

A practical framework for assessing scientific article quality: Guidance for authors, editors, and reviewers

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Abstract: The quality of a scientific article is determined not only by the completeness of the manuscript's structure, but also by the coherence of the argumentation, methodological rigor, transparency of reporting, quality of evidence, and consistency between findings, interpretations, and conclusions. Various reporting guidelines have been developed to support research reporting for specific approaches and designs, but they have limited scope and do not directly provide a framework for evaluating all sections of a manuscript. This article aims to develop a practical guide for assessing and improving the quality of scientific articles for authors, editors, and reviewers. The framework presented organizes the manuscript into front matter, main text, and end matter, and then formulates evaluation criteria for the Title, Abstract, Keywords, Introduction, Methods, Results, Discussion, Conclusion, Author Statements and Declarations, and References. In the Methods section, four principles of synthesis, including structured, transparent, accessible, and reproducible, are used to organize reporting requirements based on various methodological approaches and strategies. At the overall manuscript level, cross-cutting quality criteria are used to assess relevance, structural and argumentative coherence, methodological rigor, transparency, quality of evidence, contribution, citation integrity, and consistency across components. This framework is used in conjunction with design-specific reporting guidelines to assess the completeness of reporting in line with the characteristics of the research design. This framework is not intended as a universal standard or a single-score rating system, but rather as an evaluative approach that can be adapted to the type of article, research design, form of evidence, scientific field, and journal requirements. Thus, the presented framework can help identify manuscript weaknesses, improve readiness prior to submission, and support a more systematic evaluation of articles during the editorial and peer-review processes.

Keywords: scientific article quality; quality assessment; scholarly writing; research reporting; methodological rigor; transparency; publication integrity; reporting guidelines; peer review

1. Introduction

Scientific publications serve not only to disseminate research findings but also to present the research process, evidence, interpretations, and contributions in a manner that is understandable, traceable, and evaluable by the scientific community. The quality of an article is determined not only by the importance of the topic or the reported findings but also by how the research argument is constructed and how the evidence is presented. Clarity of structure, precision of language, coherence of the line of argumentation, and consistency between the objectives, methods, results, discussion, and conclusions are essential components of effective scientific writing (Barroga & Matanguihan, 2021; Lippi, 2017). Various methodological guidelines and resources have been developed to help authors produce more comprehensive and transparent research reports. These guidelines include general guidance on writing scientific articles as well as design-specific reporting guidelines intended for specific types of research, such as PRISMA for systematic reviews (Page et al., 2021), STROBE for observational studies (von Elm et al., 2014), COREQ for qualitative research (Tong et al., 2007), CROSS for survey research (Sharma et al., 2021), and ARRIVE for animal studies (du Sert et al., 2020). The existence of these guidelines indicates that the quality of reporting varies across study designs. The literature on scientific writing also emphasizes the importance of logical consistency in argumentation and the function of each section of a manuscript in producing coherent scientific communication (Barroga & Matanguihan, 2021; Lippi, 2017).

These various guidelines have different scopes and functions. Design-specific reporting guidelines are primarily intended to ensure that information relevant to a specific research design is reported, whereas general scientific writing guidelines typically address how to structure manuscript sections or improve presentation quality. These different approaches do not, in and of themselves, provide a cross-cutting evaluative framework that integrates manuscript structure, coherence of argumentation, methodological rigor, quality of evidence, interpretation, scientific contribution, citation integrity, and publication transparency into a single assessment system. This gap is significant because the quality of a manuscript depends not only on the completeness of each section individually but also on the relationships and consistency among the sections. In other words, a manuscript may meet certain reporting requirements but still have weaknesses in the coherence of its argumentation, the alignment between methods and objectives, the connection between results and interpretation, or the proportionality of claims to the evidence. The need to evaluate manuscripts in a more integrated manner is also relevant in the editorial process, as editors must consider journal fit, significance, and the overall quality of the manuscript before determining its eligibility for the peer review process (Meijer & Webster, 2024).

Based on these issues, this article aims to develop a practical framework for assessing and improving the quality of scientific articles from the perspectives of authors, editors, and reviewers. The framework was developed through a synthesis of the literature on scientific writing, article structure, methodological rigor, transparency in reporting, citation integrity, and scientific publication practices. The manuscript is then organized into front matter, main text, and end matter, with each section translated into evaluation criteria for Title, Abstract, Keywords, Introduction, Methods, Results, Discussion, Conclusion, Author Statements and Declarations, and References. In the Methods section, four principles of synthesis, including structured, transparent, accessible, and reproducible, are used to organize reporting requirements based on various methodological approaches and strategies. At the overall manuscript level, a cross-cutting quality assessment evaluates the coherence and consistency among components, as well as the quality of argumentation, methodological rigor, transparency, evidence, contribution, and publication integrity. This framework is used in conjunction with design-specific reporting guidelines to assess the completeness of reporting in accordance with the characteristics of the research design. The framework presented is a practical and complementary

synthesis, not a universal standard or a substitute for existing reporting guidelines. Therefore, its application can be adapted to the research design, type of evidence, scientific field, and requirements of the target journal.

This article employs a conceptual and integrative literature synthesis approach, not a systematic review. Sources were selected based on their relevance to scientific writing, manuscript structure, methodological rigor, reporting transparency, citation integrity, and scientific publication practices. Priority was given to reporting guidelines, methodological literature, scientific articles that directly address research writing or reporting practices, and relevant publisher and scientific organization policies. This synthesis was used to identify principles and criteria applicable across manuscript sections and supplemented with specific considerations regarding research design.

2. Structure and quality standards of a scientific article

2.1 Overall structure of a scientific article

The structure of a scientific article organizes research information into sections that serve distinct yet interrelated functions. In empirical research articles, this structure allows readers to follow the research process from the background and objectives, through the methods used and the findings obtained, to the interpretation of the results. In empirical research articles, one of the most widely used structures is IMRaD (Introduction, Methods, Results, and Discussion). This structure organizes the manuscript based on the primary functions of each section: explaining the background and objectives of the research, the methods used, the findings obtained, and the interpretation and implications of the findings (Sollaci & Pereira, 2004). The IMRaD structure is not a format that must be applied identically to all types of articles. The form and organization of a manuscript may vary depending on the article's purpose, type of research, academic discipline, and journal requirements. Articles such as systematic reviews, case reports, narrative reviews, and editorials, for example, may use a different structure from empirical research articles (ICMJE, 2026).

In this article, the structure of a scientific article is understood as a functional arrangement comprising the front matter, main text, and end matter. The front matter includes initial elements such as the Title, Abstract, and Keywords, which help readers identify the topic, purpose, and main focus of the article. The main text contains the core of the research, which, for empirical articles, generally follows the IMRaD framework and may include the Introduction, Methods, Results, and Discussion, with the Conclusion serving as the closing section if presented separately. The end matter contains information that complements the article's scientific record, such as Author Statements and Declarations and References, in accordance with the characteristics of the research and the journal's guidelines. The arrangement of these elements may vary between journals; therefore, the structure used must be adapted to the type of article and the requirements of the target publication (ICMJE, 2026).

