A SCIENTOMETRIC ANALYSIS OF HIGHLY CITED PUBLICATIONS AND A SUMMARY OF TOP 25 ARTICLES REGARDING COVID-19

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ABSTRACT

Scientometric analyses allow to shed light to status of the current literature and provide guidance to future studies. We aimed to analyze highly cited articles in terms of study fields, authors, organizations and countries. We also summarized top 25 articles for future perspectives. The Web of Science database which allows statistical analysis of a specific subject was used for data collection. We obtained highly cited publications (cited ≥6 times) and investigated them in terms of categories, countries, authors, organizations, languages, countries and journals. We also analyzed top 25 articles from full-texts and summarized them. Majority of the highly cited articles were about General Internal Medicine. Huazhong University of Science Technology was on the top of the list followed by Harvard University. Majority of the highly cited articles were published by authors from China. Journal of Medical Virology was the leading journal followed by Science of the Total Environment. English was the most common language used in articles. Clinical characteristics, diagnostic tools and treatment methods were the popular study fields when top 25 articles were considered. Scientometric analysis of the highly cited publications revealed that China, as the origin of the pandemic, was the leading country in terms of citations. Publishers and authors should be aware of inconveniences caused by rapid publication.

Contribution/Originality: This is also the unique study to summarize the top 25 articles on COVID-19 to guide future studies in this field.

1. INTRODUCTION

In December 2019, a series of pneumonia cases of unknown origin were identified in Wuhan region of China. Lately, the etiological agent was defined as the 2019 novel coronavirus (2019-nCoV), and the disease was recently declared by the World Health Organization (WHO) as coronavirus disease 2019 (COVID-19) [1]. Coronaviruses belong to Coronaviridae family and are the agents of a disease in a clinical spectrum ranging from common cold to severe acute respiratory syndrome (SARS) and the Middle East respiratory syndrome (MERS) [2]. Coronaviruses are distributed widely in humans and other mammals as enveloped non-segmented positive-sense RNA viruses [3]. The signs and symptoms of the disease such as fever, cough and shortness of breath are well-described in the literature and appear 2–14 days after an exposure to virus. While Real time Polymerase chain reaction (Rt-PCR) is
a practical test in detecting both symptomatic and asymptomatic patients, computed tomography is often required in many patients in order to determine the progression of the disease towards pneumonia [4]. Until now, this pandemic has reached every corner of the planet, and similar to previous pandemics, as well as causing substantial medical, economic, and social disruption, it caused loss of many people’s lives [5]. According to WHO COVID-19 dashboard, there have been 65,257,767 confirmed cases of COVID-19, including 1,513,179 deaths globally, as of 5 December 2020 [6].

Speaking of such a pandemic, it is not surprising that more and more COVID-19-related articles are being published. Researchers all around the World are racing to find solutions to stop rapid transmission of the disease, diagnosis, treatment, prevention and vaccination [7]. Investigation of scientific literature has numerous benefits for public health. A useful method for literature analysis is scientometrics, also known as “Science of science” [8]. It allows researchers to recognize gaps and lack of knowledge on a specific field of science. Considering the increasing number of publications on COVID-19, scientometric analysis may also help identify the different research areas and to determine the most frequently cited publication. In this article, we aimed to perform an analysis of the highly cited COVID-19 articles in order to guide researchers in this field. To our knowledge, even though there are studies on COVID-19 articles in the literature, there is a lack of information on highly cited articles.

2. MATERIALS AND METHODS

For this scientometric analysis, we entered the keyword “COVID-19” to the Web of Science® (WoS, Thomson Reuters, New York, NY) Scientific Database as of December 7th. WoS is the standard database for citation analyses, as it provides more details compared with other medical databases [9]. Then, the publications were arranged according to number of citations. When a filter was applied for highly cited (number of citations ≥6) publications, a total of 1661 publications were obtained. Then, number of citations was determined. The publications were filtered according to article type, organizational sources, funding agencies, first authors, journals, countries and language. The data was entered to Microsoft Excel® Program for analysis. The data was given as numbers and percentages.

And then, we also determined the top 25 mostly cited articles and analyzed them according to article information, category and study design, country, and number of times cited. Titles, abstracts and full-texts of the articles were investigated and analyzed.

Since this was a meta-data analysis of published work, ethics committee approval was not required.

