Mapping of PubMed Literature on Early Trends of 2019 Novel Coronavirus (COVID-19)

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Abstract

2019 novel coronavirus infection (COVID-19) causes extreme viral pneumonia in people, known to have a high death rate and a similitude in clinical indications with Severe Acute Respiratory Syndrome coronavirus. This investigation intended to study the attributes of distributions on early COVID-19 research through bibliometric analysis. PubMed database was looked on 07, February, 2020 for COVID-19 distributions published during 01<sup>st</sup> December 2019 to 06<sup>th</sup> February 2020. Investigation parameters incorporate year of production, distribution type, examples of universal coordinated effort, and research organizations. An aggregate of 62 COVID-19 research distributions were distributed during the examination time frame. The exploration works were distributed from 13 nations, demonstrating the global noteworthiness on coronavirus episode. USA was the biggest supporter, with 24 articles distributed over a range of 2months and 6 days, trailed by England (11 articles). Aftereffects of the investigation will bear some significance with understudies, specialists, curators and data science experts, and will fill in as a pattern for resulting examinations.

Introduction

In December, 2019, an aspiratory contamination related with the novel coronavirus (COVID–19) showed up in Wuhan, China (Lu et al, 2020). Human coronavirus is one of the fundamental pathogens causing respiratory disease. Once in a while, zoonotic viruses can taint humans and afterward spread between individuals, for example, with MERS (Middle East respiratory syndrome coronavirus), SARS (Severe Acute Respiratory Syndrome), and now with COVID–19 (Hu, 2017). SARS-CoV and MERS-CoV can be transmitted directly to humans from civets and dromedary camels, respectively, and both viruses originate in bats (Tao, 2017), but the origin of COVID–19 needs further investigation. The disease is transmitted by respiratory droplets produced when an infected person coughs or sneezes. Symptoms including fever, cough, and shortness of breath appear between 2 days to 14 days after exposure to the virus (NCIRD, 2020). Additionally, the potential general wellbeing danger presented by COVID–19 infection is high, both all-inclusive and to the United States (Hui Ds et al, 2020). As of now, a huge mass will have an expanded danger of disease, for instance, human services laborers thinking about contaminated patients and other close contacts of the perished. So as to assess the momentum effect of COVID–19 logical research-creation, a bibliometric examination was performed utilizing accessible data filed at the PubMed database. Bibliometric investigation analyzes the advancement of any theme and offers an extensive evaluation of logical research patterns. As of late, the bibliometric investigation has been widely performed to survey logical exercises in differing fields, including irresistible sicknesses brought about by Nipah infection (Sanni, S. A. et al, 2017), Zika virus (Frances, 2018), SARS CoV (Yang and Yang, 2005), H1N1 influenza (Luchs, A 2012), MERS CoV - (Sa’ed, H. Z, 2016) Swine flu influenza (Baskaran and Sivakami, 2014), Ebola virus (Pouris and Ho, 2016), Dengue (Zyoud 2016), Chickun gunya (Madhu et al, 2018). Notwithstanding, inferable from the way that there has been a little bibliometric concentrate about COVID–19 research in the English writing the present examination endeavored to evaluate the attributes and nature of early research articles including COVID–19 research.

Review Of Literature

Lipsitch etal (2020), attempted to identify the full spectrum of disease severity, mode of transmission, range of victims, role of asymptomatic or pre-symptomatic individuals played in transmission of infection and risk factors involved leading to death of patients. The examination further proposed family unit studies could be utilized to direct popular shedding considers which may help decide when patients were generally irresistible and to what extent they ought to be confined. A key purpose of the suggestions was that viral testing ought not to be utilized uniquely for clinical consideration. An extent of the testing limit must be held to help general wellbeing
endeavors to portray the direction and seriousness of the malady. In this manner, Wenzhong et al (2020) made a rationed area investigation, homology demonstrating, and further utilized sub-atomic docking to think about the organic jobs of specific proteins of the novel coronavirus. Further, Zyoud (2016), made bibliometric concentrates on Middle East respiratory disorder coronavirus (MERS-CoV) that causes serious viral pneumonia in people, known to have a high death rate and a likeness in clinical indications with SARS coronavirus. An aggregate of 883 MERS-CoV investigates productions were distributed over the world. The MERS-CoV-related distributions were started from 92 nations/domains, demonstrating the worldwide spread of MERS-CoV inquires about. The investigation referenced that the USA was the biggest benefactor, with 319 articles distributed more than 4 years, trailed by KSA (113 articles). Similarly, a bibliometric study made by Hossain (2020) evaluated the contemporary scientific literature to assess the evolution of knowledge on COVID–19, by identifying the leading research stakeholders, and analyzing the conceptual areas of knowledge development in this domain. Bibliometric data on COVID–19 related studies published during 2019–20 were retrieved from three major databases within Web of Science core collection. A total of 371 records from 13,021 hits were retained in this study.