Thus, the structure of an article not only indicates the order of the manuscript's sections but also reflects their functions and interrelationships. The Title, Abstract, and Keywords provide initial access to the article's content; the Introduction establishes the rationale for the research; the Methods section explains how the evidence was obtained; the Results section presents the findings; the Discussion interprets the significance of the findings; and the Conclusion synthesizes the study's main message. Meanwhile, Author Statements and Declarations, along with References, supplement the article with information regarding contributions, support, transparency, and the traceability of scientific sources. The integration of these functions is essential so that the manuscript can be read as a single, coherent argument, rather than as a collection of standalone sections. Based on this structure, Figure 1 presents a general framework for organizing scientific articles in these guidelines. This figure is a structural synthesis developed in this article, not a direct reproduction of any specific guideline. This structure

places the Title, Abstract, and Keywords as front matter, the main body of the research as the main text, and the Author Statements and Declarations and References as end matter. This arrangement is intended as a general framework that can be adapted to the type of article, research design, and policies of the target journal.

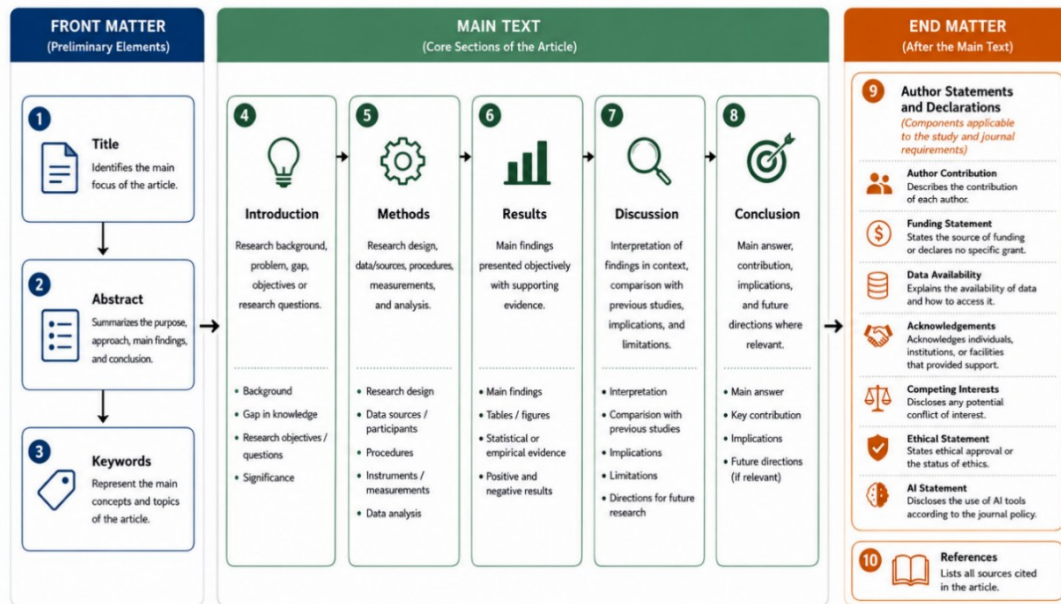


Figure 1. Overall structure and organization of a scientific article

2.2 Front matter

2.2.1 Title

The title is the first element of a manuscript used to identify the topic, scope, and main focus of an article. Since the title is often the initial information readers use to determine an article's relevance, it must convey the research content accurately, clearly, specifically, and concisely. An effective title reflects the main focus of the research without using ambiguous, unnecessary, or potentially misleading terms (Simon et al., 2020; Tullu, 2019). The use of terminology representative of the field of study in the title can help readers recognize the research focus and, in the digital publishing environment, improve the article's discoverability through search engines and scientific databases (Pottier et al., 2024).

Conciseness does not mean omitting important information. The title should provide sufficient information to indicate what is being studied and, where relevant, the population, phenomenon, approach, or main context of the research. The title must also align with the actual focus and scope of the reported research so as not to imply a design, novelty, effectiveness, or broader implications beyond what the study supports (Simon et al., 2020; Tullu, 2019). The use of representative terms or keywords can enhance discoverability, especially since the title is one of the metadata elements used in digital literature searches. However, considerations of discoverability should not take precedence over scientific accuracy and readability. Selecting terms that are commonly used in the field of study and relevant to the research focus can support the discoverability of articles through search engines and scientific databases, without sacrificing the precision and clarity of the title (Pottier et al., 2024; Tullu, 2019). Based on this principle, the quality of a title can be assessed through the following aspects: accuracy and relevance, specificity, clarity, conciseness, representativeness, scientific tone, discoverability, and consistency with the manuscript. The aspects and quality criteria for titles are presented in Table 1.

Table 1. Aspects and criteria for title quality

Aspect	Criteria
Accuracy and Relevance	The title accurately represents the topic, object, phenomenon, variable, or main focus of the research and is relevant to the content of the manuscript.
Specificity	The title is specific enough to indicate the scope of the research and distinguish it from other studies with similar topics.
Clarity	The terms used are clear, precise, and unambiguous, so that the focus of the article can be understood without having to read the entire manuscript.
Conciseness	The title is concise and informative, avoiding words, phrases, or details that do not contribute to the necessary scientific information.
Representativeness	The title reflects the most important aspects of the research, including the context, population, phenomenon, approach, or design, if such information is relevant to understanding the focus of the article.
Scientific Tone	The title uses scientific language and avoids sensational expressions, promotional language, humor, unnecessary jargon, and uncommon abbreviations.
Discoverability	The title uses key terms representative of the research topic and likely to be used by readers when searching for literature in databases or scientific search engines.
Consistency with the Manuscript	The title is consistent with the article's objectives, scope, methods, results, and conclusions, and does not imply claims not supported by the research.

2.2.2 Abstract

An abstract is a self-contained summary that conveys the most important information from an article, enabling readers to understand the purpose, approach, main findings, and key messages of the research without reading the entire manuscript. Since the abstract is often the first part read after the title and can serve as the basis for readers to determine an article's relevance, the most important information must be presented clearly, accurately, and concisely (Iskander et al., 2018; Tullu, 2019). The abstract must also consistently reflect the content of the manuscript, particularly regarding the objectives, methods, results, and conclusions, and must not introduce information or claims not supported by the main body of the article (Drury et al., 2023; Tullu, 2019).

The content of the abstract should be tailored to the type of article and the journal's guidelines. In empirical research articles, the abstract typically includes the context or problem, objectives, methods, main results, and conclusions. However, this structure does not have to be applied uniformly across all article types, as some journals use structured abstracts while others use a narrative format. Similarly, conceptual articles, review articles, and other types of articles may require different emphases depending on their purpose and the nature of their contribution (Drury et al., 2023; Tullu, 2019). In addition to being comprehensive, the abstract must adhere to the principles of accuracy, clarity, conciseness, self-containment, and consistency. The language used should be objective and specific, while claims regarding significance, effectiveness, causality, generalizability, or implications must be proportional to the reported evidence. Terms representing the study's main concepts may be used naturally to aid in the discoverability of the article, but the use of keywords should not compromise clarity or turn the abstract into a list of search terms (Tullu, 2019). Based on these principles, the quality of an abstract can be assessed through the following aspects: content completeness, accuracy and consistency, self-containment, clarity and conciseness, specificity of key information, proportionality of claims, discoverability, and journal compliance. The aspects and quality criteria for abstracts are presented in Table 2.