3. RESULTS

During the study period, a total of 55,361 articles regarding COVID-19 were determined. Of these articles, 1,661 were named as “highly cited”. When highly cited publications were investigated, it was determined that sum of times cited was 146,887 (141,620 without self-citations), average citations per publication was 88.43 and mean h-index was 177. All highly cited articles were published in 2020. Types of publications were original article (n=1,297), review (n=364), early access (n=76), data paper (n=1) and proceeding paper (n=1), respectively. When publications were categorized, 170 was in general internal medicine, 125 was in infectious diseases, 97 was in biochemistry and molecular biology, 89 was in pharmacology. Number of publications regarding emergency medicine was 8.

When organizational sources of the publications were investigated; 133 was from Huazhong University of Science Technology, 87 was from Harvard University, 80 was from Wuhan University and 75 was from University of California System.

Top first authors of the highly cite articles were Wang Y (n=29), Liu Y (n=27), Wang J (n=26), Liu L (n=25) and Liu J (n=24).
The highly cited articles were published in Journal of Medical Virology (n=47), Science of the Total Environment (n=41), Journal of Biomolecular Structure Dynamics (n=27), Nature (n=26) and Lancet (n=24), respectively.

Distribution of the highly cited publications according to countries were as follows: China; 598, the USA: 573, Italy: 248, England: 213, Canada: 99, France and Germany: 98, Australia: 84, Spain: 71, Netherlands: 65, India: 56, Switzerland: 53, Singapore: 47, Iran: 37 and Japan: 36 publications.

Of the highly cited publications, 1,648 was in English, 7 was in German, 4 were in Spanish and 2 were in French language. Characteristics of highly cited publications are presented in Table 1 details.

Table 1. Characteristics of the highly cited publications.

| Categories                                      | n     | %    | Ranking |
|------------------------------------------------|-------|------|---------|
| General Internal Medicine                      | 170   | 10.2 | 1       |
| Infectious Diseases                            | 125   | 7.5  | 2       |
| Biochemistry and Molecular Biology             | 97    | 5.8  | 3       |
| Pharmacology                                   | 89    | 5.3  | 4       |
| Public Environmental and Occupational Health   | 89    | 5.3  | 5       |
| Immunology                                     | 86    | 5.1  | 6       |
| Medicine Research Experimental                 | 85    | 5.1  | 7       |
| Environmental Sciences                         | 84    | 5    | 8       |
| Surgery                                        | 84    | 5    | 9       |
| Virology                                       | 79    | 4.7  | 10      |
| Radiology and Nuclear Medicine Imaging         | 78    | 4.6  | 11      |
| Multidisciplinary Sciences                     | 75    | 4.5  | 12      |
| Cardiovascular System                          | 68    | 4    | 13      |
| Microbiology                                   | 66    | 3.9  | 14      |
| Clinical Neurology                             | 63    | 3.7  | 15      |
| Cell Biology                                   | 59    | 3.5  | 16      |
| Psychiatry                                     | 58    | 3.4  | 17      |
| Peripheral Vascular Disease                    | 49    | 2.9  | 18      |
| Oncology                                       | 47    | 2.8  | 19      |
| Hematology                                     | 46    | 2.7  | 20      |
| Neurosciences                                  | 42    | 2.5  | 21      |
| Pediatrics                                     | 41    | 2.4  | 22      |
| Obstetrics and Gynecology                      | 36    | 2.1  | 23      |
| Respiratory System                             | 36    | 2.1  | 24      |
| Gastroenterology and Hepatology                | 34    | 2    | 25      |

**Type of Publications**

| Type of Publications         | n     | %    | Ranking |
|------------------------------|-------|------|---------|
| Original Article             | 1297  | 78   | 1       |
| Review                       | 364   | 21.9 | 2       |
| Early Access                 | 76    | 4.5  | 3       |
| Data Paper                   | 1     | 0.06 | 4       |
| Proceedings Paper            | 1     | 0.06 | 5       |

