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Original Research

Acceptance Times of Bibliometric Analyses on COVID-19 Literature

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Abstract

The present study aims to analyze the acceptance times of scientific papers presenting bibliometric analyses of COVID-19 literature published in the first phase of the pandemic. We collected the data from the Web of Science of Clarivate Analytics. The analysis considered various aspects of the papers and the published journals, such as document type, impact factor (IF) quartile rank of journals, and journal indexation. An initial search yielded 149 papers, 91 of which were selected for further analysis after excluding editorial materials and articles unrelated to COVID-19 and bibliometrics. We should have collected the required submission history information for fourteen of the 91 papers. The analysis revealed that acceptance times of bibliometric analyses on COVID-19 literature ranged between 1 and 238 days, with a median of 47 and a mean of 66.4 days. Most papers had shorter acceptance times than the mean, with only a few documents being accepted after a long wait. Journals without IF had lower acceptance times than those with IF, whereas journals with an IF between 2 and 2.99 had the most extended acceptance times; similarly, second- and fourth-quartile journals had a shorter acceptance time for papers than first- and third-quartile journals. Journals indexed in ESCI accepted documents in less time than journals indexed in other databases. In conclusion, scientific journals joined the rush to publish COVID-19-related research, as they shortened acceptance times for bibliometric analyses on COVID-19 literature published during the first phase of the pandemic compared to the period before the pandemic.

Keywords: Acceptance Time, Peer Review, Review Time, Editorial Process, Editorial Delay, Bibliometric Analyses, COVID-19 Literature.

Introduction

Science would only exist by sharing knowledge, and since the nineteenth century, scientific journals have played a crucial role in this process. In the past, scientists only published in a small number of journals, while now, in the 21st century, scientific publications have become ubiquitous (Shuttleworth & Charnley 2016). Many are little-known, while others gain wide readership and prestige—the latter often accelerates the sharing of scientific knowledge and, thus, scientific development (Asaad, Rajesh, Banuelos, Vyas & Tran, 2020).

Peer review, a process of scrutinizing and assessing research output by experts in the field, is the primary quality control tool in the dissemination process (Bornmann, 2011). Peer reviewers are responsible for maintaining the quality of scientific publications, constituting the primary quality control measure used by journals (Knudson, Morrow Jr & Thomas, 2014). In the past, the length of time required by peer review was one of the factors behind the slow development of science. This was due to many factors, such as the necessity of using traditional mail to exchange reviews between reviewers and editors, and editors and authors; the habit of allowing reviewers to spend months, if not years, on a single review; and the slow process of traditional ink-to-paper printing and publishing. The entire process has changed significantly in the twenty-first century. Researchers can now choose from many journals that promise quick review and publication. This is possible because the review process as a whole can be managed online and published either fully online or in a hybrid online/print format. Rapid technological advancements in recent decades and the widespread use of the internet have made this difference possible. Another change is new expectations of the process: researchers expect their manuscripts to be reviewed quickly, and since there are so many journals to choose from, journal editors must recognize this expectation if they want their journals to be competitive. A technology-assisted manuscript assessment process has thus allowed for faster access to a complete knowledge base, enhancing scientific knowledge and accelerating the translation of manuscripts into scientific products (Kalcioglu, Ileri, Karaca, Egilmez & Kokten, 2015).

Publishing in peer-reviewed journals can be thought of as a process consisting of sequential steps, beginning with conducting the research that leads to the findings reported in the manuscript (Luwel, van Eck & van Leeuwen, 2020). From submission to publication, each manuscript requires much effort from journals and reviewers (Asaad et al., 2020), which requires time. The time between manuscript submission by the author and acceptance by the journal's editor is called the editorial delay or, more commonly, acceptance time (Garg, 2016). This period and the time between acceptance and publication comprise the entire time from submission to publication and determine how quickly new knowledge is made available to others (Kun, 2020). Many journals offer rapid online publication before publication, with some publishing even accepted manuscripts before proofreading.

