IMPROVING THE QUALITY OF PEER REVIEW: GGA INSTRUCTIONS FOR REVIEWERS

Melhorando a qualidade do processo de revisão por pares: instruções para os revisores da GGA

Patrick Alexander Wachholz[a]

ABSTRACT

Peer review is an essential and integral part of the editorial and academic publication process that contributes to validate manuscripts submitted to biomedical journals. A good review can greatly improve the quality of published manuscripts, thereby improving the journal's reputation, value, and relevance to the reader. This special article includes the main recommendations of the editorial board of *Geriatrics, Gerontology and Aging* to its current and future reviewers, aiming at a continuous improvement of quality standards in the peer review process used by the journal. In addition, the importance and types of review processes are discussed, as well as the editorial flow and selection of reviewers, and general and specific recommendations are presented for carrying out good reviews.

KEYWORDS: peer review; electronic journals; ethical review.

RESUMO

A revisão por pares (*peer review*) é parte essencial e indissociável do processo editorial e de publicação acadêmica, contribuindo para a validação dos textos submetidos para revistas biomédicas. Boas revisões melhoram sobremaneira a qualidade dos manuscritos publicados e, por conseguinte, a reputação, o valor e a relevância da revista para os leitores. Este artigo especial incluiu as principais recomendações do Conselho Editorial da revista *Geriatrics, Gerontology and Aging* aos seus atuais e futuros revisores, almejando a contínua evolução dos padrões de qualidade do processo de revisão por pares adotado pelo periódico. Além de discorrer sobre a importância e tipos de processos de revisão, como se dão o fluxo editorial e a seleção dos revisores, apresentamos recomendações gerais e específicas para a condução de um bom parecer.

PALAVRAS-CHAVE: revisão por pares; revistas eletrônicas; revisão ética.

[a]Department of Public Health, Medical School of Botucatu, Universidade Estadual Paulista "Júlio de Mesquita Filho" – Botucatu (SP), Brazil.

Corresponding data
Patrick Alexander Wachholz – Rua Álvaro Ferreira de Moraes, 79 – Vila Moraes – CEP: 19900-250 – Ourinhos (SP), Brazil.
E-mail: patrick.wachholz@unesp.br
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INTRODUCTION

The earliest mention of peer review dates back to 1731 by the Royal Society of Edinburgh's *Medical Essays and Observations*. Almost 20 years later, the Royal Society of London took over the responsibility of reviewing manuscripts submitted to the *Philosophical Transactions of the Royal Society*. All manuscripts were inspected by a committee on papers whose members were recognized as experts in such matters.[1]

The process of peer review, as we know it today, was developed in the early 1940s as a result of the need for expert technical advice from the most prestigious journal editors at the time, because of the substantial growth in the number and complexity of submissions.[1-3] Until then, journals such as *Science* and *Journal of the American Medical Association* (JAMA), for example, did not use external reviewers (non-members of the editorial board) in the process of critical analysis or editorial decision-making.[2] The excess of space that most journals had so far disappeared, while an increasing need was felt for greater scrutiny and a more in-depth quality analysis of the material submitted to journals.

Currently, it is inconceivable that a journal can be published without the support of peer review. This is even one of the requirements for a journal to get indexed by major international databases. All of the more than 5400 titles registered by the end of the first half of 2019 in the Medical Literature Analysis and Retrieval System Online (MEDLINE) meet this requirement, including 60 Brazilian titles and 1470 titles indexed in Latin American and Caribbean Health Sciences Literature (LILACS), of which 527 are Brazilian.

Since 1989, the editors of two of the leading biomedical journals have held, every four years, international conferences to present research into the quality of publication processes, including editorial peer review.[4]

IMPORTANCE OF PEER REVIEW

Research needs to translate the ethical pursuit of understanding the nature of the facts. When conducting an investigation, certain basic principles must be followed to ensure scientific rigor. One of the main roles of a reviewer (also referred to as a referee or consultant in Brazil) is to ensure that the principles of research integrity are safeguarded.

