

Upholding morality and honesty in global scientific research during the coronavirus disease pandemic

Peng Lyu¹, Yue Wang², Xiu-Yuan Hao¹, Bing Liu³, Jun-Min Wei³

¹The Chinese Medical Journal, Chinese Medical Association Publishing House, Beijing 100052, China;

²National Institutes For Food and Drug Control, Beijing 102629, China;

³Chinese Medical Association Publishing House, Beijing 100052, China.

Coronavirus disease 2019 (COVID-19) is currently causing great damage to the health of people worldwide. At a press conference on May 31, 2020, Tedros Adhanom Ghebreyesus, the Director-General of the World Health Organization, announced that there have been more than six million cases of COVID-19 worldwide.^[1] A study by the United Nations Department of Economic and Social Affairs reported that the global economy could contract by almost 1% in 2020 because of the COVID-19 pandemic.^[2] In the face of this unprecedented crisis, everyone, including scientists and the general public, is eager to receive increasingly detailed scientific information about COVID-19. To share the latest research information promptly, both traditional journals and non-peer-reviewed preprint servers have been working tirelessly to release the latest research on this disease and provide support and decision-making information to clinicians and public health officials.

Within the context of the pandemic, the initial intention of medical communication was to improve evidence-based clinical practice and provide a voice and hope to the public. The COVID-19 pandemic has become a seemingly legitimate reason for a rush to publication on this topic, and an inefficient understanding of original authentic scientific research achievements have become sources of rumors.

Howard Bauchner, Editor-in-Chief of the *Journal of the American Medical Association*, pointed out that “the number of contributions we have received is rising rapidly. The online edition of the magazine received 53% more contributions in the first three months of this year than in the same period in 2019. Many of them are related to the

2019 novel coronavirus (2019-nCoV), but most of them are of poor quality.”^[3]

As of May 31, more than 300 manuscripts related to COVID-19 had been submitted to the *Chinese Medical Journal*, the official journal of the Chinese Medical Association. Many submitted manuscripts were simple case reports that had been prepared without the support of research funds. More importantly, some articles may have described the same patients with COVID-19, which can impact the integrity of case reports.^[4]

Aggravating this issue, an influx of submissions occurred on preprint servers, where submission is not accompanied by academic quality checks and peer review. By May 31, 2020, medRxiv and bioRxiv, the main pre-release servers for COVID-19 research, had collected >3700 and >900 manuscripts, respectively. Although some of these non-peer-reviewed results may have inspired researchers' scientific pursuits and played a role in the rapid dissemination of scientific research information on the pandemic situation, they also created the possibility of generating false statements. Concurrently, the inconsistent quality of this research has led to numerous imprecise and even misleading research conclusions.

The “man-made COVID-19” conspiracy theory originated from a paper published by an Indian research team on the preprint server bioRxiv on February 2, which suggested that COVID-19 has many links to human immunodeficiency virus (HIV) and may contain HIV inserts^[5]; however, this view was soon rejected by other studies, after which the Indian researchers withdrew the paper. Nevertheless, the influence of this paper has been ever-present, and some researchers such as Luc Mon-

Peng Lyu and Yue Wang contributed equally to this work.

Correspondence to: Dr. Xiu-Yuan Hao, The Chinese Medical Journal, Chinese Medical Association Publishing House, Beijing 100052, China.
E-Mail: haoxiuyuan@163.com

Copyright © 2020 The Chinese Medical Association, produced by Wolters Kluwer, Inc. under the CC-BY-NC-ND license. This is an open access article distributed under the terms of the Creative Commons Attribution-Non Commercial-No Derivatives License 4.0 (CCBY-NC-ND), where it is permissible to download and share the work provided it is properly cited. The work cannot be changed in any way or used commercially without permission from the journal.

Chinese Medical Journal 2020;133(20)

Received: 04-06-2020 Edited by: Qiang Shi

Access this article online

Quick Response Code:



Website:

www.cmj.org

DOI:

10.1097/CM9.0000000000001080

tagnier, a French virologist and Nobel laureate, have speculated that 2019-nCoV is a synthetic product.^[6]

Another typical example is the case of hydroxychloroquine. A clinical trial^[7] based on 42 patients without the inclusion of randomized controls revealed an improved virological cured rate in the trial group treated with hydroxychloroquine against COVID-19 compared with the control group. This study showed that hydroxychloroquine treatment was significantly associated with viral load reduction/disappearance in patients with COVID-19 and that its effect was reinforced by azithromycin; however, the sample size was small, and follow-up studies have demonstrated that chloroquine does not show desirable efficacy and even causes serious side effects in some combinations of anti-COVID-19 treatment.^[8]

