Editorial Article
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Need for Open-Science Policies

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ABSTRACT

Publishing, sharing, and disseminating their research results are among scientists' most important objectives. This process, which consists of stages full of intensive labor and care, is very laborious and may not always result in a positive outcome. A review of the scientific literature indicates that some non-academic authors publish more than academics. On the other hand, the presence of a widespread reproducibility problem even in highly cited publications negatively affects the reliability of scientific findings. Open-science policies and public peer review practices are needed to overcome these problems.

Keywords: Meta-science, Open-science, Replication Crisis, Reproducibility

INTRODUCTION

Is there a correlation between the quantity of publications, citations, and scientific rigor? Unfortunately, the answer to this question is "Yes" unless we have stronger standards. Both for the advancement and evaluation of academics as well as for the evaluation and scientific ranking of universities, the quantity of publications and the quantity of citations are among the crucial factors. Although the majority favors this strategy, it is well recognized that being scientific means something entirely different.

To publish, share, and disseminate the results of their research and to be mentioned by others are among the most important objectives of scientists. Publication is a result, a kind of product that contributes to the success and ex-

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istence of the scientist's efforts. The citations received are also a reward and a sign of appreciation. In addition to being a prerequisite for academic advancement, publishing also enhances scientists' job and life satisfaction. However, preparing and publishing articles in reputable scientific journals is a laborious and stressful process.

Starting from the decision about the topic of the article, all processes including the suitability, validity, and repeatability of the research methods; summarization and presentation techniques of the findings; consistency of the conclusions and recommendations with the results are important steps that need careful attention.

Additional processes and filters are needed for the following submission to a journal such as the assessment of the suitability of the submitted article by journal editors for publication and comments of the peer reviewers on its scientific quality. Due to the large number of articles submitted to journals with high impact factors, the acceptance rates are naturally low, and many articles are rejected. This publication adventure is a frequently experienced and well-known process by every scientist and scholar.

However, despite the presence of strict rules, it is seen that the published research articles may not be as perfect as thought, the editor and reviewer filters can be very permeable, and the article evaluation processes might be incredibly fast in some cases.

Findings of meta-science studies indicate the presence of a widespread reproducibility problem, a "replication crisis" in a significant number of scientific publications (Pashler and Wagenmakers, 2012; Munafò et al., 2017). This problem, characterized by selective reporting, statistical fetishism, and non-reproducible workflows, was noticed initially in social science research and then in health sciences, and finally, its existence in epidemiological research has begun to be discussed (Mathur and Fox, 2023).

Quality and replication issues in academic publications are not new and have a long history. It is frequently observed that in situations when the findings of the study did not support the study aims and hypotheses they were tried to be supported with forced interpretations, and the methods were written vaguely that is not clear enough to be repeated by others.

Meta-science, also known as Meta-Research or Evidence-Based Research,

means “the science of science” or “the research of research”. In other words, it means “looking at science from a bird’s eye view” (Ioannidis et al., 2015). The document titled “Manifesto for repeatable, testable science”, prepared by a group of scientists and published in Nature magazine in 2017, is an important step in the development of meta-science (Munafò et al., 2017). Openness, transparency, and reproducibility in scientific research methods and publication principles are among the main interests of meta-science.

In a recently published meta-science analysis, a systematic mapping, and a detailed review of authors with more than 700 publications in journals with high-impact factors were carried out (Ioannidis, 2023). Interestingly these authors were predominantly from outside the scientific community, only 3 of them had a doctorate degree (in the fields of oceanography, pharmacology, and organic chemistry), but their publications were not related to the field in which they are titled. It is noteworthy that all the publications of these authors appeared in almost the same journals, and that they wrote on very different subjects. Nature, Science, and BMJ were the journals where publications by these non-researchers appeared most frequently. Another interesting point is that although it is a standard rule for the journals they publish in, a significant number of them did not include information regarding “conflict of interest” in their publications.

When the articles with more than 100 citations in 2020-2022 were further evaluated, it was understood that 13 of the 25 authors of these publications did not even have a master’s degree, and the majority were from the field of science journalism (Ioannidis, 2023). Science journalism is an important and necessary field in terms of communicating scientific issues to ordinary people in an understandable way. However, it is surprising that experts in this field have published and been cited so many times in scientific journals that they are ahead of scientists.

Since these authors focus on hot topics, it is understandable to some extent that their articles can be published in a shorter time than the articles of academics. However, it seems that the scientific content of their articles is often overlooked in this rush.

It is not correct to see scientific research and publishing as a monopolized area of professionals with academic titles. But here the interesting thing is

that, compared to academics, these authors have published more, and received more citations, that is, they have created an impact. If the effects they create positively impact human health, this should be respected. If the effects are like the effects created by social media phenomena, "influencers" and trolls, there is a serious problem.

Why open science?

Information production in the field of health is a public activity by nature. Aside from their efforts to develop products that require patents, scientists trying to publish health-related research results do not have any concerns about making money through these publications. On the other hand, it has become a rule, a known and ordinary practice, for journals that publish these articles to take over the copyright of the articles, block access to others, and sell them for money. The strange thing is that no one objects to this situation. However, openness and transparency in science are essential for the research results to be questionable, debatable, and repeatable, and for the accurate information to be announced and disseminated.

As a matter of fact, the manifesto mentioned above emphasizes the necessity of measures such as standardizing pre-registration for all research, encouraging multicenter study designs, using CONSORT and PRISMA-like reporting standards, diversifying peer evaluations, and conducting pre- and post-publication peer evaluation, for example. It is stated that public evaluation will be more effective and useful than traditional peer evaluation.

With the understanding that pre-registration is a necessary method to prevent selective reporting, especially by preventing "p-hacking" or "data butchery", pre-registration has been mandatory for clinical trials in the USA since 1997. This practice has become a prerequisite for the acceptance of the publication by the ICJME since 2005. As a result of the clarity provided by the pre-registration application, the positive result reporting rate, which was previously 80- 95%, decreased to 40% (Allen and Mehler, 2019).

Evaluation should not only be a pre-publication task. Peer review and evaluation during every phase including post-publication are important for the reliability and dissemination of research results. Open peer review appears to increase publication quality (Walsh et al., 2000).

Openness is also an important tool to overcome the reproducibility problem.

CONCLUSION

The causes, dynamics, and consequences of reproducibility and openness issues in scientific studies are undoubtedly not as brief as mentioned here. Scientific studies and research must be the product of free thought. In this sense, it is the basic principle of every sane scientist to argue that there should be no restrictive limits or meaninglessly strict rules for research.

However, it is necessary to seek answers to the following questions, keeping in mind that the guidance caused by false information produced by methods that are far from control and cannot be repeated can in a sense turn into a new type of colonialism:

-Does appearing in many publications mean being scientific?

-Is there or should there be an "influencer" or troll role in scientific publishing?

-Are there criteria for the competence of journal editors and reviewers? Should there be?

-Are there any mechanisms to prevent journal editors or reviewers from stealing the author's ideas? Should there be any?

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