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# Spreading of SARS-CoV-2 papers after first report: Reflections on changes in scientific communication during the pandemic. A short communication

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## KEYWORDS

COVID-19, SARS-CoV-2, 2019-nCoV, Publishing, Medical journals.

## ABSTRACT

*Aim: The identification of novel SARS coronavirus in 2019 and the diffusion of COVID-19 prompted a new topic with an increased number of related scientific publications. The aim of this work is to discuss the “spreading of papers” by analyzing the first 60 papers following the “paper zero”.*

*Methods: The MEDLINE database and databases such as Embase, Scopus and Web of Science - Core collection were queried in April 2020. It was decided to focus on the first 60 papers retrieved from MEDLINE, after the paper zero, that was identified by following backward the series of published papers. Some descriptive statistics was used to support the discussion.*

*Results: The number of publications on SARS-Cov-2 and COVID-19 since the beginning of the year till 13 April 2020) in MEDLINE were 4568; in Embase 2829, in Scopus 2201, and in Web of Science - Core Collection 1081.*

*Conclusion: In a rapidly spreading pandemic, speed becomes a priority. News sharing runs quickly, and in medical publishing peer review processes, aimed to provide transparency of data integrity, validity of interpretations, and confidence in conclusions have therefore been accelerated.*

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## Introduction

The identification of novel SARS coronavirus in 2019 (SARS-CoV-2) and the diffusion of the disease (COVID-19) prompted a new emerging topic to the scientific community. As we know, in late December 2019, in China, were identified a limited number of patients hospitalized for pneumonia of unknown etiology, who were epidemiologically linked to a wholesale fish market in Wuhan, Hubei Province, China (1). There is no doubt that, in such and other cases, commercial air travels and travelers have played a key role in the spreading SARS-CoV-2 (2); Wuhan Tianhe International Airport is located around 26 km to the north of Wuhan city center. And on

21 February 2020 the virus had spread to “the Old Continent” (3).

In the emergence the reaction of the media led to a significant increase in the number of scientific publications on the subject which affected thematic journals and, in some cases, resulted in the opening of online sections dedicated to COVID-19. Since the spreading of papers follows the emergence of COVID-19 new cases, with a cascade of new publications, the “spread of the virus” might be a test on the field to study the response time of scientific media, like BMJ’s Coronavirus Hub, JAMA network or COVID-19 Resource Centre by The Lancet, to the abrupt emergence of a new theme. The World Health

("Coronavirus"[Mesh:NoExp] OR "Betacoronavirus"[Mesh] OR "Coronavirus Infections"[Mesh:NoExp] OR "Severe Acute Respiratory Syndrome"[Mesh] OR "COVID-19 vaccine"[Supplementary Concept] OR "COVID-19 serotherapy"[Supplementary Concept] OR "spike glycoprotein, COVID-19 virus"[Supplementary Concept] OR "COVID-19"[Supplementary Concept] OR "COVID-19 drug treatment"[Supplementary Concept] OR "COVID-19 diagnostic testing"[Supplementary Concept] OR "severe acute respiratory syndrome coronavirus 2"[Supplementary Concept]) OR (((("severe acute respiratory syndrome coronavirus 2"[Title/Abstract] OR "SARS-Related Coronavirus"[Title/Abstract] OR "sars virus"[Title/Abstract] OR "sars viruses"[Title/Abstract] OR betacoronavirus[Title/Abstract]))) OR ((COVID19[Title/Abstract] OR Covid-19[Title/Abstract] OR SARS-CoV-2[Title/Abstract] OR 2019-nCoV[Title/Abstract] OR SARS2[Title/Abstract] OR SARS-CoV-19[Title/Abstract] OR coronavirus\*[Title/Abstract]))) OR ((Pneumonia[Title/Abstract]) AND (outbreak\*[Title/Abstract] OR atypic\*[Title/Abstract] OR Wuhan[Title/Abstract]))) AND (2020:2020[pdat])  
 Filters: from 2020 - 2020

**Table 1** Search query

Organization created a database of publications on coronavirus disease that is updated daily.

Thus the propagation of the virus is followed by a spread of papers.

The aim of this work is to analyze the progress of this new topic by:

- 1 identifying and following the first report (paper zero) and the spreading all-over-the-world of the first 60 papers with reference of
- 2 journal, theme and IF,
- 3 country where the research was conducted,
- 4 time-to-acceptance and
- 5 time-to-publication by using as source PubMed and to compare it with the available data in non-emergency conditions.