Table 2. Aspects and criteria for abstract quality

Aspect	Criteria
Content	The abstract contains the key information necessary to understand the article independently, in accordance with the type of article and the research objectives.
Completeness	The main objective or research question is stated clearly and specifically.
Research purpose	
Methods or approach	The approach, design, data sources or participants, and main procedures or analyses are briefly described in accordance with the characteristics of the research.
Key findings or main argument	The main findings or central argument are presented in a specific and informative manner, rather than relying solely on general statements such as “significant,” “successful,” or “yielded positive results.”
Conclusion or central message	The conclusion or central message states the main message, conclusion, or contribution of the article in proportion to the evidence or arguments presented.
Self-contained	The abstract can be understood without unnecessary reliance on other parts of the manuscript and does not depend on information available only in the main text.
Accuracy and consistency	The information in the abstract is consistent with the Title, Introduction, Methods, Results, Discussion, and Conclusion, including the objectives, methods, findings, and level of certainty of the claims.
Clarity and conciseness	The language is clear, specific, concise, and free from unnecessary information, irrelevant jargon, or excessive elaboration.
Proportionality of claims	The abstract does not exaggerate the significance, effectiveness, causality, generalizability, novelty, or implications of the research beyond the available evidence.
Discoverability	Terms representing the study’s main concepts are used naturally to help readers identify and find the article through scientific search systems.
Journal compliance	The abstract follows the target journal’s requirements regarding structured or unstructured format, word count, required elements, and other technical specifications.

2.2.3 Keywords

Keywords are metadata elements that help represent the main topics and concepts of an article and support the identification and discoverability of the article in search systems and scientific databases. The selected keywords should reflect concepts, objects, phenomena, variables, methods, or contexts that are truly integral to the article and use terminology commonly used in the field of study. Selecting the right terms for the title, abstract, and keywords can help improve discoverability and make it easier for readers to find relevant articles through digital literature searches ([Pottier et al., 2024](#); [Tullu, 2019](#)). Keywords must be consistent with the article’s focus, particularly with the title and abstract, but should not simply replicate all terms found in the title. Their selection should consider terms that best represent the research topic, terms commonly used in the relevant academic field, and terms that readers are likely to use when searching for literature. Thus, keywords complement the article’s metadata rather than merely repeating the title ([Ecarnot et al., 2015](#); [Pottier et al., 2024](#); [Simon et al., 2020](#)).

Keyword selection should also take into account the characteristics of the academic field. If a field or journal uses a controlled vocabulary or specific indexing terms, that terminology can be used to improve consistency and traceability. However, the use of a controlled vocabulary should follow the

journal's guidelines or relevant indexing practices and should not replace the need to select terms that substantively represent the article's content. Based on these principles, the quality of keywords can be assessed by the following criteria, including relevance, specificity, consistency, field-specific terminology, complementarity, discoverability, clarity, and controlled vocabulary (when applicable). The aspects and quality criteria for keywords are presented in Table 3.

Table 3. Aspects and quality criteria for keywords

Aspect	Criteria
Relevance	Keywords directly represent the main topics, objects, phenomena, variables, methods, or concepts discussed in the article.
Specificity	The term is specific enough to distinguish the article from other studies on similar topics and is not so general that it loses its informative value.
Consistency	Keywords are consistent with the focus, title, abstract, and key terminology used in the article.
Field Terminology	The keywords are common, recognizable, and relevant to the scientific field.
Complementarity	The combination of keywords complements the information in the title and abstract by adding important terms that help represent the scope of the article without being overly redundant.
Discoverability	Keywords are selected by considering the terms readers are likely to use when searching for literature through databases or scientific search engines.
Clarity	The terms are clear and unambiguous, are not overly general, and do not convey meanings that could interfere with identifying the article's topic.
Controlled Vocabulary	When available and relevant, keywords follow the controlled vocabulary, thesaurus, or indexing terms established by the relevant field or journal.

2.3 Main text

2.3.1 Introduction: building a strong research rationale

The introduction is the part of the manuscript that establishes the scientific rationale for the research by situating the research problem within the context of existing knowledge. Its primary function is not merely to provide background, but to explain why a particular issue is worth studying, what is already known about it, which aspects remain unexplained or inadequately addressed, and how the research addresses these needs (Delvin et al., 2014; Vintzileos & Ananth, 2010). Thus, the Introduction establishes an argumentative connection between the research context, the scientific problem, prior knowledge, knowledge gaps, and the research objectives (Busse & August, 2021).

Writing the Introduction requires a synthesis of the literature, not merely an inventory of previous research. The literature is used to map existing knowledge, identify patterns or consistency in findings, and highlight limitations or issues that still require explanation (Barroga & Matanguihan, 2021). Research gaps can take various forms, including empirical limitations, inconsistencies in findings, conceptual or theoretical limitations, methodological limitations, and limitations related to the research context (Arianto et al., 2021; Sandberg & Alvesson, 2011). Therefore, the existence of a gap cannot be adequately stated through a general formula such as "there is still little research", but must be demonstrated through a literature synthesis that enables readers to understand what is unknown or insufficient, why this is important, and why new research is needed (Sandberg & Alvesson, 2011; Vintzileos & Ananth, 2010).

The line of reasoning in the Introduction must then guide the reader from the research problem to the research objective or research question. This relationship need not follow an identical sequence across

all disciplines or article types, but it must demonstrate logical continuity between the identified scientific need and the proposed research. The research objective or research question must be formulated in response to the issues and gaps that have been established ([Arianto et al., 2021](#); [Chiarella, 2007](#)). Similarly, claims regarding novelty and contribution must be grounded in the study's position relative to existing knowledge and formulated in proportion to the actual contributions offered ([Grant & Pollock, 2011](#)). Thus, a strong Introduction establishes a coherent relationship between the rationale, the gap, the research question or objective, and the contribution.

The introduction must also maintain focus, proportionality, and relevance to the literature. An overly broad discussion can obscure the research problem, while a literature review that is too narrow can result in gaps that lack a sufficient foundation. The literature used must be relevant to the research problem and objectives and sufficiently representative to demonstrate the study's position within the state of the art ([Barroga & Matanguihan, 2021](#); [Lippi, 2017](#)). Claims regarding significance, novelty, or contribution must also be limited to what can be demonstrated by the literature and the research objectives, so as not to make claims that go beyond the available basis for argumentation ([Vintzileos & Ananth, 2010](#)). Based on these principles, the quality of the Introduction can be assessed through several dimensions, including the research problem and significance, the state of the art, the research gap, the research objective or question, the contribution, the quality of evidence and citations, logical coherence, focus and conciseness, and the proportionality of claims. The aspects and criteria for evaluating the quality of the Introduction are presented in Table 4.

