

Capacity Building in Peer-Review: a Student-led Journal Experience

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Abstract

Introduction: Peer-review plays a pivotal role in optimizing the quality of research articles. However, new strategies need to be implemented in the peer-review system to enhance research rigor, accurate reporting, and data reliability, such as increasing diversity among the reviewers through the inclusion of undergraduate students as reviewers. We aim to report the peer-review policies, procedures, and practices of a medical student-led journal editorial board in 2020, specifically detailing the challenges and the role of the students in the peer-review process.

Methods: Through validated online training courses and peer education methodology, the students built capacity regarding the relevance of peer-review, its models, structure, and the publication process. The peer-review process was blinded for authors and reviewers, emphasizing the importance of impartiality and the minimization of identification bias. Guidelines for authors and reviewers were developed to add standardization to the submission and review processes, based on journals' recommendations and reporting guidelines.

Results: From July to August of 2020, the student-led journal received 254 submitted manuscripts from all five Brazilian geographic regions, compared to the 72 submissions received in the previous edition. After review, 50 manuscripts were accepted with major or minor corrections.

Discussion: Peer-review contributes to the construction of content, and is the foundation for evidence-based medicine. In addition, it improves ethical thinking, communication skills, and critical appraisal abilities, also desirable in the academic and professional spheres. The medical student peer-review process has numerous benefits and should be promoted and further studied as a potential strategy for building capacity in peer-review.

Introduction

The communication of results to researchers is a process that has been established long before journal publications and has transitioned over the years through various methods. The appraisal of articles by colleagues in the field (i.e., the peer-review process) is one of the most common ways to critique and review research. The Committee on Publication Ethics (COPE) asserts that peer-review in all its forms plays a pivotal role in ensuring the integrity and liability of scholarly records (1), which leads to a higher quality of research. However, several criticisms of the peer-review process exist (2).

On one side, authors expect a rapid, detailed, judicious, and fair assessment. Well-intentioned reviewers work towards improving the articles, even if rejected, aiming to acknowledge the amount of work the

authors have done (3). Editors should ensure the quality of the peer-review process and maximize its potential to enable proper scientific communication and dissemination of research findings. In turn, those who volunteer to review a manuscript await evidence that may be relevant to the journal's scope and scientific field of focus (4).

Nonetheless, the standard peer-review process has several limitations. The current knowledge dissemination model is characterized by the presentation of research findings which go through the inspection of journals that define priority themes, formats, and specific evidence. In this regard, journals are able to decide what is published, by whom, when, and how (2,5,6). Because of this structure, such a model does not encourage controversy or public debate. The process is neither equitable nor inclusive, as peer-review is implemented by only a select proportion of researchers. Frequently, two to three reviewers volunteer their time to evaluate manuscript submissions with considerable knowledge and methodological gaps (5–7). Furthermore, scientists should be rewarded and acknowledged for peer-review work, which is not typical (8).

With this in mind, new strategies need to be implemented in the peer-review system to enhance research rigor, accurate reporting, and reliability of data. An excellent strategy to start improving this process is by increasing diversity among the reviewers through the inclusion of undergraduate students as reviewers and promoting peer-review processes in non-student-led and student-led journals. Providing opportunities for objective feedback, regardless of level of expertise, is of high priority. In student-led journals, undergraduate students should receive training and mentorship from experienced researchers to learn about and understand the publishing process at the beginning of their careers (9).

The Brazilian Medical Students Journal (BMS) is a free scientific journal published by the International Federation of Medical Students' Associations of Brazil (IFMSA Brazil), a nonprofit, nongovernmental organization (10,11). Upon its inception in 2016, BMS aimed to share projects, activities, and experiences written by IFMSA Brazil members. Since then, the journal has increased in size, and currently, BMS aims to propagate scientific evidence through its editions and advocates for access to research and open science. Its thematic scope includes public health and inequities, improvements in patient care, medical education development, knowledge mobility, and best research practices (11).