### Objectives And Methodology

This bibliometric study analyzed COVID–19 research articles published in the month December 2019 and January until 7th February 2020. Data was downloaded on 7th February 2020. The search terms included “2019-nCoV”/“2019 novel corona virus”/“Wuhan virus”/“COVID–19”/“SARS COV–2” in the title/theoretical hunt of the PubMed database and recovered all records that were filed. Considering the pestilence episode that affected around the world, the investigation tried to do early research in spite of the time of articles were restricted to 2 months and 7 days. Articles were incorporated just if their essential center was COVID–19. Copies and news reports were barred. Profile data of each included article was then isolated containing the quantity of the author(s), title, month and year of production, distribution type, and diary title are considered. From the gathered information, the commitments of nations, associations, and the authors towards COVID–19 research, the appropriation of distributed papers in top diaries were sought after. The study employed VOSviewer (Version 1.6.14) to map PubMed COVID–19 articles’ terms. For segregating title and abstracts 10 items, 45 links, 735 total link strength two clusters, Binary Counting Methods was used. A base number of events of a term 10 of the 1136 terms, 16 meet the edge. The default decision is to choose the 60% significant terms. Further, 5 items, 10 connections 20 all out connection quality, one bunch, a base number of archives of 2 authors of the 311 authors, 19 meet the edge. The complete quality of the co-author joins for 19 authors with different co-authors was determined and the authors with the best all out connection quality were taken. Identifying with associations, 7 items, 21 connections, 42 all out connection quality, least of 2 associations of the 160 associations, 13 meet the limit. For every one of the 13 associations, the total quality of the co-origin connect with different associations was determined. As to keywords 5 items, 7 connections, 24 all out connection quality, two groups, a base number of event of catchphrases 5 of the 97 keywords, 5 meet the edge. For every one of the 5 catchphrases, the complete quality of the co-event connect with different keywords was considered.

### Data Analysis And Discussion

Expectedly, most research works (34) on COVID–19 are distributed in the long stretch of January 2020, besides, around 26 articles are distributed in the primary seven day stretch of February 2020, while 2 articles in the period of December explored on this subject. 90% of distributions were in the English language (56) and around 6 were in Chinese representing 10% productions during the examination time frame. Strikingly, 39% of publications were from the United States, while 18% were from the U.K, further Sweden and china represented 10% of the exploration yield. Table 1 gives data on most productive areas on distributing COVID–19 research and table 2 means the core authors, distributing research information on this exceptionally contagious infection. Wang W tops with 5 commitments, trailed by Lang L and LI X with 4 publications each, while 8 additional writers had contributed 3 articles each. It is intriguing to take note of that the significant 5 authors engaged with potential research on this deadly infection work in various research labs of Beijing, China. Table 3 gives data on
the major 5 journal publications on COVID-19. Typically, in the limited ability to focus the flare-up of the sickness, the Journal of Medical virology had distributed more articles (9) trailed by Euro Servilely (7), The Lancet(6) and The New England Journal of Medicine with 5 productions individually.

Table 1 Most productive countries publishing COVID-19 research

| S.No | Country       | Frequency | %     |
|------|---------------|-----------|-------|
| 1    | United States | 24        | 38.71 |
| 2    | England       | 11        | 17.74 |
| 3    | Sweden        | 6         | 9.68  |
| 4    | China         | 6         | 9.68  |
| 5    | Netherlands   | 5         | 8.06  |
| 6    | Canada        | 2         | 3.23  |
| 7    | Switzerland   | 2         | 3.23  |
| 8    | Portugal      | 1         | 1.61  |
| 9    | Germany       | 1         | 1.61  |
| 10   | France        | 1         | 1.61  |
| 11   | Iran          | 1         | 1.61  |
| 12   | Korea (South) | 1         | 1.61  |
| 13   | Japan         | 1         | 1.61  |