An example is *Current Science*, an internationally-recognized Indian general science journal, which publishes unedited, accepted articles on its website, with the corresponding watermark printed across the page: "Unedited version published online on (specific date)". This significantly contributes to a shorter publication period. Some journals, however, fall behind this custom of quick publication. Medical journals are frequently chastised for long acceptance and publication delays of original research (Houry, Ernst, Weiss & Segal, 1999; Kun, 2020), even though delays might hurt patient health (Chen, Chen & Jhanji, 2013).

Acceptance time consists of various sub-periods, such as revision time, when it takes authors to change and resubmit a paper. Although journals differ, a peer review process usually begins with the editor's first assessment of the article, followed by the decision to accept the manuscript for peer review or to reject it immediately (so-called "outright rejection"). If the article is rejected, the corresponding author receives notification from the editor that the paper is unsuitable for publication in the journal, with or without a brief explanation. After passing this first stage, the manuscript is sent out for peer review. Based on the resulting review reports, the editor determines whether to reject the manuscript, give the author(s) a chance to rewrite and resubmit it, or accept it directly. In the case of a revise-and-resubmit scenario, there may

be multiple additional review rounds before a final decision is reached. If the procedure takes unusually long, the author may withdraw and submit the work to a different outlet (Huisman & Smits, 2017).

Several studies have already attempted to determine the time it takes for journals to publish a manuscript (Andersen, Fonnes & Rosenberg, 2021; Kalcioglu et al., 2015; Asaad et al., 2020). Researchers generally identify two parts of this process in their analyses: the review (and editorial) stage (i.e., the period from submission to acceptance) and the publication stage (i.e., the period from acceptance to final publication, either online or in print) (Horbach, 2020).

In 2019, the world faced a pandemic of the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). The pandemic has been changing the world ever since, in all aspects of our lives. As expected, this has strongly affected the scientific community since many scientists immediately started to work on various aspects of COVID-19. Medical researchers worked on multiple topics, such as the identification of the virus (Wang et al., 2020; Ren et al., 2020), how it transfers between people (Mallapaty, 2020; Morawska et al., 2020), what symptoms it gives, and of course, how to treat infected patients (Roda, Varughese, Han & Li, 2020; Kalil et al., 2021; Salazar et al., 2020). The pandemic, however, also triggered intensive research in other scientific disciplines; in particular, emerging technologies such as geospatial technology, artificial intelligence, telemedicine, the internet of things, and additive manufacturing have been playing significant roles in combating COVID-19 in various ways, such as detection, monitoring, and diagnosis (Mbunge, Akinnuwesi, Fashoto, Metfula & Mashwama, 2021). Social researchers also face a new reality; Van Bavel et al. (2020) discussed COVID-19-related studies on threat perception, social context, science communication, aligning individual and communal interests, leadership, stress, and coping.

After almost two years, we have been unable to eradicate the virus from the globe. As of November 2021, some European countries have been facing the fourth wave of COVID-19. The severity of the virus and its influence on the world required immediate reaction. This, in turn, required quick publication, especially of medical papers, to share knowledge on the virus. In this case, this was not just a wish by authors to publish quickly but a necessity to increase survival by rapidly understanding how science can address the increasing severity of COVID-19. Had this research been shared slowly, with years from submission to publication, this would have significantly delayed the study to prevent the disease. Instead, many papers on the pandemic and the virus were quickly published, and the knowledge was shared soon.

This rush, naturally, was noticed by the bibliometrics community, which immediately began studies of COVID-related research output. As such research also contributes to the general knowledge of COVID, it would be desirable to publish such research quickly, even if medical knowledge is of much greater importance. To determine if this was the case, this paper reports research that analyzed acceptance times of COVID-related bibliometric papers during the first research stage against the COVID-19 pandemic. We chose the initial period of the pandemic to explore the initial reaction of the bibliometrics research community to this important topic, as reflected in bibliometrics papers published on COVID-19.