BMS's editorial board is composed of the scientific team members, who nationally run and administer IFMSA Brazil's publication, research, and community services units (10). The scientific team members are annually renewed, from December of one year until November of the next. In 2020, the BMS editorial board restructured its peer-review system to improve reliability and transparency. Changing the process highlighted the importance of promoting rapid dissemination of research findings to advance the medical field (12). Therefore, this article aims to report the peer-review policies, procedures, and practices of a medical student-led journal editorial board in 2020, detailing the challenges and the role of students in building capacity in the peer-review process.

Methods

Two members of the scientific team attended online training courses provided by Elsevier and Publons on the peer-review process to improve their knowledge on the topic (13,14). Through peer education methodology, these two people were responsible for educating the other members of the team via a webinar. The learning objectives were to understand the definition of peer-review and its relevance to the scientific community, to differentiate peer-review models, to comprehend traditional publication stages (editorial screening, reviewing, editor assessment of reviewers comments, the final decision on papers), to understand the role of editors and reviewers, and to discern how to write a helpful review report (1,15). Due to the design of our study and the inclusion of non-sensitive data, ethics approval was not obtained.

Based on the webinar, the BMS editorial board made some decisions. The team agreed to adopt a blinded peer-review format, where the authors' names would be blinded to reviewers to minimize identification bias of authors, reduce the incidence of nepotism and both institutional and geographic biases, and reinforce the need to provide impartial review of manuscripts (16,17). In addition, the team considered it was of utmost importance to create a guide for authors and one for reviewers, describing the submission process and the review process, respectively. Two working groups of six members each were created - one for each guide. Each working group had five participants and one coordinator to supervise the process. Both groups shared first drafts with the entire team to receive critical feedback and promote a collective decision-making process.

Regarding the guide with instructions for authors, the document incorporates directions on how to format the submission files and what each manuscript part should include, similar to guides from different journals (18–20). In addition, the guide elucidates which ethical standards authors should adhere to and how to use the Contributes Roles Taxonomy (CRediT) instrument to give credit and recognition to the contribution roles of each author (21). Since BMS publishes articles in Portuguese and English, the guidelines were created in both languages.

Concerning the instructions for reviewers, the document detailed specific criteria for analyzing articles depending on study design. Consolidated report guidelines, such as the PRISMA checklist for systematic reviews, CARE checklist for case reports, and MacDermid et al. (2009) for original articles were used as tools to help reviewers consolidate their assessments, depending on the article type (22–24). For experience reports, the editorial board created its own checklist. The instructions for reviewers document also provides guidelines for making final recommendations on the manuscript and for using the appropriate review tone. Additionally, the guide includes a protocol to follow when plagiarism is suspected (1).

Results

The editor-in-chief screened 254 manuscripts for the 7th edition of BMS. The editor verified that the manuscript was aligned with the scope of BMS and complied with the journal guidelines, and 31 submissions were rejected for not meeting our criteria. The editor-in-chief then blinded the 223 remaining manuscripts by removing author names and affiliations, then randomly assigned each manuscript to two

reviewers from the scientific team, who independently appraised the submission. An overview of the peer-review process is illustrated in Figure 1.

Manuscript reviewers did not know who else was assigned to the same manuscript in order to avoid conflicts of interest. If reviewers had any disclosures or conflicts of interest, they were required to contact the editor-in-chief via email so that another editorial board member could be selected to review the manuscript. Reviewers had an average of three weeks to provide their comments about the submitted article. Subsequently, the editor-in-chief reviewed the comments and decided to accept with no revisions, accept with major or minor revisions, or reject. Regardless of the decision, all manuscript comments were sent to the authors via email through the journal's official email address. Of the total reviewed, 50 (22,4%) were accepted into the 7th edition, requiring major or minor revisions. The revisions were received from the authors and sent back to the original reviewers, and members of the scientific team once again edited the content of the manuscripts and verified that the revisions were appropriate. Lastly, the editor-in-chief forwarded the final manuscript files to the content designers. Overall, BMS had a considerable increase in the number of submitted articles. While the 6th edition received a total of 72 submissions, the 7th received 254 manuscripts submitted between July 22nd, 2020 to August 22nd, 2020 from all five geographic regions of Brazil .

