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Letter to the Editor

Published evidence on COVID-19 in top-ranked journals: A descriptive study



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The COVID-19 pandemic has generated an unprecedented global scientific effort to provide swift answers to pressing health needs. While many hospitals turned into almost exclusive COVID-19 centres during part of the pandemic; funding bodies, research offices, drug agencies, ethical committees, health authorities, and editorial boards of scientific journals prioritized COVID-19 related projects and articles. This contributed to the generation of a vast volume of scientific material. However, the rush to characterise this new disease since the COVID-19 outbreak in Wuhan, China has led to issues with ethical and scientific rigour aspects [1–4].

We aimed to investigate the scientific material generated during this pandemic by assessing the profile of articles in top-ranked scientific journals (TRSJ), focusing on categories related to COVID-19 research or management. To do so, we accessed the ten top-journal webpages in 16 categories (See Supplementary Table) according to the current Journal Citation Reports as stated by the Web of Science [5]. We assessed articles addressing COVID-19 by reviewing the title and abstract, from December 16th, 2019 to May 3rd, 2020 and classified said articles by date of online publication, type of study, corresponding author's country of origin, unination or multinational collaboration, and main study topic.

A total of 32,249 articles were published in the 160 TRSJ included in our study over our 5-month study period. Of these, 2209 (6.8%) addressed COVID-19 (Table 1). The timeline of COVID-19 article production in the evaluated issues can be seen in Fig. 1.

The categories with the most COVID-19 related articles were

“Medicine, internal and general” and “Infectious diseases” (28.1% and 19.1% of COVID-19 articles, respectively). Remarkably, the number of studies in “Virology” and “Microbiology” was relatively low (less than 1% and 2%). Just 15.1% articles were the result of multinational collaborations. The United States produced the largest amount of the articles in this study, and together with China and the United Kingdom accounted for 71% of total COVID-19 articles, the remaining 29% originating in 53 other countries. Almost 70% of the articles were viewpoints, editorials or letters, and only 21% of them were original investigations. The most commonly addressed topics related to clinical manifestations and prognosis or interventions and health services.

Our findings show an exponential production of COVID-19 articles in TRSJ, especially since the end of March. However, the proportion of articles addressing COVID-19 in relation to the total does not reach 7% overall, which might appear low when most investigators, editorial boards and reviewers seem to have had the impression of dealing exclusively with COVID-19 issues during recent months. However, if we consider the area of knowledge encompassed in these 16 categories, it is remarkable that a single topic accounts for 7% of the articles published over 5 months. Secondly, COVID-19 has had a relatively large impact in TRSJ of broad scope, whereas relatively few publications have been in specialised journals, which we would have assumed would focus on COVID-19 such as Microbiology and Virology. This might be explained by the need for further basic and translational research efforts. Thirdly, the low proportion of multinational collaborations surprised us, as COVID-19 is a global threat and requires international effort. Fourthly,

Table 1
Characteristics of articles on COVID-19 published in top-ranked journals during the study period.

General features	
Articles published	
- Total	32,249
- Median per journal (IQR)	141 (77–289.5)
COVID articles published	
- Total, n (%)	2209 (6.8%)
- Median (IQR)	4 (0–14.8)
Profile of the journals	
- Impact factor, median (IQR)	10.491 (7.167–16.601)
- Eigen factor, median (IQR)	0.04 (0.02–0.07)
- Associated to scientific society or institution, n (%)	74 (46.3%)
- Specific COVID-19 section in webpage, n (%)	63 (39.4%)
Journals that have published more extensively on COVID-19, n (% over total articles)	
- Annual Rev Virology	3/4 (75%)
- Eurosurveillance	54/104 (51.9%)
- J infection	107/241 (44.4%)
- Lancet Public Health	32/89 (36%)
- Lancet Infectious Diseases	93/310 (30%)
- Lancet	175/653 (26.8%)
- Lancet Resp Med	51/191 (26.7%)
- Nature Rev Immunol	25/101 (24.8%)
Profile of COVID-19 articles	
By category. COVID-19 articles/total, n (%)	
- Medicine, general and internal	621/4085 (15.2%)
- Infectious diseases	421/2992 (14.1%)
- Public, environmental and occupational health	98/779 (12.6%)
- Immunology	145/1829 (7.9%)
- Respiratory system	191/2757 (6.9%)
- Critical care medicine	135/2433 (5.5%)
- Cardiac and cardiovascular surgery	127/2338 (5.4%)
- Gastroenterology	106/2466 (4.3%)
- Oncology	55/1429 (3.8%)
- Surgery	87/2424 (3.6%)
- Radiology	78/2142 (3.6%)
- Medicine, research and experimental	48/1381 (3.5%)
- Virology	37/1208 (3.1%)
- Microbiology	10/568 (1.8%)
- Haematology	31/1852 (1.7%)
- Clinical neurology	19/1566 (1.2%)
Multinational studies, n (%)	333 (15.1%)
Country of corresponding author	
- United States	752 (34%)
- China	544 (24.6%)
- United Kingdom	273 (12.4%)
- Italy	170 (7.7%)
- France	59 (2.7%)
- Singapore	58 (2.6%)
- Canada	43 (1.9%)
- Switzerland	40 (1.8%)
- Germany	32 (1.4%)
- Netherlands	30 (1.4%)
- Other	208 (9.4%)
Total number of countries	56
Type or article	
Original articles	465 (21%)
- Randomized clinical trials	2 (0.4%)