**Institution**

| Institution                                              | n     | %    | Ranking |
|----------------------------------------------------------|-------|------|---------|
| Huazhong University of Science Technology                | 133   | 8    | 1       |
| Harvard University                                       | 87    | 5.2  | 2       |
| Wuhan University                                         | 80    | 4.8  | 3       |
| University of California System                          | 75    | 4.5  | 4       |
| University of London                                     | 75    | 4.5  | 5       |
| Harvard Medical School                                   | 63    | 3.7  | 6       |
| Chinese Academy of Medical Sciences Peking Union Medical College | 48    | 2.8  | 7       |
| University of Hong Kong                                   | 43    | 2.5  | 8       |
| Institut National de la Sante et de la Recherche Medicale Inserm | 40    | 2.4  | 9       |
| Columbia University                                       | 39    | 2.3  | 10      |
| University College London                                | 39    | 2.3  | 11      |
| Fundan University                                         | 38    | 2.2  | 12      |
| University of Washington                                 | 38    | 2.2  | 13      |
| University of Washington Seattle                         | 38    | 2.2  | 14      |
When top 25 articles were investigated, the article entitled “Clinical Characteristics of Coronavirus Disease 2019 in China” by Guan W et al. was in the first place with 4865 citations (last accessed in December, 2020). Top 3 articles were about clinical findings and factors regarding mortality. In the top 25 articles, majority of the authors were from China (n=16), followed by Italy (n=2) and the USA (n=2). JAMA was the most popular journal (n=8), followed by Lancet (n=6). The articles were analyzed and summarized in Table 2.
| Article Information (Reference no) | Category and Study Design | Country | Times Cited | Summary |
|-----------------------------------|--------------------------|---------|-------------|---------|
| Guan, et al. [10]                 | Clinical findings and mortality Retrospective Multicenter Study | China   | 4865        | Involved 1099 patients with COVID-19 from 552 hospitals. The median incubation period was 4 days the most common symptoms were fever and cough. Death rate: 1.4%. |
| Zhou, et al. [11]                 | Clinical findings and mortality Retrospective Multicenter Study | China   | 4108        | 191 patients. Death rate: 28.2%. Older age, high SOFA score, and d-dimer greater than 1 μg/ml are associated with poor prognosis. The longest observed duration of viral shedding in survivors was 37 days. |
| Wu and McGoogan [12]              | Clinical findings and mortality Viewpoint | China   | 2409        | A summary of 44,672 confirmed cases. Death rate: 2.3%. 14% of the cases were severe. Includes suggestions on prevention methods and next steps to be taken. Compares SARS, MERS and COVID-19. Despite much higher case fatality rates for SARS and MERS, COVID-19 has led to more total deaths due to the large number of cases. Emphasizes the rapid spread of the disease. |
| Mehta, et al. [13]                | Pathogenesis Correspondence | England | 1686        | Emphasizes hyperinflammation resulting in fatal hypercytokinaemia with multiorgan failure in COVID-19. Steroids, intravenous immunoglobulin, selective cytokine blockade are suggested as therapeutic options. |
| Xu, et al. [14]                   | Pathogenesis, Case Report | China   | 1626        | A 50-year-old man with fever, chills, cough, fatigue and shortness of breath following a travel to Wuhan. Postmortem histological examination was performed after his death and revealed acute respiratory distress syndrome. Blood analyses revealed overactivation of T cells, manifested by increase of Th17 and high cytotoxicity of CD8 T cells, as an indicator of severe immune injury. |
| Gautret, et al. [15] | Treatment methods Clinical Trial | France | 1261 | 36 patients. Azithromycin added to hydroxychloroquine was found to be significantly efficient for virus elimination. |
|---------------------|----------------------------------|--------|------|----------------------------------------------------------------------------------|
| Zou, et al. [16] | Diagnosis. Correspondence | China | 1124 | Viral load detection in 18 patients. Higher viral loads were detected soon after symptom onset, with higher viral loads detected in the nose than in the throat. Asymptomatic patients may also transmit the virus. Viral shedding pattern of SARS-CoV-2 resembles influenza. |
| Cao, et al. [17] | Treatment method Randomized, controlled, Original Article | China | 1098 | 199 patients. Lopinavir–ritonavir was administered to 99. Lopinavir–ritonavir showed no benefit when compared to standard therapy. |
| WuáC and CaiáY [18] | Clinical findings and mortality. Retrospective cohort study | China | 1089 | 201 patients with confirmed pneumonia. Patients with older age, neutrophilia, and organ and coagulation dysfunction tend to develop ARDS. Methylprednisolone administration may be beneficial in patients with ARDS. |
