an appendix to demonstrate the degree to which the article conforms to or reasonably deviates from, the standards for transparent reporting [40] (Figure 1).

Addressing Peer Review Comments

Timely submission of comments within the specified timeframe mandated by the overseeing editors is of utmost importance. If authors are unable to meet the prescribed deadline for submission, it is advisable for them to formally communicate with the journal office to request an extension of time. It is imperative to furnish the rationale for the request. The requirement to respond to peer review feedback often involves undertaking further research [41]. In such cases, the editors are likely to be understanding and flexible if the need for an extension is based on this rationale.

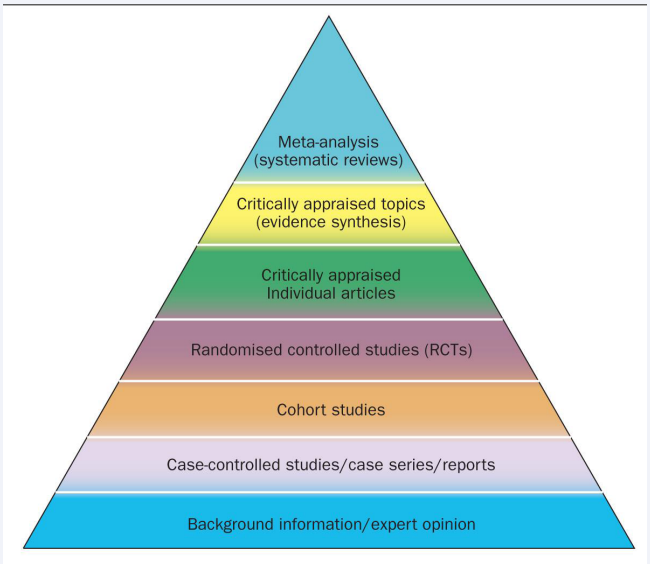

Figure 1 A typical hierarchy of evidence pyramid showing systematic reviews at the top of the evidence hierarchy (By Alan Davies).

To enhance the editor's evaluation and monitoring of revisions made to the manuscript, it is imperative to systematically list each comment and furnish a suitable response, while emphasizing any alterations implemented [42]. When confronted with a substantial volume of comments, such as those obtained from multiple peer reviewers, it is beneficial to utilize tabulation as a method of demonstrating the methodical and comprehensive response to the received critiques [43]. It is imperative to acknowledge that to effectively persuade, it is crucial to provide a comprehensive response to comments received from editors and peer reviewers. To bolster the assertions put forth, it is crucial to furnish corroborating sources and scientific justifications [44].

Diverse perspectives may emerge concerning the suitable methodology for tackling issues, such as the task of clarifying heterogeneity. In specific cases, the occurrence of unexplained heterogeneity may be unavoidable. The assignment may require the construction of a comprehensive table consisting of numerous responses [45]. Under specific circumstances, it is conceivable for the response document to surpass the length of the manuscript. Authors are required to demonstrate conciseness and precision in their responses. However, the application of strict word limits, as observed in manuscripts, is not uniformly enforced. There is a possibility that, in the future, there will be a growing inclination towards the public dissemination of peer reviews as a means to augment transparency [46].

CONCLUSION

The process of generating concise and accurate written material necessitates substantial exertion and entails a substantial investment of time. To uphold the internal and external validity of systematic reviews, editors, peer reviewers, and readers must possess the capacity to critically assess them promptly [40]. The importance of the intelligibility of systematic reviews cannot be overstated, as it is essential for effectively utilizing the information, they offer to inform clinical practice and policy decisions, even when faced with limitations on the number of words allowed. It is crucial to create a well-organized abstract that reflects the structure of the main text to effectively communicate information. The IMRaD acronym, denoting the conventional framework for the primary content in scholarly articles, is equally applicable to systematic reviews, laboratory experiments, and clinical trials, among other research methodologies [47]. The accurate presentation of the collected data can be achieved by presenting the findings of the systematic review in a concise manuscript, accompanied by comprehensive and transparent supplementary files [48].

AUTHOR CONTRIBUTION

MK and RF have equal contributions: designing and data curation, writeup, MN, AB, HT: proofreading, editing, structure

AVAILABILITY OF DATA AND MATERIALS

The data that support the findings of this study are openly available on request.

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