EDITORIAL

Open-access Mega-journals in Health and Life Sciences: What Every Researcher needs to know about this Publishing Model

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Abstract: A mega-journal is a peer-reviewed scientific open-access journal designed to be much larger than a traditional classical journal. The low selectivity review criteria largely focused on the scientific soundness of the research methodology and ethical issues regardless of the importance and application of the results, the fast peer review, and a very broad scope usually covering a whole discipline, such as biomedicine or social science, are the major hallmarks. This publishing model was pioneered by PLOS One and was soon followed by other publishers. A few years ago, it was believed that the academic journal landscape would dominate by the mega-journals model, but a decline has been registered in the last few years. This editorial aimed at presenting the current state-of-the-art of the open-access mega-journals (OAMJs) in scientific publications.

Keywords: Open-access mega-journals, scientific soundness, broad scope, scientific publishing, low selectivity review, peer-review.

EDITORIAL

The open-access mega-journals (OAMJs) are peer-reviewed academic journals with a much larger scope (than traditional ones) that follow the open-access model by typically charging article processing charges (APCs). Articles are not rejected due to the lack of novelty or significance if they are original and “scientifically sound.” This publishing model was pioneered by PLOS One and was soon followed by other publishers, changing the scientific research paradigm [1-9]. It is not unreasonable to say that the growth of PLOS One probably exceeded even the most optimistic predictions as around 2011, PLOS One became one of the largest journals in the world. Indeed, since its founding in 2006, PLOS One has published more than 258,000 publications (data obtained from the PLOS website on 01-12-2021). This journal does not consider the importance of the article to support acceptance or rejection. Instead, PLOS One only verifies whether the methodology and data analysis are well-designed and leaves on the scientific community to ascertain the importance and application of the obtained results [10]. This publishing model has inspired and has been adopted by journals from nearly every scientific publisher [11]. Since 2011, other “PLOS One-like” title journals have also been launched, including the BMJ Open, F1000 Research, PeerJ, Scientific Reports (Springer Nature*), Royal Society Open Science, Heliyon (Elsevier*), SAGE Open (focused on humanities and social science), Cureus, The Scientific World Journal (Hindawi*), IEEE Access, etc. Specifically, by November 2017, the “Scientific Reports” journal overtook PLOS One in terms of output [12].

Most OAMJs will probably not become as commercially successful as PLOS One or Scientific Reports. The effect of the strong brand name of the publisher and the fact that both were indexed by Clarivate® could have contributed to their success in attracting submissions. Indeed, over its first 6 years, PLOS One grew much faster than the net growth rate of scientific publication over the last half-century [13]. Currently, more than 50,000 articles are being published per year in Scientific Reports, PLOS One, and IEEE Access, accounting for more than 2 % of global journal output and contributing to the exponential growth in the total numbers of articles published. While Scientific Reports and PLOS One accept about two-thirds of their content in superimposed areas such as the Biological Sciences, Medical and Health Sciences, IEEE Access focuses on engineering and has Journal Impact Factor (JIF).

In spite of this huge growth, once a journal reaches the stage of rapid growth, it is likely that a slow decline will eventually follow, as demonstrated recently [14]. It was suggested that a decrease in the JIF, together with an increase in the variety of options available to publish in the OAMJs model, may explain the decline [7]. Indeed, it has been evident that OAMJs have started to decline in all bibliometric parameters, indicating that their future as a major publishing platform may be now threatened [15]. For instance, after reaching peak publication in 2013 with 31,509 published articles, PLOS One output and its JIF have been in steady decline (i.e., approximately 35 % low in 2017). In an
interesting discussion, Phil Davis [16] claimed that the performance course of the OAMJs resembles that of massive open online courses since both anticipated a great future by changing the paradigms of publishing and teaching but now seems to be no longer expanding. Nevertheless, this publishing model still represents an important segment of the open-access market, according to the fifth edition report of the International Association of Scientific, Technical and Medical Publishers (STM) published in late 2018 [17]. Interestingly, the broad open-access journals, such as Nature Communications and Science Advances still consider the novelty of obtained results, have also expanded in the last few years.

Although several exceptions exist, the APC of 1,350 USD set by PLOS ONE became the standard price. Nevertheless, as previously suggested, the costs could be easily reduced and still maintain the profit of the business model due to high acceptance rates common in OAMJs [18]. Due to high scientific outputs, the editorial structure is substantial, with thousands of active scientists on the editorial board [19]. This dichotomy of being both a producer and gatekeeper of knowledge, which is also common to other journal editorial boards, brings forth the conditions for conflict of interest, but this risk has not given proof of being effective. Table 1 presents the major characteristics of OAMJs.

Table 1. Main characteristics of OAMJs.

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<th>S.No.</th>
<th>Main Characteristics of OAMJs</th>
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<td>1</td>
<td>It has very broad scopes generally encompassing a whole discipline (e.g., Medicine from Wolters Kluwer, BMJ Open, and IEEE Access for engineering) or multiple disciplines (e.g., PLOS ONE and Scientific Reports).</td>
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<td>2</td>
<td>The review process focuses exclusively on whether the methodology is sound and if ethical standards are accomplished.</td>
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<td>3</td>
<td>It does not consider the importance of the research topic or obtained results.</td>
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<td>4</td>
<td>It accelerates the review and publication process.</td>
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<td>5</td>
<td>Since novelty is not the aim, it allows authors to publish valuable findings, such as replication studies, protocols, and negative results, that might otherwise face rejection by traditional selective journals and save future researchers time, energy, and resources.</td>
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<td>6</td>
<td>The journal is not artificially limited by the size, publishing what deserves to be published.</td>
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<td>7</td>
<td>It has a large editorial board of academic editors (as opposed to a staff of professional editors).</td>
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<td>8</td>
<td>Typical statements involve: “reviewing only for scientific and methodological soundness” (PLOS ONE); “rigorous but inclusive review” (BioONE); “impact neutral” (Hindawi); “publishing all sound science - separating the question of the level of interest from the decision about publishability” (BMC); “technically sound” (Scientific Reports); “properly conducted medical research” (BMJ Open); “objective determination of scientific and methodological soundness, not subjective determinations of ‘impact,’ ‘novelty’ or ‘interest’” (PeerJ).</td>
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CONCLUSION

The OAMJ, a relatively recent phenomenon, has been changing the publishing world rapidly and, with its proliferation, it was once expected to become a major publication platform. On the other hand, surprisingly, the bibliometric research related to OAMJs is relatively sparse [8, 15, 20], contrasting with the thousands of discussions on this topic in media publications for the general public. The higher article acceptance rates of OAMJs have led to some criticisms due to the perception that this model serves as a shelter for manuscripts rejected by more credible conventional journals.

In conclusion, due to the large number of articles published, OAMJs have found a place in scholarly publication. However, their future is uncertain, and research on this phenomenon is relatively limited, especially with respect to the consequences for "soundness science" and understanding the spirit of this scientific soundness by peers.

CONFLICT OF INTEREST

The author(s) declare no conflict of interest, financial or otherwise.

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