Materials and Methods

We used Web of Science (WoS) of Clarivate Analytics to identify bibliometric publications related to COVID-19, covering all the indexes of Science Citation Index-Expanded (SCIE), Social Science Citation Index (SSCI), Arts & Humanities Citation Index (AHCI) and Emerging

Source Citation Index (ESCI). To this end, we searched this database using the following set of keywords (Elango, 2023) in the topic: "COVID-19" OR "coronavirus disease 2019" OR "coronavirus 2019" OR "SARS-COV-2" OR "2019-nCov") along with (bibliometric* OR scientometric*).

Initially, the search, conducted on April 5, 2021, yielded 149 records. After downloading these records, we used the following screening procedure:

1. Exclusion of editorial materials (2 items), letters (3 items), and meeting abstracts (1 item).
2. Exclude articles not related to COVID-19 (35 articles and 15 reviews). For example, a review by Li & Xu (2021) focused on publications related to "financial innovation" and not on COVID-19 literature, even though they provided the keyword "COVID-19" in the abstract.
3. Exclude non-bibliometric studies (2 items, an article, and a review).

This procedure produced 91 papers (articles and reviews), including early-access articles and reviews, for further analysis. Since we found one data paper, we treated this item as an article. For each paper, we collected the following information:

- Dates of submission and acceptance are collected from full-text papers. Only 77 (89.5%) of the 91 papers have information on submission and acceptance dates; the remaining fourteen papers (Appendix 1) provided no such details, wholly or partly. Finally, 77 papers have been taken for further analysis.

- Impact factors and quartiles of the published journals, collected from Journal Citation Reports (2020).

According to Journal Citation Reports (https://support.clarivate.com/ScientificandAcademicResearch/s/article/Journal-Citation-Reports-Quartile-rankings-and-other-metrics?language=en_US), journal quartile is based on percentile ranks and is obtained by dividing the journal's rank in a given category by the number of journals in this category: Q1 = 0 – 0.25, Q2 = 0.26 – 0.50, Q3 = 0.51 – 0.75, Q4 = 0.76 – 1.00. Since we worked with only bibliometric papers indexed in the Web of Science, we needed a random sample, and thus, no statistical hypothesis testing was required. Therefore, we used exploratory data analysis. JASP 0.16.3.0 (Love et al. 2019), an open-source statistical package, performed this analysis.

Results

Table 1 summarizes the analyzed bibliometric papers on COVID-19, encompassing the number of studied documents and the minimum, maximum, mean, median, and standard deviation of acceptance time. The median acceptance time was 47 days, and the mean was 66.4 days. The minimum and maximum days for accepting a bibliometric article on COVID-19 literature were 1 and 238, respectively.

The shortest acceptance time for the article by Chahrour et al. (2020); such a short period for acceptance raises the question of whether the peer-review process of this article was traditionally stringent. This occurrence is deemed an outlier and has consequently been excluded from subsequent analyses. The longest acceptance time, 238 days, was for Cordeiro, Santos, Angelo, and Marujo (2022), an article published by the *International Journal of Logistics-Research and Applications*, which is indexed in the Social Science Citation Index

(SSCI) of Clarivate Analytics; its 2019 impact factor was 2.152.

Table 1
An Overview of the Studied Papers

Number of papers with submission history (62 Articles, 15 Reviews)	77
Minimum acceptance time	1
Maximum acceptance time	238
Mean acceptance time	66.4
Median acceptance time	47
Standard Deviation of acceptance time	57.4

The data were left-skewed (see Figure 1), with a few outlying values to the right of the distribution. This shows that most papers had shorter acceptance times than the average, and only a few had long acceptance times. A similar result was reported in general medical journals (Sebo, Fournier, Ragot, Gorioux, Herrmann & Maisonneuve, 2019).