The process described highlights the importance of developing an organized methodology to standardize the peer-review process. Developing analytical review skills by editing manuscripts at the undergraduate student level is important and key to developing knowledge and clinical context for translational and clinical research. The process became more standardized and brought more clarity and transparency for both the reviewers and authors. This process was vital for the team to learn and understand that a reporting guideline should be a structured tool for researchers to use while writing manuscripts, being more helpful for authors than for reviewers (25). Several reporting guidelines were not included in the BMS peer-review process, for example, for experience reports such as the Standards for Reporting Qualitative Research (SRQR) and Consolidated Criteria for Reporting Qualitative Research (COREQ) (26,27). Because of the added value of reporting guidelines, the editorial board updated the BMS editorial policies on manuscript submission process in 2021, deciding to require authors to use these reporting guidelines when submitting an article and promote more checklists to enhance the quality of articles that are submitted.

Discussion

Thorough peer-review plays a pivotal role in optimizing the quality of research studies released into the scientific community. Even though this process cannot address steps prior to article submission, a crucial stage to improve reproducibility and quality of research outputs, peer-review improves how research findings are disseminated and understood by readers (5). The system applied in BMS illustrates how peer-review contributes to the construction of content. Specifically in the biomedical field, the process stands for evidence-based medicine by fighting against misinformation, bias, and inappropriate content (28).

Although not all the reviewers adequately contribute towards content improvements, the greatest asset of the peer-review process is combining both objective and subjective feedback. By outlining comments and detailing feedback on manuscripts, reviewers provide researchers with a different perspective on the structure and message of the analyzed text, and improve technical aspects of the paper's methods and data presentation (29).

It is worth emphasizing that the quality of peer-review influences the reputations of journals. Thus, being a reviewer requires several responsibilities towards authors, editors, and readers. According to the Council of Scientific Editors, reviewers must give constructive and unbiased comments to authors, honoring the process confidentiality, provide a critical evaluation of the article for the editors, pointing out improvement recommendations and notifying ethical concerns or any conflicts of interest, and ensure the quality of publications for readers, specifically concerning research clarity and reproducibility (30). In addition to scientific context, these skills are helpful and expected in academic and professional spheres.

Regarding our report, reviewers improved their communication and writing skills, including formality and cordiality, when outlining comments and feedback to authors (31). Moreover, refining students' ability to provide high-quality feedback increases the potential for their involvement in the medical curriculum by enhancing self-directed learning, leadership ability, and intellectual knowledge improvement (32–34). By incorporating students into the center of the publishing process, preconceptions about who can participate in research and knowledge sharing are challenged. All parties, including students, should be allowed to extend their capabilities in order to use, share and create knowledge, and journals need to incorporate mechanisms to promote diversity and equitable involvement among academics and citizen researchers.

Ethical responsibility is another high value characteristic developed through the peer-review process since the privacy of information is essential to human-related research, however sometimes neglected by authors, editors, or reviewers either intentionally or unintentionally. Examples of this commitment to ethics are compliance with journal norms of confidentiality, notification of eventual conflicts of interest or ethical concerns, and management of assignments and deadlines (30).

Assuming a reviewer's role enabled students to exercise critical appraisal of submitted articles and to evaluate methodological rigor and clarity of research, aspects of much importance in the scientific field. In our peer-review model, BMS reviewers detailed their recommendations and then worked with the editor-in-chief, which prioritizes group decision-making, unlike the typical hierarchical flowchart of peer-review in which decision-making is vertical from the editor-in-chief and associated editors to reviewers and editorial board, rather than horizontally (35).

