

The Unparalleled Growth of COVID-19 Publications

Paul Fontelo, Mrigendra Bastola, Craig Locatis, Fang Liu

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Abstract

The global pandemic of COVID-19 has generated an unprecedented number of research papers from clinicians and scientists worldwide. We searched PubMed for articles on coronaviruses from 1970 to June 2020. Surges of publications occurred in 2003 from SARS and, again in 2012 from MERS. Although the name COVID-19, caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) was only announced by WHO in February 2020, the number of publications has already exceeded 16000 by June this year. China and the US lead in publications, but a significant number also come from countries hardest hit by the illness. International collaborative publishing is significant. Since these publications are generally free to access worldwide, it provides a rich evidence base for clinicians and scientists combatting the COVID-19 pandemic.

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Original Manuscript

The Unparalleled Growth of COVID-19 Publications

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Abstract:

The global pandemic of COVID-19 has generated an unprecedented number of research papers from clinicians and scientists worldwide. We searched PubMed for articles on coronaviruses from 1970 to June 2020. Surges of publications occurred in 2003 from SARS and, again in 2012 from MERS. Although the name COVID-19, caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) was only announced by WHO in February 2020, the number of publications has already exceeded 16000 by June this year. China and the US lead in publications, but a significant number also come from countries hardest hit by the illness. International collaborative publishing is significant. Since these publications are generally free to access worldwide, it provides a rich evidence base for clinicians and scientists combatting the COVID-19 pandemic.

Introduction:

The new name Coronavirus disease 2019 (COVID-19), an illness caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), was first announced by the WHO Director-General in a media briefing on February 11, 2020 [1]. It was tentatively named previously as the 2019 novel coronavirus (2019 n-CoV). The growth of publications in the medical literature has been extraordinary. In 2019, only 14 articles on COVID-19 were indexed in PubMed. None are recorded prior to December 2019. In the past six months, more than 16,000 publications were indexed.

Methods:

A week-to-week PubMed search for articles on “COVID-19” from December 18, 2019 to June 24, 2020 was done using a list of top publishing countries [2]. A PubMed search was also completed for Coronavirus from 1970 to 2020. Queries were likewise performed for COVID-19 and Coronavirus in PubMed for six highly cited journals, comparing the same time periods in 2018 to 2019 and 2019 to 2020. A quantitative analysis was done on the number of publications by date, country of origin, number of publications and publications in PubMed journals. No qualitative analysis was done.

Results:

[insert Figure 1 here]

Total publications for the 10 countries was 25665. The US topped the total publication count with 6098 articles, followed by China (4561), then Italy (3331), and the UK (2910). France, India, Canada, Germany and Australia published 1341, 1158, 1089, 990 and 918, respectively. Although not in the original list of top 10 publishing countries, Hong Kong, Iran, Singapore, Spain, Japan, and Taiwan had 554, 548, 549, 819, 474, 325 publications, respectively, were also included in this review because of the high number of COVID-19 cases reported in these countries (Figure 1).

Collaboration and co-authorship among countries is also occurring. For COVID-19 publications, 451 papers have authors from China and the US, and 408 papers with China and the UK authors. Additionally, Italy, Germany and Spain also collaborated on 358, 217 and 151 papers, respectively. Sixty-three papers were coauthored by scientists from the US and Iran.

[insert Figure 2 here]

Figure 2 shows yearly total publications for coronavirus from 1970 to June 2020. Surges in journal publications were attributed to the highly pathogenic SARS-CoV in 2003 (peak count of 221 in 2005) and MERS CoV in 2012 (peak count of 200 in 2015). Publications on both SARS and MERS continued until late 2019 when COVID-19 led the list.

Searches were also done on PubMed for the terms “COVID-19” and “Coronavirus” in publications from six high impact journals (BMJ, Lancet, JAMA, NEJM, Proceedings of the National Academy of Science (PNAS) and Science) between the last two weeks of 2019 until Jun 24, 2020 (12/18/2019 to 6/24/2020). For comparison, a similar search was done for the same time period a year earlier. Except for one paper on “Coronavirus” in PNAS, none was published for the same time period between 2018 to 2019. The search for “Coronavirus” from December 18, 2019 to June 24, 2020 found 213,308, 55, 159, 35 and 151 articles published in the six journals, respectively. For “COVID-19”, 599, 455, 176, 209, 37 and 151 journal articles were published, in the same time period, for the same journals, respectively. Since the term COVID-19 was not used prior to February 2020, no search was done prior to 2020.