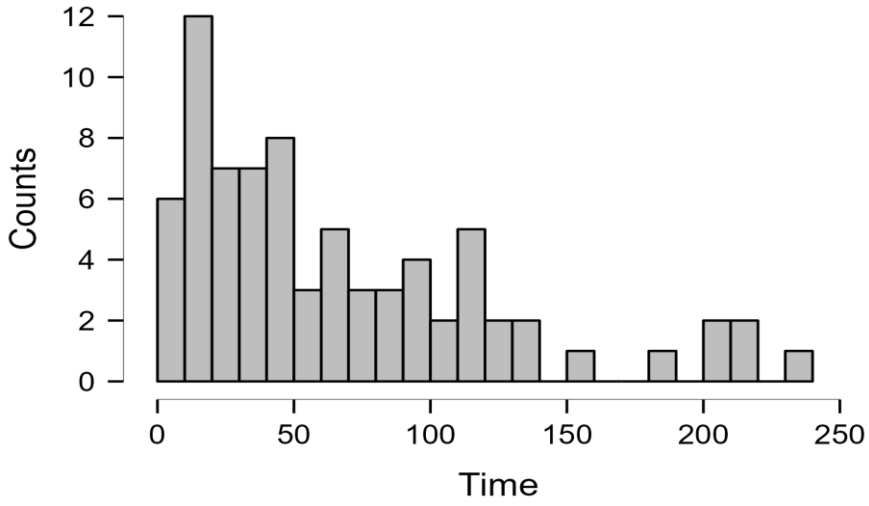

Figure 1: *Histogram of Acceptance Times of Bibliometrics Papers on COVID-19 Research, Published from 2020 to April 5, 2021*

Table 2 provides the distribution of acceptance time grouped by several variables: document type, journal impact factor and quartile, and journal index. Most of the bibliometric analyses on COVID-19 literature were published as articles. This is unsurprising since articles are generally the preferred publication type for bibliometric or scientometric studies (Patra, Bhattacharya & Verma, 2006; Mooghali, Alijani, Karami & Khasseh, 2011). Our data showed no observable difference in the summary of acceptance times between articles and reviews. Over half of the bibliometric analyses on COVID-19 literature were published in journals with impact factors between 2.00 and 2.99 (24.7%) and non-impact factor journals (27.3%). The highest mean acceptance time has been observed in journals with an impact factor of 5 and higher; the lowest is in journals with impact factors between 3.00 and 4.99. Similarly, the shortest acceptance time (three days) was observed in the non-impact factor journals and journals indexed in ESCI, and the highest acceptance times in the journals with impact factors ranging from 2.00 to 2.99.

Most bibliometric analyses on COVID-19 literature were published in journals of the first quartile (32.5%), followed by second-quartile journals (Table 2). The shortest mean acceptance times were for papers published in the second and fourth-quartile journals; first- and third-quartile journals took more time to accept. Three-fourths of the analyzed bibliometric analyses on COVID-19 literature were published in journals having impact factor (72.7%) and included in science and social science indexes. Almost one-fourth of the analyses were published in the journals indexed in ESCI, a group with the shortest mean acceptance time of 47.1 days; it is the only group for which the mean acceptance time was shorter than the global mean for the 77 articles analyzed. Papers published in journals indexed in SSCI had the longest mean acceptance time (85.7 days).

Table 2
The Distribution of Acceptance Time

		n	Share of 76	Mean	Median	SD	Min. days	Max. days
Document Type								
	Article	61	80.3	67.8	46.5	57.3	3	219
	Review	15	19.7	65.0	50	59.6	3	238
IF Range								
	Non-IF	20	27.6	49.5	48	37.5	3	139
	<1	3	3.9	90.7	42	112.2	11	219
	1 to 1.99	11	14.5	56.7	46	38.5	7	112
	2 to 2.99	19	25.0	98.6	92	74.0	14	238
	3 to 3.99	12	15.8	39.7	21	34.3	9	117
	4 to 4.99	5	6.6	39.6	42	30.8	9	86
	5 to 5.99	6	7.9	112.7	107.5	45.9	50	182
Quartile								
	1	25	32.9	79.1	80	54.5	9	214
	2	17	22.4	62.5	45	54.3	9	205
	3	10	13.2	80.1	42.5	80.5	16	238
	4	4	5.3	69.7	26.5	100.7	7	219
Index								
	ESCI	20	26.3	49.5	48	37.5	3	139
	SCIE	35	46.0	71.2	47	62.0	7	219
	SCIE and SSCI	15	19.7	73.9	57	54.8	14	214
	SSCI	6	7.9	86.3	74	85.7	9	238

n: Number of papers, SD: Standard Deviation, IF: Impact Factor, ESCI: Emerging Source Citation Index, SCIE: Science Citation Index Expanded, SSCI: Social Science Citation Index