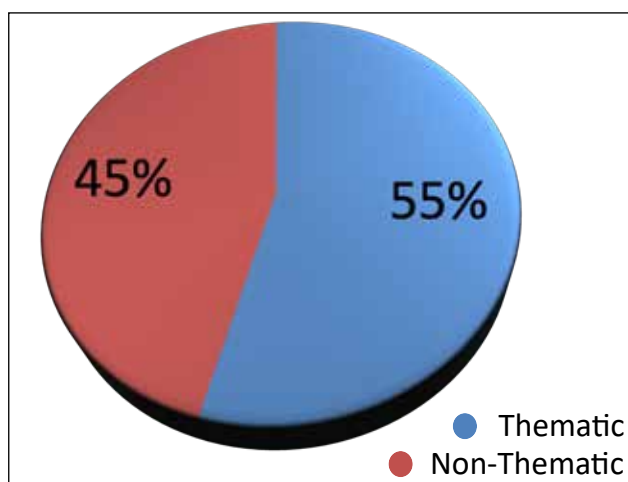
## Methods

The MEDLINE database was queried through PubMed, the public access web portal of the National Library of Medicine, National Institutes of Health-USA, in April 2020 by using the search query reported in Table 1. The total number of papers since the beginning of the year till now (12 April 2020) was obtained. Other databases such as Embase, Scopus and Web of Science - Core collection were also queried.

For our considerations we decided to focus on the first 60 papers retrieved from MEDLINE, after the paper zero, that was identified by following backwards the series of published papers. Some descriptive statistics was used to support the discussion.

## Results

The number of publications on SARS-Cov-2 and COVID-19 since the beginning of the year till 13 April 2020 in MEDLINE were 4568; in Embase 2829, in Scopus 2201 while Web of Science - Core Collection 1081.



**Figure 1** Pie chart of thematic vs non-thematic article types

The paper zero, like the patient zero, is sometimes hard to be found, in such case it does not exist as a conventional paper, since it is a mail posted on-line (Published Date: 2019-12-30 23:59:00) in the Program for Monitoring Emerging Diseases (ProMED), a public Internet service of the International Society for Infectious Diseases (ISID) (4). Following the thread, the first non-scientific paper is a bulletin from the Wuhan Municipal Health Committee on the pneumonia outbreak in the city (5).

As for journals, the first scientific paper was published by the Journal of Travel Medicine; the list of the first 60 papers, based on the date of publication, is reported in Table 2.

Among the journals, a slight prevalence of non-thematic over thematic ones was found, respectively 55% vs 45% (Figure 1).

The papers were mostly original articles (50%), followed by reviews (20%), case reports (16%), editorials (10%), notes (8.3%), letters (6.7%), and

	Journal	Theme	IF	TA mean (d:h)	TP mean (d:h)	Total papers	Original n°	Original %
1	Journal of Travel Medicine	N	4.155	2:0	6:0	1	0	0,0
2	Journal of Medical Virology	Y	2.049	7:12	13:16	7	5	71,4
3	NEJM	N	70.670	2:0	57:0	8	2	25,0
4	Viruses	Y	3.811		1:12	1:12	2	0
5	Lancet	N	59.102	na	na	8	6	75,0
6	Emerging Microbes Infections	Y		6.212	1:16	7:0	3	0
7	Eurosurveillance	Y	7.421	4:0	4:6	6	5	83,3
8	Nature	N	43.070	10:0	13:18	4	0	0,0
9	Journal of Virology	Y	4.324	6:0	55:0	1	1	100,0
10	BioScience Trends	N	1.686	4:0	5:0	1	1	100,0
11	Journal of Korean Medical Science	N	1.716	2:0	3:0	2	0	0,0
12	JAMA	N	51.273	2:0	3:0	2	0	0,0
13	Journal of Infection	Y	5.099	na	na	1	0	0,0
14	Radiology	N	7.608	2:12	5:12	2	2	100,0
15	Infection Genetics and Evolution	Y	2.611	1:12	2:12	2	0	0,0
16	Travel Medicine and Infectious Disease	Y	4.868	3:0	5:0	2	1	50,0
17	International Journal of Infectious Diseases	Y	3.538	0:0	34:0	2	1	50,0
18	Science China Life Sciences	N	3.583	4:0	5:0	1	0	0,0
19	Cell Res	N	17.848	3:0	10:0	1	0	0,0
20	ChemBiochem	N	2.641	8:0	8:0	1	0	0,0
21	Microbes Infections	Y	2.669	1:0	7:0	1	0	0,0
22	World Journal of Pediatrics	N	1.169	1:0	9:0	1	0	0,0

**Table 2** The papers analyzed

*Legend: Ranking = order of publication date; Theme = Journal's theme; IF = Impact Factor by JCI; TA = Time-to-Acceptance, days:hours; TP = Time-to-Publishing, days:hours; Total papers = Total papers; Original n° = Original Articles, n°; Original % = Original Articles, % of Total papers; na = not available data*

viewpoints (4%) (Table 3).