Readers' recognition that the assumptions of research integrity have been preserved depends, significantly, on the level of trust in the authors' study, in the people in charge of the editorial process, and in the quality of peer review conducted before the decision to accept the paper.

Responsibilities assigned to reviewers include writing a respectful, constructive, and fair review (or feedback) that highlights the strengths and weaknesses of the study. Suggestions for changes intended to improve clarity and quality are welcome, in addition to recommendations to the editor based on the relevance and originality of the manuscript.[1,5,6] A proper peer review cannot be limited to the mere application of a checklist standardized by evaluative criteria.

Good reviewers, in addition to being committed to meeting the deadlines set by the editor, are able to make recommendations as to whether the manuscript should be accepted, its relevance and novelty. According to Brown et al.,[6] beyond this, an exceptional reviewer is able to provide the editor and authors clear, concise, constructive, and insightful feedback.

The peer review process is essential for scientific journals,[7] and the value of a detailed, thorough, and fair review for the quality of published articles is unquestionable.[5] For authors, feedback improves the quality and readability of their manuscripts and underscores the reproducibility and scientific integrity of their findings.[5]

Although the ability to perform a peer review depends on the reviewer's expertise and prior knowledge in the field and/or topic,[6] the skills to write a meaningful report are under constant development. For researchers with well-established careers, participating in peer review may seem an altruistic endeavor.[8] However, such an endeavor is perceived as a pillar of academic citizenship,[9] since their own work also depends on the review of other researchers. Additionally, they benefit from staying engaged with the scientific community, while optimizing ideas and opportunities for future research. For early-career researchers, the act of thinking critically about another investigator's study design and manuscript structure can greatly improve their own research and scientific writing skills.[9]

TYPES OF REVIEW

Most biomedical journals use a blind peer review process, in which the authors are unaware of whom will assess their manuscript, that is, the reviewers' identities are protected.[9] In a study of more than 4,000 reviewers, double-blind peer review, in which both the authors and reviewers remain anonymous throughout the editorial process, was perceived as more ethical and less prone to bias,[10] but not necessarily an approach free of critique. Single-blind peer review

could, *a priori,* favor more prestigious institutions or groups of authors and hinder the review process in fields where the scientific community is still small.[11] Although recommendable, some authors believe that double-blind review can hardly ensure anonymity, since astute reviewers can 'guess' the identity of the authors by their writing style and self-citations, for example.[11,12]

A review model that has recently gained popularity among prestigious journals, such as those of the *British Medical Journal* (BMJ) group, is open peer review. In this model, external reviewers are selected by the editors and have access to the authors' identities during the review process. The reviewers' identities are then disclosed to the authors and readers of the journal after publication, as their names are recorded at the end of the manuscript along with the name of the assigned editor. This model may increase the reviewers' and editors' sense of responsibility for research integrity (as their names will be linked to it) and public recognition of all efforts made during peer review. No empirical study, however, has been conducted to date to confirm these assumptions. Conversely, some reviewers may feel uncomfortable to expose personal limitations, especially in reviews written in a language other than their native language.

Many journals adhere to postpublication review processes by comments often made through a Letter to the Editor. Some journals have *blogs* and *microblogs* for this purpose, also made available through pubpeer.com (a website to discuss scientific research) and, previously, through PubMed Commons, which closed in February 2018.

EDITORIAL FLOW AND REVIEWER SELECTION

After submission of a manuscript, once compliance with the journal's instructions for authors and editorial policy has been ensured, it is usually the editor-in-chief who makes the first review of the manuscript. High-impact journals, such as *JAMA*, *Lancet*, *BMJ*, and *New England Journal of Medicine*, have full-time staff dedicated to the journal's editorial process. In these journals, 30 to 50% of submissions are rejected by the editor-in-chief without external peer review for not fitting the scope of the journal or not being a priority article for the journal.[2]