Discussion:

Coronaviruses, first reported in the literature in the 1960's, were not considered as highly pathogenic to humans until the occurrence of severe acute respiratory syndrome (SARS-CoV) in 2003 and Middle East respiratory syndrome coronavirus (MERS CoV) in 2012 [3-7]. Other previously documented coronaviruses (HCoV-NL63, HCoV-229E, HCoV-OC43 and HKU1) were known to cause mild upper respiratory infections but only in immunocompromised patients. This prompted the FDA to issue a caution to developers without an Emergency Use Authorization (EUA) that a positive antibody result might be due to past or present infection with non-SARS-CoV-2 coronavirus strains above [7]. This review does not address the quality of publications. A more careful evaluation of the quality of reports will need to be undertaken.

Conclusion:

The current global pandemic produced an unprecedented increase in the number of publications on COVID-19, mostly coming from developed countries, largely affected by the pandemic. The literature also reflects a significant degree of international collaboration. These publications, generally free to access worldwide, provide a resource in support of the global efforts to control and manage the COVID-19 pandemic.

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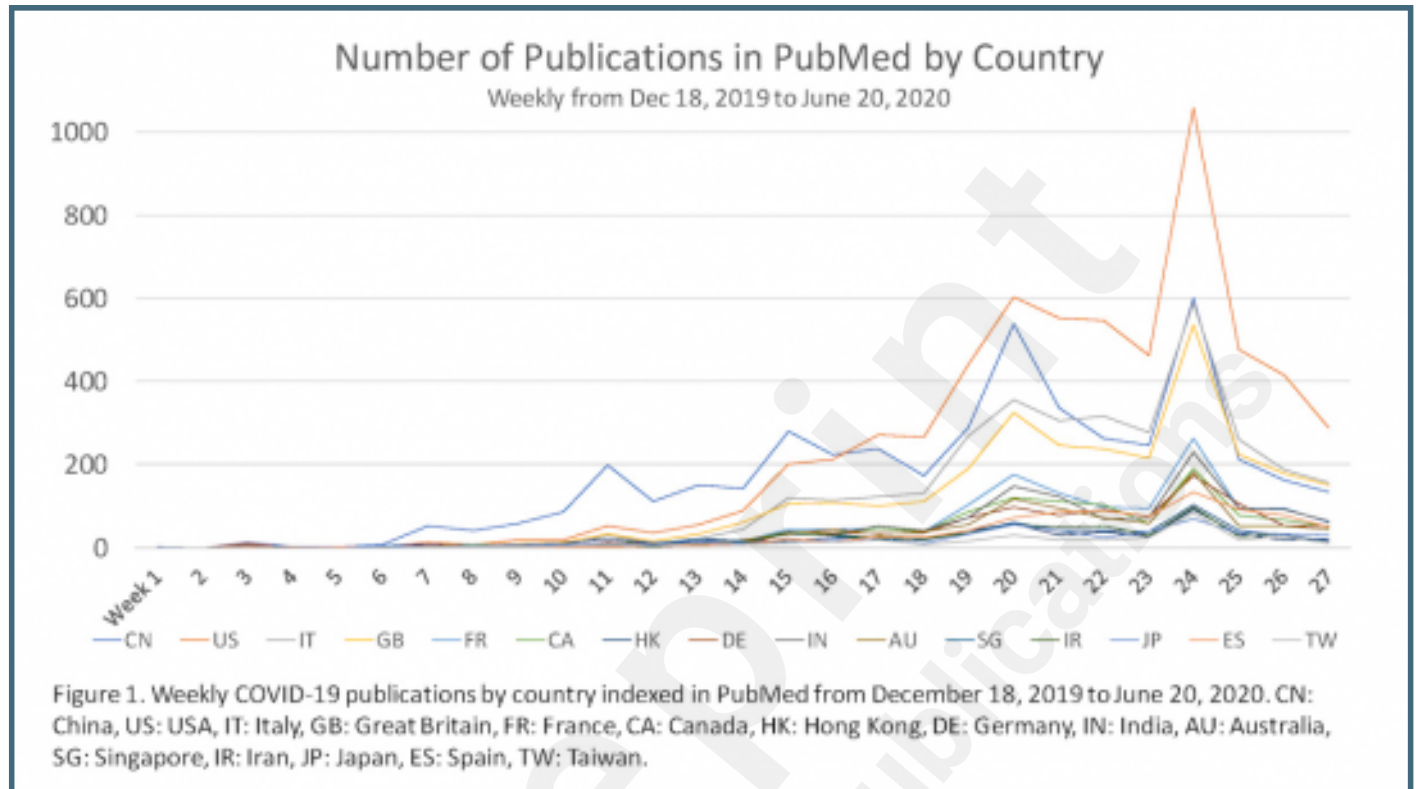
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Supplementary Files