Table 4. Aspects and criteria for evaluating the quality of the introduction

Aspect	Criteria
Research Problem and Significance	The research problem or issue is clearly formulated and supported by scientific reasoning that demonstrates the relevance and importance of the research.
State of the Art	Relevant literature is critically synthesized to demonstrate existing knowledge, developments in the field, consistent or divergent findings, and the limitations of previous research.
Research Gap	The knowledge gap or unresolved issue is specifically formulated based on the literature synthesis and highlights aspects that are insufficient, inconsistent, or have not been studied in the relevant context.
Rationale for Addressing the Gap	It explains why this gap is important to address and how filling it can add scientific value to the field of study.
Research Objective/Question	The research objective or question is clearly formulated and directly relates to the problem and the identified gap.
Contribution	The expected contribution to knowledge, theory, methods, practice, or context is described in specific and proportionate terms.
Evidence and Citation Quality	Key claims are supported by relevant, credible, and sufficiently representative literature that reflects the state of the art, with clear links between the claims and their sources.
Logical Coherence	The argument develops logically from the context and problem to the state of the art, research gap, rationale, objective/question, and contribution without any leaps in reasoning.
Focus and Conciseness	The discussion is sufficient to establish the rationale for the research but remains focused and does not stray into a literature review unrelated to the research objectives.
Proportionality of Claims	Claims regarding significance, novelty, contribution, or implications do not exceed the scope of the research and the available evidence.

2.3.2 Methods: Establishing methodological rigor

The “Methods” section of the manuscript explains how the research was designed, conducted, and analyzed to generate evidence to address the research objectives or questions. The selection of the research design and methodological procedures must take into account the research objectives, the characteristics of the research questions, the data sources, and the type of evidence required to answer them ([Creswell & Creswell, 2018](#)). The Methods section must provide sufficient information regarding the research design, sources or units of analysis, data selection or collection procedures, measurement or analytical procedures, and analysis strategies so that readers can understand how the research was conducted and assess the appropriateness of the methodological approach to the research objectives ([Simon et al., 2020](#)).

Methodological rigor cannot be reduced to the amount of information included in the “Methods” section. Rigor relates to the alignment between the research questions, design, procedures, measurements, analysis, and the type of evidence produced, as well as to the clarity of the documentation that allows readers to evaluate the research process. Transparency of methods is an essential prerequisite not only for reproducibility but also for understanding, evaluating, comparing, and extending research findings ([Zogmaister et al., 2024](#)). A lack of methodological information can hinder the evaluation of research quality and, under certain conditions, complicate efforts to reproduce or verify the reported processes and results ([Standvoss et al., 2024](#)).

Methods reporting requirements vary depending on methodological approaches and strategies because research generates different types of evidence and faces different methodological challenges. Quantitative research requires clarity regarding variables, measurements, sampling, and analysis procedures; qualitative research requires information regarding context, data sources, the researcher’s position, and the processes of data collection and analysis; whereas mixed-methods research requires an explanation of the design, sequence of implementation, relationships, and integration of quantitative and qualitative components ([Creswell & Creswell, 2018](#); [Fetters et al., 2013](#); [O’Brien et al., 2014](#)). Thus, reporting standards should not be applied identically to all research studies but should be tailored to the design, data sources, procedures, and the type of evidence produced.

In these guidelines, the quality of the Methods section is defined through four integrative principles: structured, transparent, accessible, and reproducible. These four principles constitute a synthetic framework developed in this article, not a universally established methodological taxonomy. “Structured” refers to the order and coherence of the relationships among methodological components; “transparent” emphasizes openness regarding research decisions and procedures; “accessible” relates to the adequacy and comprehensibility of methodological information for readers; while “reproducible” refers to the availability or documentation of information that allows the research process to be traced and, if appropriate given the study’s characteristics, examined or replicated. These four principles are applied proportionally according to the methodological approaches and strategies used. Table 5 presents general principles and criteria for assessing the quality of the “Methods” section, while Table 6 adapts these four principles to reporting requirements based on various research approaches and methodological strategies. The application of the principle of reproducibility must be tailored to the characteristics of the research. In certain studies, particularly qualitative and conceptual research, the emphasis may be placed on the traceability of procedures, analytical decisions, and process documentation, rather than on the identical replication of the study. The categories in Table 6 are presented as a methodological synthesis to evaluate reporting, not as a hierarchical taxonomy or an exclusive classification of research designs. A single study may combine more than one approach, design, or methodological strategy.

Table 5. Integrative principles and quality criteria for methods

Principle	Criteria
Structured	Methods demonstrate a coherent and systematic relationship between the research objective/question, research design or approach, data sources or units, procedures, measurements, and analysis.
Transparent	Methodological decisions, procedures, data sources, selection criteria, measurements, analysis, and relevant changes or deviations are reported openly and are traceable.
Accessible	Methodological information is presented with a level of completeness, clarity, and comprehensibility that allows readers to understand and evaluate how the research was conducted.
Reproducible	Relevant information, materials, data, code, protocols, parameters, or other documentation are provided or documented to the extent necessary to allow the research process to be traced and, where appropriate for the type of research, verified or replicated.

Table 6. Application of methods quality principles across research approaches and methodological strategies

Research Approach/ Methodological Strategy	Structured	Transparent	Accessible	Reproducible	Ref.
Quantitative Research	Research design, variables, sampling, measurement, analysis	Operational definitions, sampling procedures, measurement, and statistical procedures	Clear definitions of variables, measurement procedures, and analytical rationale	Data-processing and analytical procedures; code where applicable	(Creswell & Creswell, 2018; Simon et al., 2020)
Qualitative Research	Design, context, participants/data sources, data collection, and analysis	Sampling decisions, researcher reflexivity, coding, interpretation, and analytical decisions	Contextual details, participant characteristics, and the analytical process	Audit trail, coding framework, and analytical documentation	(Creswell & Creswell, 2018; O'Brien et al., 2014)
Mixed-Methods Research	Design type, sequencing, quantitative and qualitative components, and integration points	Rationale, timing, methodological decisions, and integration procedures	Clear description of each strand and their relationship	Integration procedures, datasets, and analytical documentation	(Creswell & Creswell, 2018; Fetter et al., 2013)
Experimental Research	Experimental design, variables, experimental units, procedures	Controls, manipulation, allocation/randomization, measurement procedures	Experimental setup, materials, parameters, and measurement conditions	Protocols, replication procedures, and data/code where applicable	(Kallet, 2004; Lalu et al., 2023)
Survey Research	Population, sampling design, instrument, and data-collection procedures	Recruitment, response/nonresponse, weighting, and data processing	Instrument characteristics, sampling procedures, and response categories	Survey instruments, procedures, and methodological documentation	(Kalton, 2021; Sharma et al., 2021)
Observational Research	Study design, population, variables, and definitions of exposure and outcome	Participant selection, measurement procedures, control for confounders, and analysis	Operational definitions, data sources, and analytical procedures	Data sources, coding procedures, and analytical documentation	(von Elm et al., 2014)