Once a manuscript is considered to be of interest to the journal's readership and has met the minimum criteria for readability and scientific rigor, it is assigned to an associate editor, who confirms whether the assumptions of research integrity have been met. It is the responsibility of the associate editor to invite scientists, researchers, and professionals of recognized competence in their field of specialization to review the manuscript. In theory, editors normally invite at least two reviewers; some journals have openly stated that they have to invite between six and ten reviewers to get at least two reviews.[2]

Potential reviewers can be identified through several ways, including previous contributions as a reviewer to the journal, known reputation and contribution to the construction of the research topic, and public review databases (such as Publons, an arm of the Web of Science group). Many journals ask authors to enter their areas of interest and expertise when they submit an article, as well as their willingness to review manuscripts in the future. Some journals also allow authors to suggest or oppose potential reviewers for their manuscript.

INVOLVEMENT AND REQUIRED SKILLS

A good review is estimated to take approximately 3 hours for experienced reviewers.[2] Inexperienced reviewers, however, may need longer deadlines. Editors often ask reviewers to send their reports within 14 to 30 days of acceptance. Because peer review is a time-consuming process, before accepting an invitation to engage in peer review, invited reviewers should ensure that their schedule will allow them to complete it in the requested time frame and that the topic is within their area of expertise.[9]

Especially in single-blind peer review, it is extremely important that invited reviewers consider and declare potential conflicts of interest before accepting an invitation to review a manuscript. Conflicts of interest may be concurrent or divergent, and involve financial conflicts (having received any monetary compensation from any parties that may be involved in sponsoring, supporting or developing the study), academic commitments (being a member of the group or institutions involved in the study, or being involved in the development of a similar study that may lead to an impartial assessment of the submitted manuscript), and personal relationships.

The Committee on Publication Ethics (COPE) acknowledges the importance of peer review to ensure research integrity and suggests basic principles to which all reviewers should adhere.[13] Chart 1 describes the basic ethical principles recommended by COPE to peer reviewers.

Although some journals adopt evaluative criteria for peer review, the low reliability among reviewers often constitutes a limitation to their use. Leung et al.[1] reviewed the main evaluation criteria available in the literature and found that, despite some items in common, there are significant differences between the assessment items explored in the sets of criteria.

GENERAL RECOMMENDATIONS

Before beginning a review, it is essential that reviewers become familiar with the instructions for authors and the scope of the journal. Careful authors ensure that their manuscript is in full compliance with the journal's instructions for authors. Attentive reviewers, however, will only be able to realize that the citation model or reference description is not adequate if they are aware of the standard guidelines adopted by the journal.

The first read-through should be a skim-read whenever possible.[14] In this first reading, reviewers should analyze the overall quality of the manuscript and record elements to support their initial impression:

- What is the main question addressed by the research? Is it relevant and interesting?
- How original is the topic addressed? What does it add to the available body of knowledge?
- Does overall readability allow the manuscript to be understood?
- Are the conclusions consistent with the evidence and arguments presented and do they refer to the research question?
- Has the reviewer noticed any conflict of interest that may not have been previously identified? Would it prevent an impartial review of the manuscript?
- If the paper includes figures or tables, what do they add to the paper? Do they aid understanding or are they superfluous?

Some guidelines suggest that, after the first reading, inexperienced reviewers make notes (following the above-mentioned recommendations) and set the paper aside for a couple of days.[2,9] In the second reading, reviewers should ensure that the assumptions of research integrity have been adequately addressed by the authors. Systematic approaches can be useful to ensure that the key elements of a manuscript are considered:[1,5,6,9]

- writing: is the manuscript clearly written and concise?;
- title: is the title specific and appropriately descriptive of the study?;
- abstract: the abstract provides readers with the first impression of the manuscript and should therefore describe in a concise manner the study purpose and hypothesis, key methods and findings, and conclusions;
- introduction: the introduction should explain why the study has been conducted and what this study would add to the body of knowledge and practice. It usually addresses the main findings of previous studies and knowledge gaps, and states the main hypothesis and purpose of the study;

Chart 1 Basic principles recommended to reviewers by the Committee on Publication Ethics (COPE): *Ethical Guidelines for Peer Reviewers*.