Table 1 (continued)

General features	
Articles published	
- Mathematical models	9 (1.9%)
Reviews	102 (4.6%)
Commentary*	1537 (69.6%)
Case reports	105 (4.8%)
Main topic	
Epidemiology	329 (14.9%)
Interventions and health services	475 (21.5%)
Clinical manifestations and prognosis	502 (22.7%)
Microbiology	75 (3.4%)
Diagnosis	182 (8.2%)
Management	205 (9.3%)
Immunology	47 (2.1%)
Other	394 (17.8%)
Special topics	
Health inequalities	78 (3.5%)
Drug interactions	26 (1.2%)

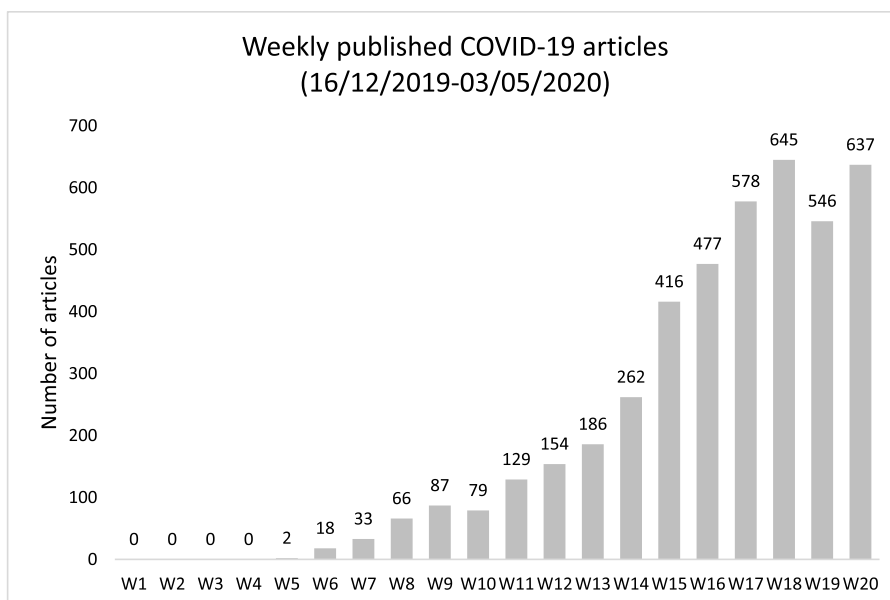
*Including pieces such as Editorials. Correspondence/Letters to Editor. Perspectives. Comments. and Overview.

more than two thirds of the articles published are largely based on opinion and analyses rather than on original data. This can be explained by the great concern and interest triggered by the COVID-19 pandemic but it also reveals a reversal in the usual scientific publication process (first evidence, then analysis). Finally, there is a lack of correlation between how countries have been affected by COVID-19 and the number of articles published in TRSJ. This could be due to the fact that while countries most affected by COVID-19 may have had the research capacity, research prioritization by local health agencies, and participation in international research networks which account for the production of original evidence, there has been a massive publication of opinion pieces, which tend to be commissioned by journals to experts based in their own countries

In conclusion, during the first 5 months of the COVID-19 pandemic, the volume of COVID-19 related articles made up almost 7% of items published in TRSJ. However, the vast majority were not original investigations.

CRediT authorship contribution statement

Juan M Pericàs: Conceptualization, Formal analysis, Investigation, Methodology, Project administration, Software, Supervision, Validation, Visualization, Writing - original draft, Writing - review & editing. **Andrea Arenas:** Data curation, Investigation, Visualization, Writing - review & editing. **Orla Torrallardona-Murphy:** Data curation, Investigation, Visualization, Writing - review & editing. **Helena Valero:** Data curation, Investigation, Visualization, Writing - review & editing. **David Nicolás:** Conceptualization, Investigation, Methodology, Resources, Supervision, Visualization, Writing - review & editing.



Week- date correlation

W1: 16/12/2019-12/12/2019	W11: 24/02/2020-01/03/2020
W2: 23/12/2019-29/12/2019	W12: 02/03/2020-08/03/2020
W3: 30/12/2019-05/01/2020	W13: 09/03/2020-15/03/2020
W4: 06/01/2020-12/01/2020	W14: 16/03/2020-22/03/2020
W5: 13/01/2020-19/01/2020	W15: 23/03/2020-29/03/2020
W6: 20/01/2020-26/01/2020	W16: 30/03/2020-05/04/2020
W7: 27/01/2020-02/02/2020	W17: 06/04/2020-12/04/2020
W8: 03/02/2020-09/02/2020	W18: 13/04/2020-19/04/2020
W9: 10/02/2020-16/02/2020	W19: 20/04/2020-26/04/2020
W10: 17/02/2020-23/02/2020	W20: 27/04/2020-03/05/2020

Fig. 1. COVID-19 publishing timeline during the study period.

Declaration of Competing Interest

None.

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at [doi:10.1016/j.ejim.2020.07.005](https://doi.org/10.1016/j.ejim.2020.07.005).

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