Research Approach/ Methodological Strategy	Structured	Transparent	Accessible	Reproducible	Ref.
Computational and Modeling Research	Model/algorithm, inputs, parameters, workflow, and evaluation strategy	Assumptions, parameterization, preprocessing, and computational decisions	Model structure, input data, software, and computational environment	Code, data, dependencies, parameters, and computational environment	(Grimm et al., 2020)
Systematic Review and Evidence Synthesis	Review question, eligibility, search, selection, data extraction, and synthesis	Search strategy, selection criteria, study appraisal, protocol, and deviations	Search terms, eligibility criteria, study characteristics, and synthesis procedures	Search strings, data extraction forms, datasets, and analytical procedures	(Aromataris et al., 2024; Page et al., 2021)
Bibliometric Research	Research objectives, database, dataset construction, and analytical strategy	Search strategy, selection criteria, data cleaning, and analytical parameters	Dataset characteristics, indicators, mapping procedures, and analytical choices	Search strategy, metadata, parameters, software, and workflow	(Donthu et al., 2021; Öztürk et al., 2024)
Development/Educational Design Research	Development objectives, framework/model, stages, and evaluation design	Development decisions, evaluation procedures, and revision criteria	Product or model specifications, evaluation criteria, and development process	Development protocols, instruments, versions, and revision records	(Jacobsen & Mc Kenney, 2024; Mc Kenney & Reeves, 2018; Richey & Klein, 2005)
Case Study Research	Case boundaries, case design, context, sources of evidence, and analysis	Case selection, data collection, the researcher's role, and analytical decisions	Case context, sources of evidence, and chain of evidence	Case database, protocol, audit trail, and analytical documentation	(Käss et al., 2024; Shaw et al., 2023)
Action Research	Research context, practical problem, action cycles, data collection, and reflection	Participant roles, researcher reflexivity, action decisions, and iterative processes	Context, action processes, participant roles, and outcomes	Cycle documentation, data records, reflection, and decision trails	(Casey et al., 2023; Stringer & Ortiz Aragón, 2021)
Conceptual / Theoretical Research	Research purpose, conceptual/theoretical approach, analytical structure	Literature selection, theoretical assumptions, synthesis, and reasoning	Concept definitions, relationships, propositions, and model structure	Literature trail, analytical reasoning, and conceptual development process	(Jaakkola, 2020; Rocco et al., 2022; Thatcher & Fisher, 2022)

2.3.3 Results: Reporting findings clearly and transparently

The “Results” section is the part of the manuscript that presents the findings generated through the conduct of the research and data analysis. In empirical research articles, this section must present findings relevant to the research objective or research question in a clear, systematic, and objective manner. The order of presenting the results should follow the logic of the research questions and analysis established in the Methods section, so that readers can trace the relationship between the planned analysis and the evidence generated (Fontanarosa & Greenland, 2024). Thus, the “Results” section is not merely a place to display all the outputs of the analysis but serves to present relevant evidence in an organized manner, allowing readers to understand what was found without including substantive interpretations, which should be developed in the “Discussion” section.

The comprehensiveness of results reporting should be tailored to the study design and the nature of the data generated. Key findings must be reported in detail, including those that do not support the research hypothesis or expectations when relevant to the research questions. In quantitative research, the presentation of inferential results should not rely solely on p-values but should also consider

appropriate measures of effect size and uncertainty, such as confidence intervals ([Lang & Altman, 2015](#); [Norris et al., 2015](#)). Numerical information must be reported with an appropriate level of precision and should not give the impression of greater accuracy than is supported by the measurements or analysis.

Tables and figures can be used to present data more efficiently and help readers identify patterns or relationships among findings. However, these visual elements should complement, rather than merely duplicate, the text description. The “Results” section should highlight the main findings contained in the tables or figures, while data details may be left to the visual elements if presentation in that manner is more effective ([Fontanarosa & Greenland, 2024](#)). Each table and figure must be referenced consistently, have an informative title or caption, and present information that is consistent with the text.

Transparency in reporting also includes information necessary to understand how the findings were obtained. If relevant to the study design, information regarding the number of participants or units of analysis, exclusions, dropouts, missing data, deviations from planned procedures, or other events that may influence the results must be explicitly reported. Such reporting allows readers to assess the completeness of the data and the relationship between the procedures described in the Methods section and the reported results. In studies that follow a specific protocol or analysis plan, results must also be reported consistently with the predefined analysis, while unexpected findings should still be reported if they are relevant to the research questions ([Fontanarosa & Greenland, 2024](#)).

Thus, the quality of the “Results” section is determined not only by the number of results reported but also by their relevance, accuracy, completeness, traceability, and clarity of presentation. Based on these principles, the quality of the “Results” section can be assessed through the following aspects: alignment with research objectives, logical organization, completeness of findings, accuracy and precision, appropriate statistical reporting, transparency of data and deviations, effective use of tables and figures, consistency between text, tables, and figures, objectivity, traceability to the “Methods” section, and distinction from the “Discussion” section. The aspects and quality criteria for the “Results” section are presented in Table 7.

Table 7. Aspects and quality criteria for results

Aspect	Criteria
Alignment with Research Objectives	The findings presented are directly related to the research objective/question and stem from an analysis relevant to the research objectives.
Logical Organization	The results are systematically organized based on the research questions, objectives, design, sequence of analysis, or the structure most appropriate for the study.
Completeness of Relevant Findings	Key findings relevant to the research questions are adequately reported, including results that support or do not support the hypotheses or expectations, when relevant.
Accuracy and Precision	Numerical values, units, categories, estimates, and analysis results are reported accurately with a level of precision appropriate to the data and methods used.
Appropriate Statistical Reporting	For quantitative research, relevant statistics are reported in accordance with the analysis used, including effect sizes and measures of uncertainty when necessary; p-values are not used as the sole basis for describing results.

Aspect	Criteria
Data and Participant Transparency of Reporting Deviations and Unexpected Findings	Information regarding the number of units of analysis, exclusions, dropouts, missing data, or changes in sample size is reported when relevant to the study design and interpretation of results. Deviations from planned procedures and unexpected findings relevant to the study are reported transparently.
Tables and Figures	Tables and figures are used appropriately to clarify or summarize results, are referenced in the text, are given informative titles or captions, and do not unnecessarily duplicate information.
Text–Table–Figure Consistency	Values, numbers, labels, categories, and findings reported in the text are consistent with the tables and figures.
Objectivity	Results are presented based on the evidence obtained without including theoretical explanations, speculation, or causal claims not supported by the study design and data.
Traceability to Methods	The relationship between the procedures and analyses described in the Methods section and the findings reported in the Results section is clearly traceable.
Distinction from Discussion	The Results section presents the findings, while interpretations, comparisons with previous studies, explanations of mechanisms, implications, and evaluations of their significance are primarily included in the Discussion.
Conciseness and Relevance	Results are presented efficiently and focus on findings relevant to the research questions or objectives without including unnecessary analysis outputs.