Further, we used boxplots of acceptance times to comprehensively analyze the fluctuations in acceptance time across various journal quartiles and impact factors (Figures 2 & 3). This analysis illustrates a noticeable variation in acceptance times among journals with different impact factors, particularly those falling within 2 to 2.99, 4 to 4.99, and non-impact factor categories (Figure 2). For these articles, we have observed a negative skewness.

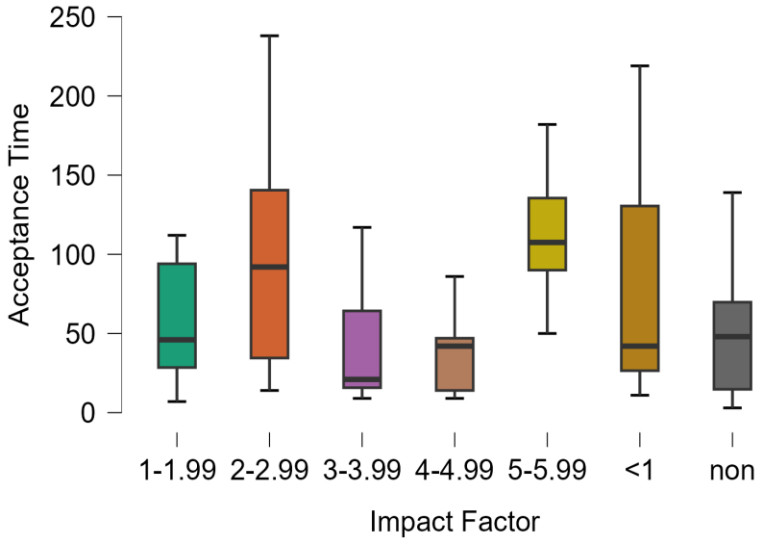

Figure 2: Boxplots for Acceptance Times of Bibliometric Analyses, Grouped based on the Impact Factor of the Journal

The studied articles published in journals within the first quartile displayed a negative skewness, whereas those in other quartiles had a positive skewness (Figure 3).

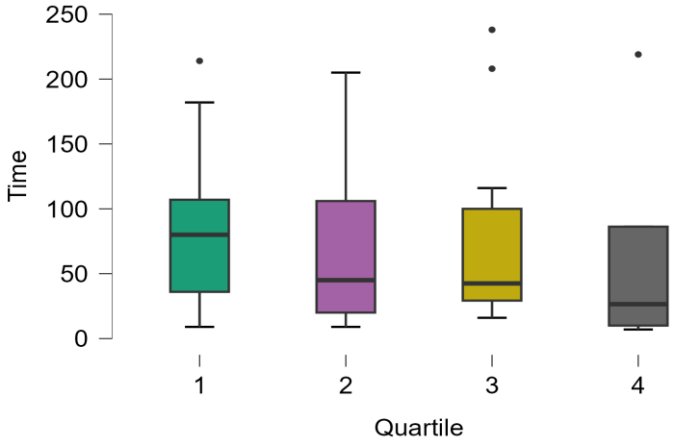

Figure 3: *Boxplots for Acceptance Times of Bibliometric Analyses, Grouped Based on the Journal's Quartile*

Nineteen (~25%) bibliometric analyses on COVID-19 literature were published in the five journals that published most of such analyses (Table 3). All these journals had an impact factor greater than 2, except for *Science Editing*, which is indexed in ESCI but does not have an impact factor—the mean acceptance times of these journals varied widely in the bibliometric analyses of COVID-19 literature. For example, *Scientometrics* had a mean acceptance time of 184 days, *Journal of Medical Internet Research* 66 days, *IEEE Access* 28 days, and *International Journal of Environmental Research and Public Health* and *Science Editing* 24 days (information collected from the relevant journal websites as well as from https://scirev.org/).