Figures

Weekly COVID 19 publications by country indexed in PubMed from December 18, 2019 to June 20, 2020. CN: China, US: USA, IT: Italy, GB: Great Britain, FR: France, CA: Canada, HK: Hong Kong, DE: Germany, IN: India, AU: Australia, SG: Singapore, IR: Iran, JP: Japan, ES: Spain, TW: Taiwan.



Publications on Coronavirus virus from 1970 to mid June 2020.

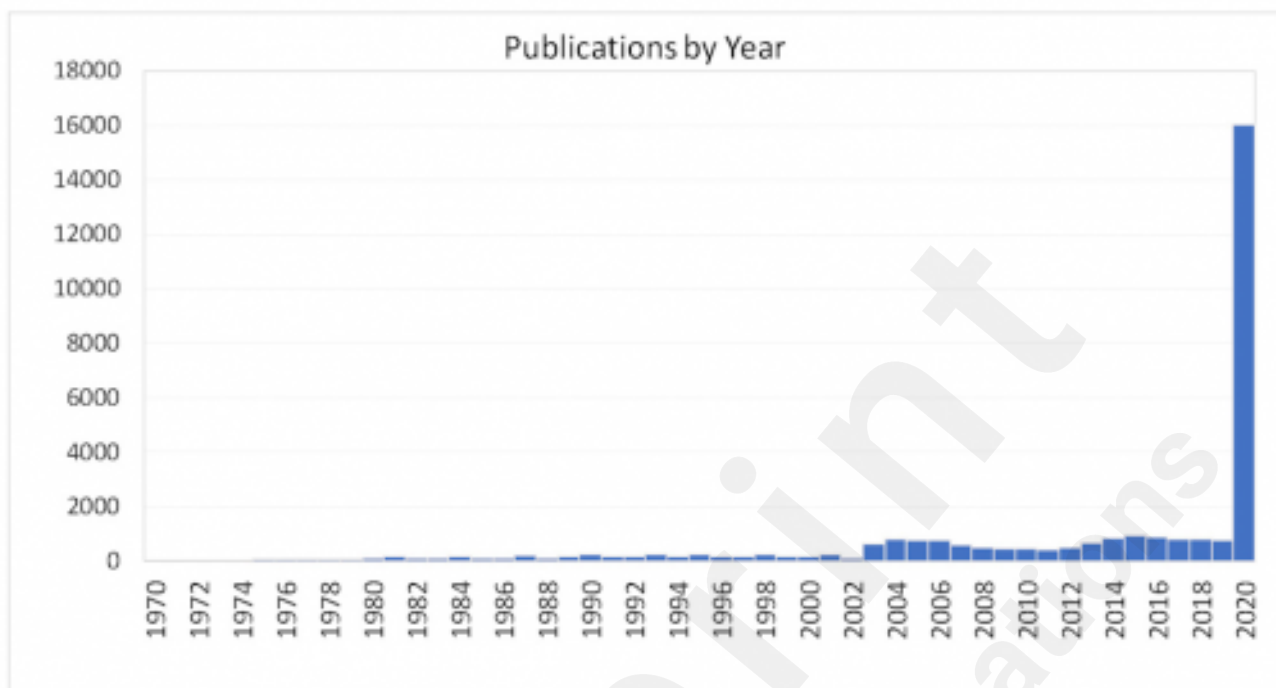


Figure 2. Publications on Coronavirus virus from 1970 to mid-June 2020.