2.3.4 Discussion: Interpreting and contextualizing findings

The Discussion is the section of the manuscript that interprets the findings and situates them within the context of existing knowledge. Unlike the Results section, which primarily presents evidence and findings, the Discussion explains the significance of those findings, their relationship to the research questions, and their position relative to previous research (Fontanarosa & Greenland, 2024; Hess, 2023). The Discussion should begin by reaffirming the main findings that are directly related to the research objectives or questions. These findings are then placed in the context of the relevant literature by comparing with previous studies, with an explanation of the similarities and differences in results. If results do not align with the hypothesis or prior research, possible alternative explanations may be discussed to the extent they have sufficient empirical or theoretical basis. Interpretations must remain consistent with the data and avoid speculation that cannot be supported by evidence (Fontanarosa & Greenland, 2024; Pollock, 2023).

The Discussion section should also objectively highlight the study’s strengths and limitations. Limitations should not merely be listed as a series of weaknesses; rather, it is necessary to explain how these limitations might affect interpretation, the accuracy of estimates, validity, or the generalizability of the findings. A proportionate presentation of limitations helps readers assess the limits of the inferences that can be drawn from the study and prevents interpretations that go beyond the strength of the evidence (Fontanarosa & Greenland, 2024; Herron, 2024; Sumpter et al., 2023).

Implications should be derived from the findings and the level of certainty of the evidence, not from assumptions about unproven potential benefits. Theoretical, methodological, practical, or policy implications may be discussed if relevant, but must be tailored to the study design, context, population, and strength of the evidence. Similarly, directions for future research should be derived from the

findings, limitations, or unanswered questions and should not simply be stated as “more research is needed” ([Fontanarosa & Greenland, 2024](#)).

The Discussion should not introduce new results or analyses not previously presented in the Results section, include issues unrelated to the study’s objectives, or use language that exaggerates the novelty, importance, or implications of the findings. Objectivity and caution in formulating claims are necessary to ensure that interpretations remain proportionate to the available evidence ([Fontanarosa & Greenland, 2024](#)). Based on these principles, the quality of the Discussion can be assessed through the following aspects: key findings, interpretation and contextualization, integration with previous research, explanation of findings, strengths and limitations, implications, future research, evidence proportionality, logical coherence, and distinction from the Results. The aspects and quality criteria for the Discussion are presented in Table 8.

Table 8. Aspects and quality criteria for the discussion

Aspect	Criteria
Key Findings	The main findings are summarized and directly linked to the research objective or research question.
Interpretation and Contextualization	The findings are interpreted based on the research evidence and placed within the relevant scientific context, rather than simply being repeated from the “Results” section.
Integration with Previous Research	The findings are critically compared with previous research to highlight similarities, differences, or advances in knowledge.
Explanation of Findings	Possible mechanisms, reasons, or factors underlying the findings are discussed if they have a sufficient empirical or theoretical basis.
Unexpected or Contradictory Findings	Findings that do not align with the hypothesis or previous research are identified and discussed objectively, including relevant alternative explanations.
Contribution	The significance and contribution of the findings to knowledge, theory, methods, practice, or context are explained in accordance with the available evidence.
Strengths and Limitations	The strengths and limitations of the study are identified in a manner that is proportionate and relevant to the study’s design, data, methods, or analysis.
Impact of Limitations	The consequences of the limitations on validity, interpretation, accuracy of estimates, generalizability, or strength of evidence are explicitly described.
Implications	Theoretical, methodological, practical, or policy implications are discussed when relevant and are derived in proportion to the findings and the level of certainty of the evidence.
Future Research	Directions for future research are derived from the findings, limitations, or unanswered questions and are formulated specifically.
Evidence Proportionality	Interpretations and implications do not exceed the strength of the evidence or transform associations into causal relationships without adequate support from the study design.
No New Results	The Discussion does not introduce new data, analyses, or findings that have not been reported in the Results section.
Logical Coherence	The argument flows logically from the main findings to the interpretation, literature context, limitations, implications, and key message.
Conciseness and Focus	The discussion remains focused on the research questions and main findings and does not repeat the Introduction or Results.
Key Takeaway	The concluding section of the Discussion provides a clear, balanced statement of the main significance of the findings and their implications.

2.3.5 Conclusion: Synthesizing the main contribution

The Conclusion is the closing section of the manuscript that synthesizes the answers to the research objective or research question based on the findings and interpretations presented. The conclusion should concisely reaffirm the study’s main message and should not introduce new data, analyses, or findings (Fontanarosa & Greenland, 2024). Statements in the Conclusion must be proportionate to the strength of the evidence, the study design, the population, and the research context. Claims regarding contributions, implications, or generalizations must be derived from the research results and should not exceed the available evidence (Fontanarosa & Greenland, 2024; Sefcik et al., 2024). In some journals, the Conclusion is presented as a separate section following the Discussion, while in others it serves as the concluding part of the Discussion. Regardless of the format, the Conclusion must remain clear, concise, consistent with the main body of the manuscript, and focused on the study’s central message. Based on these principles, the quality of the Conclusion can be assessed by the following aspects: alignment with the research objective, synthesis of key findings, central message, contribution, proportionality of claims, consistency, absence of new evidence, and clarity and conciseness. The aspects and quality criteria for the Conclusion are presented in Table 9.

Table 9. Aspects and quality criteria for the conclusion

Aspect	Criteria
Alignment with Research Objective/Question	The conclusion directly addresses the research objective or question.
Synthesis of Key Findings	Key findings are concisely synthesized and do not merely repeat the Results.
Central Take-Home Message	The main message of the research is stated clearly and specifically.
Contribution	Contributions to knowledge, theory, methods, practice, or the field of study are stated if supported by the findings.
Proportionality of Claims	Claims are consistent with the strength of the evidence, the study design, the population, and the research context.
Consistency	Conclusions are consistent with the Introduction, Methods, Results, and Discussion.
No New Evidence	There are no new data, analyses, or findings that have not been previously presented.
Clarity and Conciseness	The conclusion is concise and clear and focuses on the main message.
Future Directions	Future research directions are included if relevant and derived from the study’s findings or limitations.

2.4 End matter

End matter includes elements of the manuscript placed after the main body of the article and serves to supplement information related to the transparency, accountability, and traceability of scientific publications. The components of end matter may vary depending on the type of article, research characteristics, scientific field, and journal requirements. In international publishing practice, these components may include author contributions, funding, data availability, competing interests, acknowledgments, ethical statements, and references. Unlike the main text, which primarily presents the study’s arguments, methods, evidence, and interpretations, the end matter provides supplementary information regarding contributions, support, access to data or materials, competing interests, ethical considerations, and sources used. This information helps readers, editors, and reviewers understand the context and responsibilities associated with the published work (Allen et al.,

[2019](#); [Larivière et al., 2016](#), [2021](#)). In this article, the end matter is discussed through “Author Statements and Declarations” and “References.” The completeness of each component is tailored to the characteristics of the research and the requirements of the target journal.