Table 3
The Five Journals That Published the Most Bibliometric Analyses on COVID-19

Journal	IF (2019)	Index	n	Acceptance time				
				Mean	Median	SD	Minimum	Maximum
Scientometrics	2.867	SCIE & SSCI	4	138.5	124.0	58.0	92	214
International Journal of Environmental Research and Public Health	2.849	SCIE & SSCI	4	33.0	32.5	6.06	27	40
Journal of Medical Internet Research	5.034	SCIE	4	103.5	91.0	55.81	50	182
Science Editing	--	ESCI	4	39.0	41.0	34.26	5	69
IEEE Access	3.745	SCIE	3	14.3	12.0	6.81	9	22

n: Number of papers, SD: Standard Deviation, IF: Impact Factor, ESCI: Emerging Source Citation Index, SCIE: Science Citation Index Expanded, SSCI: Social Science Citation Index

Discussion

Compared to general medical journals and plastic surgery journals before the pandemic (Asaad et al., 2020; Sebo et al., 2019), acceptance times in the literature presenting bibliometric analyses on COVID-19 had as much as almost three shorter average acceptance time; this indicates rapid decision-making in such literature. One more comparison: in our study, we observed a median of 47 days. If you compare these 47 days to the observations from the studies mentioned above, you will see how quick the decision-making process was in the literature we studied. In general, in medical journals, the median was 123 days (based on 781 papers published in 18 different journals; Sebo et al., 2019); in plastic surgery journals, the median was 140 days (based on 1141 articles published in six journals; Asaad et al., 2020). Decision times are 2.6 times slower in general medical journals and 3.0 times slower in plastic surgery journals.

These are exciting results from a bibliometrics point of view. They show that the bibliometric community recognized the importance of meta-analysis of bibliographic research on COVID-2019 research as the publication process of articles on this topic should be significantly accelerated. The remarkable thing about these results is that such acceleration requires collective-albeit unconsciously, collective decisions. One person would be unable to change anything; two or three people would not. This game's three most important players are editors, reviewers, and authors. To accelerate the process, the editors had to redouble their efforts; reviewers had to, too-without their challenging work, much more complex than usual, none of this would have been possible. After reviewing their articles, the authors also had to strengthen their efforts to make changes.

It must have been an unconscious collective decision. We are still determining whether there was a collective belief in the community that this should be the case. The journal editors provoked and caused this acceleration of the editorial process. Or did it “work out” simply because all the players wanted it? Just like that? We have not investigated this topic, so we can now ask the above questions. Someone (maybe even us) will pick it up and provide a sufficient explanation. Research on this subject seems extremely interesting: our research has shown that

the editorial process in this type of journal significantly accelerated. These qualitative studies aim to shed light on who or what is behind this process.

Most of the bibliometric analyses on COVID-19 literature were published as articles. This is unsurprising since articles are generally the preferred publication type for bibliometric or scientometric studies (Patra et al., 2006; Mooghali et al., 2011). The acceptance time between these two types of publications was similar: articles and reviews. This study has some limitations. First, it covers only one database, the Web of Science. However, we used it because it is globally recognized for covering peer-reviewed literature. Second, the study is based on a small publication dataset covering the first year of the COVID-19 pandemic. Extending the survey with subsequent years could affect the results. On the other hand, acceptance times in the coming years could lengthen as the community has become accustomed to this situation, which usually signals a return to normality. For instance, employees returned to offices, including scientists; almost like before the pandemic, they had less time for work; the coronavirus stopped being frightening and began to be treated as part of everyday life.