1	Agree to review only if you have the necessary expertise to assess the manuscript and if you are able to return the review in a timely manner.
2	Respect the principles of confidentiality and do not reveal details of the manuscript or review during or after peer review other than those requested by the journal.
3	Refrain from using information obtained during the peer review process for your own or your institution's advantage, or to disadvantage or discredit others.
4	Declare all potential competing or conflicting interests, seeking advice from the editorial board if you are unsure about what may be a relevant interest.
5	Do not allow your review to be influenced by the origins of the manuscript or by commercial considerations.
6	Be objective and constructive in your review and refrain from being hostile or ambiguous and from making libelous or derogatory personal comments.
7	Bear in mind that peer review is a reciprocal effort that requires a fair and efficient assessment in a timely manner.
8	Provide journals with personal and professional information that is true and accurate and a fair representation of your expertise.
9	Recognize that impersonation of another individual during the peer review process is considered serious misconduct.

- methods: the methods describe how the study purpose(s) and hypothesis(es) have been tested. Effective reviews should be able to provide editors and authors with feedback when the main requirements of this section have not been met, including study reproducibility. Reviewers can analyze whether key elements are clearly and sufficiently described, including study design/type, data source, sampling procedures, eligibility, data collection and analysis, and ethical aspects;
- results: good reviewers usually evaluate whether the authors were able to present the results in a logical and clear sequence, according to the purpose(s) described. If the paper includes tables or figures, are they clearly labeled and necessary (not repetitive) and/or understandable when read on their own? Is it possible to improve the presentation of data? Has any finding been presented without previous description of its collection and/or analysis in the methods?;
- discussion/conclusions: a good discussion usually begins with a summary of the study hypothesis(es), purpose(s), and key findings. A good review should assess whether the authors were able to compare and contrast their findings with the work of others, to highlight the relevance and context of the study findings, and to acknowledge the strengths and limitations of their study, concluding with the central inferences for the reader.

SPECIFIC RECOMMENDATIONS

Before submitting the evaluative report, reviewers should become familiar with the submission system that the journal uses. *Geriatrics, Gerontology and Aging* (GGA) currently uses the Editorial Manager system, which provides an online manual to facilitate access and use of the system by reviewers, available on the website or through the following *link*: <https://www.ariessys.com/wp-content/uploads/EM-Reviewer-English.doc>.

It is also recommended that reviewers become familiar with and consider suggesting the use of guidelines for reporting the main types of research. The *Equator* initiative (<https://www.equator-network.org>) provides easy access to these tools for both authors and reviewers, who can use them as a systematic method for assessing manuscripts.

In quantitative research, reviewing statistical methods is an element that can substantially improve the quality of the manuscript. Not all reviewers, however, see themselves as sufficiently prepared to give their opinion on methodological issues that involve statistical assumptions. If required, journals use a statistical consultant (or a consultant editor) for technical clarification. Nevertheless, basic aspects can be addressed by reviewers even if they do not have advanced statistical skills:[15]

- Is there sufficient detail to review the methods and statistical aspects? Reporting guidelines, provided by the *Equator* initiative, are often very useful in assessing these aspects;
- Have the authors justified their sample size and used reproducible methods to evaluate the effect size that they consider important to detect?;
- Do subgroup analyses (particularly those not planned or specified) suggest multiple testing (data fishing) or selective reporting?;
- Have continuous variables been categorized in an unnecessary or unusual manner?;
- Are estimates presented with no confidence intervals, or are results presented without estimates, based only on p-values?;
- Is the interpretation of results appropriate? For example, do observational studies evaluate causality;
- Is the extrapolation of results appropriate?;
- Is there consideration of the impact of missing data?;
- Have potential confounders been sufficiently addressed?

WRITING REVIEWERS' RECOMMENDATIONS TO AUTHORS AND EDITORS

When beginning to draft the reports, reviewers should keep in mind some of the COPE recommendations,[13] and Chart 2 includes the main ones.