2.4.1 Author statements and declarations

Author Statements and Declarations are a collection of statements that clarify authors’ contributions and responsibilities, sources of research support, availability of data or materials, non-authorship contributions, competing interests, ethical considerations, and the use of AI when relevant. This section is an element of publication transparency and not merely an administrative requirement. International editorial practices increasingly treat these declarations as an explicit part of the publication process and research integrity review.

2.4.1.1 Author contribution

The author contribution statement describes the substantive role of each author in the research and manuscript preparation. The list and order of authors’ names do not in and of themselves indicate the division of scientific labor, particularly in collaborative research. The *contributorship* approach allows individual contributions to be documented more clearly and links credit to responsibility for the published work ([Allen et al., 2019](#); [Larivière et al., 2016](#)).

2.4.1.2 Funding statement

The Funding Statement identifies sources of financial or material support related to the research. If there are funders, relevant information may include the name of the organization and, where applicable, its role in the research design, data collection or analysis, interpretation of results, manuscript preparation, or publication decisions. Funding information should be distinguished from competing interests, as the two provide different types of transparency.

2.4.1.3 Data availability statement

The Data Availability Statement explains whether the data, materials, or code supporting the research are available and, if so, how to access them. Data cannot always be shared openly due to considerations of privacy, confidentiality, ownership rights, security, ethical requirements, or legal provisions. Therefore, the statement must explain the data’s availability status and access mechanisms, or the reasons for any restrictions, if the data cannot be shared.

2.4.1.4 Acknowledgements

Acknowledgments are used to recognize individuals, groups, or institutions that provided assistance or support but do not meet the criteria for authorship. Distinguishing between authorship and acknowledgments is important because authorship involves both credit and responsibility for the published work ([Allen et al., 2019](#); [Larivière et al., 2021](#)). Technical or administrative contributions, the provision of facilities, or other forms of support may be included in the Acknowledgments section if they do not meet the substantive criteria for authorship.

2.4.1.5 Competing interests statement

A Competing Interests Statement discloses financial or non-financial relationships or interests that could influence or could reasonably be perceived as influencing, including the research, the

interpretation of results, or the publication process. Such disclosure does not in itself indicate a violation or bias, but it allows editors and readers to assess the potential impact of these interests on the scientific work.

2.4.1.6 Ethical statement

The Ethical Statement describes the ethical approval, oversight, and protections relevant to the research. For research involving humans or animals, this information may include approval from an ethics committee or authorized institution, informed consent, consent for publication if required, and measures to protect the privacy, confidentiality, and well-being of subjects or participants. Research that does not require ethical approval may state this fact if it is relevant to the journal's requirements.

2.4.1.7 AI statement

An AI Statement is used to disclose the use of generative AI or AI-assisted technologies when such use falls within categories that require disclosure. The disclosure should explain the tools used, the purpose of their use, and the extent of their involvement in a proportionate manner. The use of AI does not absolve human authors of their scientific responsibility. Authors remain responsible for the accuracy, integrity, attribution, and substance of the published work. The literature on AI and authorship also highlights the importance of distinguishing technological assistance from the intellectual contributions that form the basis for authorship ([Formosa et al., 2025](#); [Khosrowi et al., 2025](#)).

2.4.2 References

The reference list is the final section of a manuscript that provides bibliographic records of the sources used to construct the argument, support claims, explain methods, and situate the research within the existing body of knowledge. References allow readers to trace the sources underlying a claim and to attribute previously developed knowledge. Therefore, the quality of a reference list is not determined by the number of sources, but primarily by the relevance, accuracy, traceability, and integrity of their use ([Barroga & Matanguihan, 2021](#)). The accuracy of bibliographic information is a crucial aspect of citation integrity. Empirical research shows that errors in author names, titles, journals, years, volumes, and page numbers are still found in reference lists and can hinder the tracing of original sources ([Aronsky et al., 2005](#)). Therefore, bibliographic information must be verified against original sources or reliable bibliographic databases.

Citation integrity is also related to how references are used in an argument. Citations should have a clear connection to the claims they support and should not be used solely to inflate citation counts or bibliometric metrics. Research on rhetorical citations indicates that not all citations serve the same substantive function in the development of a study ([Bao & Teplitskiy, 2024](#); [Teplitskiy et al., 2022](#)). Practices such as inappropriate citation requests, excessive self-citation, and other forms of citation manipulation can distort the scientific record and should therefore be avoided ([Markel, 2024](#); [Plevris, 2025](#)).

The status and reliability of publications must also be verified before using a source. Articles that have been retracted or have publication integrity issues should not be used as valid scientific evidence, unless that status is specifically part of the subject of analysis. This verification is part of the author's responsibility to ensure the traceability and fundamental reliability of the literature used. In these guidelines, the quality of references is assessed based on the following aspects: accuracy and verification, relevance and direct support, selection of primary, secondary, and seminal sources, currency and state of the art, citation integrity, publication status and source reliability, bibliographic

consistency, persistent identifiers and digital traceability, and verification of information obtained through AI. The aspects and quality criteria for references are presented in Table 10.

Table 10. Aspects and quality criteria for references

Aspect	Criteria
Accuracy and Verification	Bibliographic information, including authors' names, year, title, journal or publisher, volume, issue, page, DOI, and other identifying elements, corresponds to the original source or a reliable bibliographic database.
Relevance and Direct Support	Each reference has a clear connection to the claim, argument, method, or context it supports and is truly relevant to the statement it refers to.
Primary, Secondary, and Seminal Sources	Primary sources are used to support specific findings, data, methods, or instruments; secondary sources are used for synthesis or context; and seminal sources are included when they have fundamental significance for the theory, concepts, methods, or developments in the field.
Currency and State of the Art	Up-to-date references are used appropriately to represent the state of the art, while older sources are retained if they have fundamental, historical, or seminal relevance.
Citation Integrity and Responsible Citation	Citations are selected based on scientific necessity and are not used excessively or manipulatively to boost bibliometric metrics, bolster the position of a particular party, or serve interests unrelated to the substance of the research.
Publication Status and Source Reliability	Publication status and source credibility are verified; sources that have been retracted, cannot be verified, or have publication integrity issues are not used as valid scientific evidence, unless such status is explicitly part of the analysis.
Bibliographic Consistency	Every in-text citation has a corresponding entry in the reference list, and every entry in the reference list is actually cited in the manuscript; bibliographic information is also consistent with the original source.
Persistent Identifiers and Digital Traceability	A DOI, dataset identifier, accession number, software identifier, or other persistent identifier is included when available and relevant to support source identification and traceability.
Verification of AI-Assisted Information	Information or references obtained with the help of AI are verified against traceable scientific sources; if the original source is available, it is cited directly and not replaced by AI output.

3. Integrated quality assessment of a scientific article

3.1 Purpose of integrated assessment

The quality assessment of a scientific article must consider the manuscript as a whole, since the quality of individual sections does not, in itself, guarantee the article's overall coherence. The relationships between the research problem, objectives, methods, evidence, interpretation, and conclusions must be consistent so that the manuscript forms a complete scientific argument ([Barroga & Matanguihan, 2021](#); [Fontanarosa & Greenland, 2024](#)). In this article, integrated quality assessment is used to evaluate the consistency and interrelationships among the manuscript's components, including structure, argumentation, methodological rigor, quality of evidence, transparency, interpretation, contribution, and publication integrity. This assessment is evaluative and diagnostic in nature, not a universal scoring system, and must be adapted to the type of article, research design, and relevant reporting guidelines.

