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Editorial

Maintaining Quality and Accuracy in Ophthalmology Academic Research: The Importance of Traditional Peer Review

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Editorial

In the last few months, Artificial Intelligence (AI) and chatbots have gained significant attention and recognition as technological advancements that could transform various fields, including academic research and ophthalmology practice. The traditional peer review process, which has been a cornerstone of academic research for centuries, is no exception. Human reviewers, who received no monetary honorarium, dedicated their own time and effort in evaluating submitted articles to ensure quality and accuracy. However, the rise of AI and chatbots (e.g. ChatGPT) has sparked discussions about whether peer reviewers could spot the authors on using these tools in their submitted work to ophthalmology journals.

Academic Research in Ophthalmology

Academic research is a process of inquiry that seeks to discover new knowledge and insights to enhance our understanding of various phenomena. It is characterized by a rigorous, systematic approach to investigating a specific scientific question or problem within a particular field of ophthalmology, no matter clinical (e.g., strabismus) and applied science (e.g., optical coherence tomography angiography imaging) aspect, or laboratory based basic sciences (e.g., Ang-2 inhibitor) and technology (e.g., gene therapy) [1,2]. The process includes conducting literature reviews, identifying a research question or problem, designing experiments/ studies, writing proposals for research grants or fundings application, conducting researches or surveys, analyzing data, and the process repeats. Upon completion of a research with significant findings, the writing up of the research include an introduction or background, a research methodology and materials used, descriptive data and analyzing results, followed by presentation of the findings [3,4]. The whole research process may take place over a period of months or even years, depending on the complexity of the research and the methodology used [1]. Ophthalmology academic research is typically published in academic journals, which are peer-reviewed and subject to strict quality control measures.

Purposes of Ophthalmology Academic Journal

Academic journals are an essential component of the academic arena, serving as a primary means of disseminating research findings and contributing to the body of knowledge within ophthalmology. The purpose of academic journals is to provide a platform for ophthalmologists, allied health practitioners, scholars and researchers to share their works with others within the field, promote intra- and inter-disciplinary communication, and disseminate information to a wider audience, stimulate discussion and debate, and to advance knowledge within the ophthalmology field. In addition, academic journals allow critiques of existing research and theories, and challenge to the prevailing assumptions. These interactions can lead to development of new and innovative ideas, thus stimulate further research and clinical applications (e.g., COVID-19 and its vaccines related ocular manifestations and ophthalmological impacts).

Journals typically have basic standards for article submission, including requirements for originality, clarity, and accuracy of data. Articles are subject to peer review, which experts in the field would evaluate the quality and appropriateness of the research methodology and results [5]. This ensures publications are of high quality and are based on sound research methodology. Besides, academic journals serve as a means of professional recognition for scholars and researchers. Publication in a prestigious ophthalmology journal (e.g., Ophthalmology) can enhance a researcher's reputation within their field, leading to increased opportunities for collaboration, funding, and career advancement.

Peer Review Process Among Ophthalmology Journals

Peer review involves the evaluation of research articles by experts within the field to ensure that the research is of high quality, accurate, and relevant. It is a critical component of an ophthalmology journal publishing which begins from the submission of an article by an author to an academic journal [6]. The editor of the journal then assigns the article to few reviewers who have expertise in the same field as the article [7]. The reviewers evaluate the article for its originality, clarity, methodology, accuracy of data, ways of results interpretation, and eventually for a sound conclusion. After reviewing the article, the reviewers would provide feedback to the editor, including their assessment of the article's strengths and weaknesses, their recommendation for areas of revision, and decisions on publication. Based on the comments from the reviewers, the editor makes a decision about whether to accept, reject, or request revisions to the article. If revision is deemed necessary, the editorial team of the journal would repeat the peer review process upon receiving of the revised manuscript.

The peer review process can take several formats, including single-blind, double-blind, and open review [8]. In single-blind review, the reviewers are aware of the identity of the author, but the author is not aware of the identity of the reviewers. In double-blind review, both the author and the reviewers are anonymous to each other. In open review, the identity of the author and reviewers is known to each other. The process does take time, and sometimes subject to bias, as reviewers may have their own unique perspectives and theories, not to say hidden conflict of interest, and difference in clinical practice across different countries.

AI and Chatbots

AI and chatbots (e.g., ChatGPT) have become increasingly popular tools for scientific manuscript writing since 2022 [9]. These technologies could facilitate the writing process, provide assistance to authors in various manuscript writing process, such as grammar and spelling checks, idea generations, organization, formatting, clarity and coherence improvement. One key advantage of using these tools for scientific manuscript writing is their outstanding speed and efficiency of output [10]. These technologies help authors to save time in the writing process, and potentially freeing up more time for the author to focus on the content of the manuscript. Chatbots can also provide authors with feedback as if pre-submission editing service. However, there are limitations of these AI and chatbots. The major key concern is the inaccuracy in factual information generated, this is particularly serious in ophthalmology academia. Ophthalmology requires a high precision on numbers, diopters, refraction axis etc. Chatbots are designed as language model for words generating, they are subject to bias and deviated information upon training. They are not databases equipped with accurate information with cross checking from authority organizations [11]. The potential errors or bias in the outputs generated by AI and chatbots could actually fool researchers, especially those who are not familiar with the topic [12]. Besides, the tone and writing of these AI and chatbots are inconsistencies and often not concise with repetitive wordings of similar meanings. If few different chatbots were used for generating different parts of the manuscript, readers would definitely find it difficult to follow.

Importance of Traditional Peer-Review in the AI Era

While AI and chatbots have gained popularity in various medical fields of scientific manuscript writing, it is important for human reviewers to identify potential misuse of theses technology by the authors. Critical thinking and judgment are important characters of a human reviewer. Factual information checking by peer reviewers is particular important to ensure the quality, accuracy, and relevance of the manuscript within the studied field. Human reviewers are able to evaluate the potential biases or errors [13]. As mentioned before, AI and chatbots generated manuscripts could fool researchers, the selection of peer-reviewers becomes an important issue nowadays. This is also the evolving challenge faced by the editorial office [14]. Upon selection, priority should always be given to researchers who are working in the same field as the manuscript being submitted.

Conclusion

It is still important to maintain a high standard of traditional peer review for ophthalmology journals in the era of AI and chatbots. Our journal would like to express our heartfelt gratitude to all peer reviewers in the past few years since the commence of the journal. Personally, I would like to thank all editorial members as well for their hard work in finding the appropriate peer-reviewers tailored for every manuscript received by our journal, which is more important in the era of AI and chatbots.

Keywords: Research; Artificial Intelligence; Peer Review; Publishing; Authorship; Journal Article; Ophthalmology

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Conflict of Interest

The author has no conflict of interest to declare.

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