Conclusion

The present research leads to the following conclusions related to bibliometrics articles related to COVID-19 published in the first phase of the pandemic. This phase is defined as the period from the pandemic's beginning to April 5, 2021, representing approximately the first year of the COVID-19 pandemic.

- The median acceptance time for bibliometric papers on COVID-19 literature was 47 days, with a mean of 66.7 days. Acceptance times varied widely, from 3 to 238 days.
- Article type did not affect acceptance time.
- On average, non-impact-factor journals used less time to accept manuscripts than impact-factor journals.

The study reveals that the bibliometric analyses on COVID-19 strongly reacted to it. This response significantly accelerated the editorial process for articles presenting bibliometric research on COVID-19—quicker than in other fields, even medical ones.

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None.

Conflict of Interest

The authors disclose that they have no competing interests.

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Appendix 1 – Papers that Do Not Provide the Information on Submission and Acceptance Dates

Sl	Paper
1	Klingelhöfer, D., Braun, M., Brüggmann, D., & Groneberg, D. A. (2020). Coronavirus: An insight into global research until the outbreak of COVID-19 and its implications for the future. *Journal of Global Health*, *10*(2), 020508.
2	Ruiz-Real, J. L., Nievas-Soriano, B. J., & Uribe-Toril, J. (2020). Has Covid-19 Gone Viral? An Overview of Research by Subject Area. *Health Education & Behavior*, *47*(6), 861-869.
3	Lee, J. J., & Haupt, J. P. (2020). Scientific globalism during a global crisis: research collaboration and open access publications on COVID-19. *Higher education*, 1-18.
4	Helliwell, J. A., Bolton, W. S., Burke, J. R., Tiernan, J. P., Jayne, D. G., & Chapman, S. J. (2020). Global academic response to COVID-19: Cross-sectional study. *Learned Publishing*, *33*(4), 385-393.
5	Lou, J., Tian, S. J., Niu, S. M., Kang, X. Q., Lian, H. X., Zhang, L. X., & Zhang, J. J. (2020). Coronavirus disease 2019: a bibliometric analysis and review. *Eur Rev Med Pharmacol Sci*, *24*(6), 3411-21.
6	Lan, R., Jiang, P., Wang, Y., Ye, M., & Ou, R. (2020). Instant response to the novel virus: A bibliometric analysis of the incipient publications on COVID-19. *Malaysian Journal of Library & Information Science*, *25*(3), 91-101.
7	Feng, X., Sun, L., Liu, Y., Li, J., & Wu, Y. (2021). Bibliometric analysis on OA articles of public health emergencies from a multidimensional perspective. *Library Hi Tech*, 39(3), 722-745.
8	Gómez-Ríos, D., López-Agudelo, V. A., Urrego-Sepúlveda, J. C., & Ramírez-Malule, H. Research on repurposed antivirals currently available in Colombia as treatment alternatives for COVID-19. *Ingeniería y Competitividad*, *23*(1), doi: 10.25100/iyc.23i1.10290
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10	Pathak, M. (2020). Quantitative analysis of international collaboration on COVID-19: Indian perspective. *Indian Journal of Biochemistry and Biophysics (IJBB)*, *57*(4), 439-443.
11	Moradi, S., & Abdi, S. (2021). Pandemic publication: correction and erratum in COVID-19 publications. *Scientometrics*, *126*(2), 1849-1857.
12	Belli, S., Mugnaini, R., Baltà, J., & Abadal, E. (2020). Coronavirus mapping in scientific publications: When science advances rapidly and collectively, is access to this knowledge open to society? *Scientometrics*, *124*(3), 2661-2685.
13	Homolak, J., Kodvanj, I., & Virag, D. (2020). Preliminary analysis of COVID-19 academic information patterns: a call for open science in the times of closed borders. *Scientometrics*, *124*(3), 2687-2701.
14	Zhang, L., Zhao, W., Sun, B., Huang, Y., & Glänzel, W. (2020). How scientific research reacts to international public health emergencies: a global analysis of response patterns. *Scientometrics*, *124*(1), 747-773.