A study reported on bioRxiv showed that many medical research journals had drastically increased the publication rate of COVID-19-related papers since the outbreak of the pandemic. The study revealed that the average turnaround times had decreased from 117 to 60 days (average decrease of 49%). This large decrease in the number of days to publication was mainly related to a decrease in the number of days required for peer review, raising concerns about the quality of both the peer-review process and resulting publications. Compared to preprint servers, publication in academic journals gives papers the appearance of reliability and assumption that they contain valid knowledge. Therefore, nonsensical, ambiguous, or incorrect science in even one of these papers is potentially harmful to the scientific community.^[9]

Expert peer review was originally a defense created by academic journals to ensure academic quality and the spread of scientific information; however, research published on preprint servers is typically not carefully reviewed by peers. Therefore, non-peer-reviewed research does not represent a complete scientific academic achievement because its academic quality is difficult to verify. Additionally, the impact of dissemination of unscientific and less rigorous information is difficult to measure. When a manuscript published before peer review is used to guide clinical practice, the potential consequences are even more serious.

We also saw that during this pandemic, when preprint servers immediately released the latest research progress worldwide, some of the major studies quickly filled the gaps in the knowledge on the epidemiology, virology, and clinical applications related to the novel coronavirus. It is likely that these servers will become an important field of academic exchange like traditional journals. After the pandemic, preprint releases are likely to draw lessons from the quality control measures adopted by traditional journals, such as strict peer review and careful verification by experienced editors; alternatively, traditional journals should also learn the advantages of the efficiency of preprint servers to speed up the peer review process to

ensure academic quality and rapid dissemination of research results.

Thus far, preprint servers have begun to reject low-quality COVID-19 papers, and traditional journals have slowed their peer review processes with the goal of improving the quality of the research results. These measures aim to ensure that the published research results are in line with the technical level of the professional field and ensure the reliability and academic quality of the data. These measures will also help address the root of the problem by discarding some researchers' eagerness for quick success and profit and return the academic atmosphere to rigor, seriousness, and realism.

Currently, medical and scientific workers are dealing with a global crisis. Accelerating the sharing of high-quality information and skillfully dealing with the contradiction between speed and rigor may be preferable to a lack of access to accurate information. However, maintaining genuine intent is critical for the advancement of research.

Conflicts of interest

None.

References

1. Coronavirus Disease (COVID-19) Pandemic. Available from: <https://www.who.int/emergencies/diseases/novel-coronavirus-2019>. [Accessed July 27, 2020].
2. Global Economy Could Shrink by Almost 1% in 2020 Due to COVID-19 Pandemic: United Nations. Available from: <https://economictimes.indiatimes.com/news/international/business/global-economy-could-shrink-by-almost-1-in-2020-due-to-covid-19-pandemic-united-nations/manuscriptshow/74943235.cms?from=mdr>. [Accessed July 27, 2020].
3. Kwon D. How swamped preprint servers are blocking bad coronavirus research. *Nature* 2020;581:130–131. doi: 10.1038/d41586-020-01394-6.
4. Bauchner H, Golub RM, Zylke J. Editorial concern-possible reporting of the same patients with COVID-19 in different reports. *JAMA* 2020;323:1256. doi: 10.1001/jama.2020.3980.
5. Research Paper by Indian Scientists on Coronavirus Fuels Bioweapon Theories. Available from: <https://www.theweek.in/news/sci-tech/2020/02/01/research-paper-by-indian-scientists-on-coronavirus-fuels-bioweapon-theories.html>. [Accessed July 27, 2020].
6. No, SARS-CoV-2 Does Not Contain HIV Genetic Code. Available from: <https://www.europeanscientist.com/en/big-data/no-sars-cov-2-does-not-contain-hiv-genetic-code/>. [Accessed July 27, 2020].
7. Gautret P, Lagier JC, Parola P, Hoang VT, Meddeb L, Mailhe M, *et al*. Hydroxychloroquine and azithromycin as a treatment of COVID-19: results of an open-label non-randomized clinical trial. *Int J Antimicrob Agents* 2020;56:105949. doi: 10.1016/j.ijantimicag.2020.105949.
8. Liu M, Caputi TL, Dredze M, Kesselheim AS, Ayers JW. Internet searches for unproven COVID-19 therapies in the United States. *JAMA Intern Med* 2020;180:1116–1118. doi: 10.1001/jamainternmed.2020.1764.
9. Horbach SPJM. Pandemic publishing: medical journals drastically speed up their publication process for COVID-19. *bioRxiv* 2020. doi: 10.1101/2020.04.18.045963.

How to cite this article: Lyu P, Wang Y, Hao XY, Liu B, Wei JM. Upholding morality and honesty in global scientific research during the coronavirus disease pandemic. *Chin Med J* 2020;133:2401–2402. doi: 10.1097/CM9.0000000000001080