Table 2 Core authors contributing COVID-19 research publications

| S.No | Authors       | Affiliation                                                                                                                                 |
|------|---------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| 1    | Wang Wenling  | NHC Key Laboratory of Biosafety, National Institute for Viral Disease Control and Prevention, Chinese Center for Disease Control and Prevention, Beijing, China. |
| 2    | Zhang Leike   | State Key Laboratory of Virology, Wuhan Institute of Virology, Center for Biosafety Mega-Science, Chinese Academy of Sciences, 430071, Wuhan, China. |
| 3    | Li Xingwang   | Clinical and Research Center of Infectious Diseases, Beijing Ditan Hospital, Capital Medical University, Beijing, China                           |
| 4    | Zhao Xiang    | NHC Key Laboratory of Biosafety, National Institute for Viral Disease Control and Prevention, Chinese Center for Disease Control and Prevention, Beijing, China |
| 5    | Xu Wenjian    | Department of Radiology, The Affiliated Hospital of Qingdao University, 16 Jiangsu Road, Qingdao, Shandong, China                                 |

Table 3 Top Journals publishing articles on COVID-19
Title and the abstract are the most important parts of a research paper - for editors (to process the paper further), for reviewers (to have an idea about the paper), and for the readers (only available free parts of a paper and hence, read widely (Bavedkar 2016). Figure 1 shows most prominent title and abstracts focused on 2019nCoV. Two clusters were formed, cluster1 (nCoV) had 9 links constituting the following words in title and abstract: outbreak (29 occurrence & 148 total link strength) novel coronavirus (46 occurrences & 207 total link strength), January (12 & 63), China (37 & 197), Wuhan (32 & 173) and infection (21 & 110). Cluster 2 (Corona virus) had 9 links constituting the following words in title/abstract: Patient (18 & 106), pneumonia (20 & 116), and coronavirus (22 & 122). The terms nCoV–2019 is found to be most relevant (2.34) followed by novel coronavirus (1.99) and China (1.37) and the least applicability observed for the terms January (0.45) and infection (0.48).

Figure 2 illustrates co-authorship pattern observed in the early publication trends of 2019nCoV. It is vivid from the figure that virtually 5 authors - He Daihai, Ran Jinjun, Yang Guangpu, Yang Lin, Zhao Shi who were involved in the 2019nCoV research received 4 links, with 2 documents and a total link strength of 8 respectively.

Out of a sum of 13 Organizations, 7 indicated colossal joint effort attributable to their most noteworthy all out connection quality. The association shaped a solitary group, contributed 2 reports with 6 connections with a complete connection quality of 12. The worked together establishments are as per the following: Department of applied science, Hong Kong polytechnic college; Department of Orthopedics and traumatology, Chinese University of Hong Kong; JC school of Public Health and Primary Care, Chinese University of Hong Kong; School of Nursing, Hong Kong Polytechnic University; School of general wellbeing, Li Ka Shing Faculty of Medicine, University of Hong Kong; Sh ho scoliosis explore lab, the joint scoliosis investigate focus of Chinese college of Hong Kong and Nanjing University, and Shenzhen inquire about organization of Chinese college of Hong Kong.

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**Conclusion**

The enormous effect on logical research yield in reference to COVID–19 research duplicates its worldwide impact as a conceivably destructive infection. The most significant confinement lies in the way that the PubMed database was utilized to scan for COVID–19. Along these lines, distributions ordered in non-PubMed - referred to diaries were not contemplated. Moreover, the quantity of research yield in 2020 is certainly going to twofold inferable from the contamination’s pandemic flare-up. In view of the PubMed database, the qualities of the COVID - 19 research yield from December 2019 are February sixth, 2020 explore by methods for bibliometric
techniques. This investigation shows that COVID–19 related writing has become increasingly broad relating to its enormous spread around the world. The main part of productions in the field of COVID - 19 research are distributed by the United States of America (24), Journal of Medical Virology (9) had distributed the greatest number of articles in a limited ability to focus, different diaries viz “Travel Medicine and Infectious sicknesses”, “Contamination Genetics and Evolution”, “Worldwide Journal of Infectious maladies”, and “Diary of Clinical Medicine “had additionally contributed essentially. Wan Wenling, Zhang Heike, Lixing Wang, Xu Wenjian, and Zhao Xiang represented their distributions on COVID–19 research, further Yang B, Leung GM, Wang X, Liu Y, Drosten C have likewise contributed altogether. This early research study may give an accommodating reference to clinical virologists and disease transmission specialists, strategy chiefs, scholastics, and COVID–19 scientists. As COVID–19 could be viewed as an ongoing developed dangerous illness, and another exploration subject, the examination results portray a look at early patterns of research on COVID–19.

Declarations

The author declares no competing interests

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Figure 1
Titles and abstract (Subjects) on COVID-19 research

Figure 2
Co-Authors Contributed on COVID19 Research
Figure 3
Organizations involved in COVID-19 research work
Figure 4

Significant author keywords on COVID-19 research

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