The country of origin of the first author was China in 50% of papers, at the second place the USA, 22%, followed by 5 countries at 3,3%, Korea, Italy, Sweden,

Germany and UK (Table 4).

The mean  $\pm$  SD impact factor for these publications was  $14 \pm 21$ .

When the time-to-publication was considered, it was

Type of paper	No.	% of total
Article	25	41,7
Case Report	4	16,0
Review	12	20,0
Letter	4	6,7
Editorial	6	10,0
Notes	5	8,3
Viewpoint	1	4,0
Total	60	

**Table 3** Types of articles published

Country	Papers first Author	Country %
China	30	50,0
USA	13	21,7
Korea	2	3,3
Italy	2	3,3
Sweden	2	3,3
Germany	2	3,3
UK	2	3,3
Argentina	1	1,7
Netherlands	1	1,7
Greece	1	1,7
Switzerland	1	1,7
Vietnam	1	1,7
Canada	1	1,7
Total	60	100,0

**Table 4** Country of first authors

available only in 32 out of 60 records due to lack of transparency of some journals and/or publishers, and it was surprisingly short, since time-to-acceptance was  $3 \pm 4$  days and the time-to-publication  $11 \pm 13$  days. These values are not comparable with ordinary timings (6). No relations were found between IF and time-to-acceptance or time-to-publication. If we suppose that the lack of literature about COVID-19, initially named 2019 nCov in January, is the cause of reducing the time required from submission to acceptance (6), we wonder if this ensures high quality standards in the review process. Among the 60 articles evaluated, over 85% are articles co-authored and this could be a reason for a shorter time to publication, but the reduced times in publication are not explainable with this mechanism.

Journal	Total papers
NEJM	8
Lancet	8
Journal of Medical Virology	7
Eurosurveillance	6
Nature	4
Emerging Microbes & Infections	3
Viruses	2
Journal of Korean Medical Science	2
JAMA	2
Radiology	2
Infection Genetics and Evolution	2
Travel Medicine and Infectious Disease	2
International Journal of Infectious Diseases	2
Journal of Travel Medicine	1
Journal of Virology	1
BioScience Trends	1
Journal of Infection	1
Science China Life Sciences	1
Cell Res	1
Chemibiochem	1
Microbes Infections	1
World Journal of Pediatrics	1

**Table 5** Ranking total papers on the subject from each journal

## Discussion and conclusion

When the scientific community are facing an emerging relevant topic, as the case of COVID-19 pandemic, it is possible to expect the following.

- 1 Lack of a paper zero, since the need to spread information quickly led to using unconventional means such as self-posted messages, that do not follow the publication rules of scientific journals; this, undoubtedly, poses a problem for the conventional peer-review editorial model that might be bypassed by opting for a post-submission open-peer review model.
- 2 A significant increase in papers related to the new topic, also, in non-thematic journals, that is supported by the general clinical relevance reached by the topic and by the diffusion and prestige of the journals itself that are, possibly, likely to mobilize more resources for the editorial

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processes during emergencies. As in other studies, the IF does not seem to affect the ranking, but there is a remarkable number of high IF journals; as a consequence they are in the highest positions for the number of published papers on the subject (Table 5).

- 3 A prevalence of papers coming from the geographical area where the emergency starts, in such case China, and, in case of diffusion, an expansion to others country that tracks the spreading of the pandemic, with a crawling of case reports like a signal of new focuses of infection in other countries.
- 4 An initial significant reduction in time-to-acceptance and time-to-publish, if compared with standard ones, that, evidently, is supported by an extra effort of editors and reviewers to follow the emergence of the new topic; we are not sure weather this increase of speed can be satisfied by maintaining the same quality standards and if, after the emergency, the increased submission of papers might represent a bottle neck with a negative impact on the publishing times.

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