Creating a student-led peer-review model in which information is freely available to the general public is challenging. It is unusual to find opportunities that expose medical students to the peer-review process during the first years in Academia. In addition, students face a competitive pressure to publish numerous manuscripts in order to receive achievements in the labor market. This pressured environment comes as a result of early exposure to the perish-or-publish system (37). Furthermore, student work is generally

underappreciated compared to mainstream publishers and senior researchers as the students are not trained researchers and may not be able to work independently (36,37).

This study has some limitations. Importantly, being a student-led journal is a limitation, since students are still learning, and prone to making mistakes while reviewing manuscripts due to lack of guidance. For example, unawareness of certain reporting guidelines, resources and collaborations, such as the Equator Network (38) demonstrate ongoing knowledge gaps in understanding how the publishing process works. A common concern among reviewers was confusion on whether reporting guidelines should be part of an article's review. Future research directions should focus on whether specific processes, such as the pairing of senior reviewers or journal editors with young researchers, increases students' knowledge, skills, and confidence in the peer-review process.

Conclusion

Developing scientific competencies and research skills as undergraduates by participating in a peer-review process exceeds traditional technical and academic knowledge from medical school courses. Understanding the peer-review process is a relevant step to develop a better awareness of research methodology, manuscript evaluation, and journal requirements. Undergraduate students can begin to develop and acquire these research skills early to benefit current and future researchers and reviewers. Overall, allowing undergraduate students to become reviewers for this medical student-led journal fostered the development of scientific skills, critical thinking, and curiosity, which are essential qualities in the next generation of researchers.

Declarations

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Figures

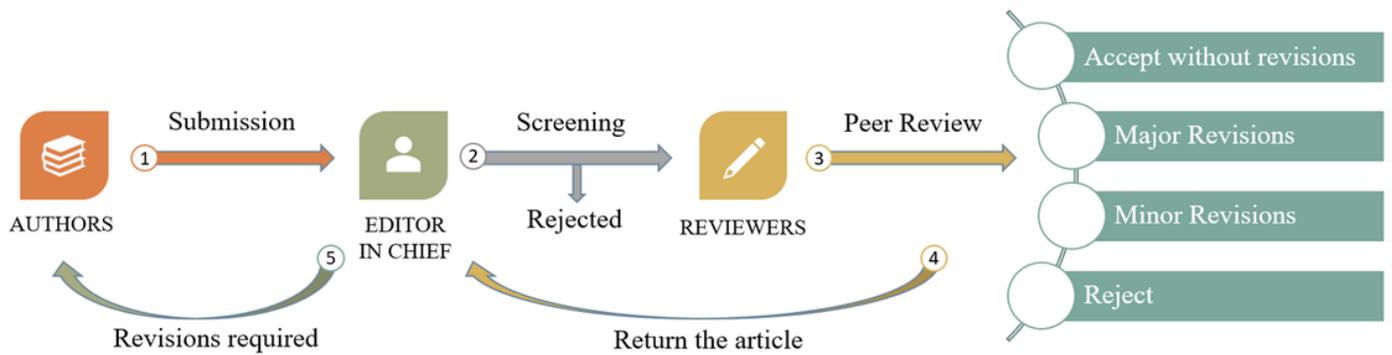


Figure 1

An Overview of the Peer-Review Process for BMS. The figure demonstrates the peer-review process used by the editorial board from the Brazilian Medical Students journal. (1) Authors submitted their manuscripts to the journal, (2) then the editor-in-chief screened the submissions. If the editor agreed that the article fits into the scope of the journal and complied with the guide for authors, the manuscript was blinded and sent to two reviewers; if not, the paper was rejected. (3) Two independent reviewers evaluated each manuscript, making final recommendations on the manuscript. (4) The editor-in-chief analyzed both reviewers' comments, and (5) sent the reviewer comments back to the authors.