3.2 Cross-cutting quality criteria

Integrated evaluation is conducted by identifying quality dimensions that apply across all sections of the manuscript. These dimensions do not replace the specific criteria discussed in Section 2, but serve

as an additional layer of evaluation to assess whether all components of the article form a coherent scientific whole. This framework is an evaluative synthesis developed in this article and is not intended as a universal evaluation system or as a substitute for design-specific reporting guidelines. Table 11 presents the main dimensions for conducting this evaluation.

Table 11. Cross-cutting quality criteria for a scientific article

Dimension		Key evaluation question
Relevance and Significance	and	Does the research problem or topic have clear scientific relevance and sufficient justification for being studied or discussed?
Argumentative Coherence		Do the research problem, rationale, state of the art, research gap, objectives, and contributions form a logical line of argument?
Structural Coherence		Do the Title, Abstract, Introduction, Methods, Results, Discussion, Conclusion, and End Matter fulfill their respective functions and are they consistently interconnected?
Methodological Rigor		Are the design, data sources, procedures, measurements, and analysis consistent with the research objectives or questions and adequate to generate the necessary evidence?
Transparency and Traceability	and	Are research decisions, procedures, data sources, analyses, and relevant supporting information adequately reported and traceable?
Evidence and Interpretive Validity	and	Are the findings and interpretations supported by sufficient evidence, and do the claims align with the strength of the evidence?
Contribution		Does the article make an identifiable contribution to knowledge, theory, methods, practice, or the field of study?
Internal Consistency		Is there consistency between the objectives, methods, results, discussion, conclusions, abstract, tables, figures, and the authors' statements?
Citation and Reference Integrity	and	Are citations and references relevant, accurate, verifiable, consistent, and used responsibly?
Ethical and Publication Integrity	and	Have authorship, funding, data availability, competing interests, ethics, acknowledgments, and the use of AI been disclosed in accordance with the nature of the research?
Reporting and Journal Compliance		Does the manuscript meet the relevant design-specific reporting guidelines as well as the requirements of the target journal?
Clarity and Accessibility	and	Is the scientific information presented clearly, concisely, and in an understandable manner without compromising scientific accuracy or depth?

3.3 Using design-specific reporting guidelines

Design-specific reporting guidelines can serve as a complementary tool for assessing and improving the completeness of information relevant to a study's design characteristics. This function differs from an overall assessment of research quality because reporting guidelines primarily focus on the information that must be reported so that the study can be understood, evaluated, and, where relevant, replicated or used as the basis for subsequent research (Altman et al., 2008). These guidelines have been developed for various types of research. CONSORT is used for reporting randomized trials (Schulz et al., 2010). STROBE is used for observational studies and specifies the information required so that observational study reports can be evaluated accurately and comprehensively (von Elm et al., 2014). PRISMA 2020 provides reporting guidelines for systematic reviews (Page et al., 2021). COREQ provides a reporting checklist for qualitative research based on interviews and focus groups (Tong et

[al., 2007](#)). ARRIVE 2.0 is used for research involving animals and emphasizes transparent and accurate reporting in animal-based experimental studies ([du Sert et al., 2020](#)).

The selection of a reporting guideline should be based on the methodological characteristics of the study and the type of report being prepared, not solely on the research topic. The EQUATOR repository organizes various reporting guidelines based on study characteristics and report types to help authors, editors, and reviewers identify relevant guidelines ([Altman et al., 2008](#)). Reporting guidelines primarily serve to improve the completeness and transparency of reporting; therefore, their use does not replace an assessment of the coherence of the argument, methodological rigor, quality of evidence, validity of interpretation, scientific contribution, or publication integrity. Thus, compliance with the checklist items of a reporting guideline does not in itself indicate that a study has a strong methodology or that its conclusions are valid.

Within this article, design-specific reporting guidelines are used to complement the cross-cutting quality framework presented in Section 3.2. The cross-cutting framework assesses the coherence and overall quality of the manuscript, while design-specific reporting guidelines assess the adequacy of the information required by the study design. Using both together allows for an evaluation that encompasses the overall quality and consistency of the manuscript as well as the completeness of reporting specific to the study design.

4. Conclusion

The quality of a scientific article is not determined solely by the completeness of its structure or compliance with reporting requirements in each section, but by the coherent relationship between the research problem, objectives, methods, evidence, interpretation, and contribution. This article frames manuscript quality as a multidimensional construct that encompasses structural and argumentative coherence, methodological rigor, transparency of reporting, quality of evidence, citation integrity, and publication accountability. This article develops an evaluative framework that organizes manuscripts into front matter, main text, and end matter, and formulates quality criteria for the Title, Abstract, Keywords, Introduction, Methods, Results, Discussion, Conclusion, Author Statements and Declarations, and References. In the Methods section, the principles of structured, transparent, accessible, and reproducible reporting are used as a synthesis framework to align reporting requirements with various methodological approaches and strategies. At the overall manuscript level, cross-cutting quality criteria are used to assess the coherence and consistency among components, while design-specific reporting guidelines are used to complement the evaluation of reporting completeness according to the characteristics of the research design.

The framework presented provides an integrated evaluative approach for authors, editors, and reviewers. Authors can use it to identify weaknesses in a manuscript before submission; editors can use it to assess the manuscript's coherence, completeness, and suitability; and reviewers can use it as an additional perspective when evaluating the relationship between research questions, methods, evidence, interpretation, and contributions. This framework is intended to complement, not replace, reporting guidelines and methodological standards developed for specific research designs. It is not intended as a universal standard or a single-score rating system applicable to all scientific articles. Its application must be adapted to the type of article, research design, form of evidence, scientific field, and the target journal's requirements. Thus, the quality of a scientific article is understood as a unity of scientific accuracy, methodological rigor, transparency, integrity, and argumentative coherence, which must be evaluated contextually and across sections.

Author's declaration

Author contribution

Rahmat Azis Nabawi: Conceptualization, Methodology, Writing-Original Draft, Writing-Review & Editing. **Dian Safitiri:** Conceptualization, Formal analysis, Methodology, Writing-Original Draft, Writing-Review & Editing. **Tee Tze Kiong:** Methodology, Writing-Review & Editing. **Gulzhaina K. Kassymova:** Writing-Review & Editing. **Olzhas B. Kenzhaliyev:** Writing-Review & Editing. **Kristine Mae Paboreal Dunque:** Writing-Review & Editing.

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Data availability

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Conflict of interest

The authors declare that they have no competing interests, financial or non-financial, that could have influenced the work reported in this article.

Ethical clearance

Not Applicable

AI statements

AI-assisted technology was used solely to identify potential issues in language clarity and coherence during manuscript preparation. The authors independently reviewed and verified all content, terminology, references, and statements and remain fully responsible for the accuracy, originality, integrity, and final content of the manuscript.

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