The notes made during the first and second reading of the manuscript may prove very useful to the reviewer during the writing of the report. *GGA* suggests that, in the first paragraph, reviewers use their own words or words from the authors to state the main question or goals addressed by the research and to summarize the hypotheses, approaches, and main conclusions of the study. This first paragraph helps the authors confirm whether or not the message they wanted to convey to the reader was clear.

The second paragraph of a good review should focus mainly on the manuscript's contributions, strengths, and whether the assumptions of originality and relevance have

been met. It is appropriate to briefly describe whether the methods used in the study are appropriate and/or sufficient and whether the data presented actually support the conclusions of the paper.

These recommendations can be divided into major and minor points/issues and featured as bullet points or numbered lists. This will make it easier for authors to respond to the questions raised in the review and for editors to confirm whether all recommendations made by the reviewers have been properly addressed.

Major issues refer to major flaws in the methods and presentation of results, the impact of which can directly undermine research integrity. Reviewers may indicate whether there is any problem that may affect the clarity of the message conveyed and whether the evidence presented supports the findings. Comments related to ethical aspects should always be considered major issues.

Minor issues include ambiguity or lack of clarity in the description of concepts, incorrect or inadequate arrangement of units of measurement, tables and figures (when not compromising the overall understanding). It is essential that reviewers not only give their opinion but also justify their recommendations. Limitations of the study may be considered minor or major issues (when, even if reported in the manuscript, they compromise internal and external validity).

It is important that the suggestions for the authors be consistent with the recommendation for the editor to accept, reject, or revise and resubmit the manuscript. When a manuscript requires substantial revision in many sections, being unsuitable to proceed in the editorial process, reviewers can recommend rejection in present form and add this recommendation to the editor. If the manuscript is thoroughly revised and edited, it may be resubmitted as a new contribution.

FINAL CONSIDERATIONS

Peer review is an essential and integral part of the editorial process. A good review can greatly improve the quality of manuscripts published in a journal, thereby improving the journal's reputation, value, and relevance to the reader.

Reviewers, however, are only able to evaluate what the authors actually include in their manuscripts. That is, peer review is not intended to identify directly or deliberately whether the data and/or information provided are deceptive. For this purpose, text similarity detection tools are used and, when there is strong evidence of plagiarism, appropriate measures are taken by the editorial board.

As Rennie pointed out,[16] "the credibility of journals depends on robust quality assurance mechanisms, and this requires continued and more rigorous testing of the operating characteristics of peer review and publication." The Ninth International Congress on Peer Review and Scientific Publication will take place September 2021 in Chicago, USA, with the goal of strengthening the evidence base so that all those involved in science can improve the conduct, reporting, and dissemination of scientific research.[17]

In order for the peer review process to evolve, it is important that researchers and scientific journals consider peer review a subject of study and evaluate whether adaptations or alternative methods would change the quality of publications. Innovative models, such as open and collaborative peer review, pre- and postpublication public review, and data sharing and access, are significant advances whose outcomes have not been consistently tested. In addition, it is crucial that journals advance by adopting fair and reliable metrics and transparent standards for identifying potential conflicts of interest not only of authors but also of reviewers.[17]

Chart 2 Recommendations of the Committee on Publication Ethics (COPE) to reviewers when engaging in peer review.

Reviewers should provide honest recommendations, based on their subjective knowledge and supported by the best available evidence, highlighting the strengths and limitations of the manuscript.	Reviewers should provide objective and constructive feedback in their recommendations, avoiding personal comments or unfounded accusations.
When readability improvements are needed (particularly when the authors are not fluent in the language used), a review is recommended rather than attempting to correct or point out errors.	It is recommended that reviewers refrain from suggesting citations related to their own work (or those of their associates) unless indispensable.
Reviewers should ensure the recommendations for the editor are consistent with the report for the authors.	If suggested additional investigations are needed, recommendations should be clear and specific.

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