| Richardson, et al. [19] | Clinical findings and outcomes. Retrospective Analysis | USA | 1037 | 5,700 patients. On admission, 30.7% of patients were febrile, 17.3% had a respiratory rate greater than 24 breaths/min, and 27.8% received supplemental oxygen. The rate of respiratory virus co-infection was 2.1% Death rate was 21% in hospitalized patients. |
| Mao, et al. [20] | Clinical findings Retrospective, Observational Study. | China | 919 | 214 patients. 36.4% of the patients presented neurologic abnormalities. Patients with more severe infection had neurologic manifestations, such as acute cerebrovascular diseases, impaired consciousness, and skeletal muscle injury. |
| Ai, et al. [21] | Diagnosis. Retrospective Study. | China | 898 | 1,014 patients. The performance of CT compared to PCR test in COVID-19 patients was analyzed. Based on positive PCR test results, the sensitivity of chest CT in diagnosis was 97%. Chest CT was recommended as a primary tool for the current COVID-19 detection in epidemic areas. |
| Authors          | Type                        | Country | Page | Details                                                                                                                                 |
|------------------|-----------------------------|---------|------|------------------------------------------------------------------------------------------------------------------------------------------|
| Wang, et al. [22]| Diagnosis. Original Article | China   | 893  | Besides nasopharyngeal swabs; blood, sputum, feces, urine, and nasal samples of 205 patients were collected. Bronchoalveolar lavage fluid specimens showed the highest positive rates (93%), followed by sputum (72%), nasal swabs (63%), fibrobronchoscope brush biopsy (46%), pharyngeal swabs (32%), feces (29%), and blood (1%). Urine tests showed no positivity. |
| Wolfel, et al. [23]| Pathogenesis. Original Article. | Germany | 858  | Virological analysis of 9 cases of COVID-19 proved active virus replication in tissues of the upper respiratory tract. The virus was isolated from samples derived from the throat or lung, but not from stool samples. |
| Chen, et al. [24]| Pathogenesis and transmission. Retrospective Analysis Case Series. | China   | 824  | 9 pregnant COVID-19 patients. Based on the clinical status of the newborns, no evidence for intrauterine infection was obtained. |
| Ruan, et al. [25]| Clinical findings and mortality. Retrospective multicenter analysis. Letter to the Editor. | China   | 824  | Using the database of 2 hospital, 68 death cases and 82 discharged cases with laboratory-confirmed infection of SARS-CoV-2 were involved. Predictors of a fatal outcome in COVID-19 cases included age, the presence of underlying diseases, the presence of secondary infection and elevated inflammatory indicators in the blood. COVID-19 mortality might be due to virus-activated “cytokine storm syndrome” or fulminant myocarditis. |
| Bai, et al. [26]| Pathogenesis and transmission. Case Series. | China   | 816  | A study on 5 family members. Transmission of the disease from an asymptomatic individual with normal CT findings was confirmed. |
| Grasselli, et al. [27]| Clinical findings and mortality. Retrospective Analysis | Italy   | 802  | 1,501 cases with confirmed COVID-19. Among 1,300 patients with available respiratory support data, 1,287 (99%) needed respiratory support, including 1,150 (88%) who received mechanical ventilation and 137 (11%) who received noninvasive ventilation. 405 (26%) patients had died in the ICU. |
| Reference         | Topic                  | Country  | Page |
|-------------------|------------------------|----------|------|
| Varga, et al. [28] | Pathogenesis           | Switzerland | 766  |
|                   | Correspondence         |          |      |
|                   | Case Series            |          |      |
| Dong, et al. [29] | Patient tracking       | USA      | 763  |
|                   | Correspondence         |          |      |
| Klok, et al. [30] | Complications          | Netherlands | 755  |
|                   | Retrospective Analysis |          |      |
| Onder, et al. [31]| Clinical findings and mortality. Retrospective Analysis | Italy | 754  |
| Shi, et al. [32]  | Diagnosis              | China    | 730  |
|                   | Retrospective Analysis |          |      |
| Lai, et al. [33]  | Epidemiology           | China    | 729  |
|                   | Review                 |          |      |
| Gao, et al. [34]  | Treatment method       | China    | 727  |
|                   | Letter to the Editor   |          |      |

### 4. DISCUSSION

During the first two months of the outbreak, COVID-19 spread quickly throughout China. The first articles on COVID-19 were published at the beginning of 2020 [35]. Since then, a growing amount of articles were published from all over the World. It is important to analyze the coronavirus literature since it helps us understand the progression of the disease. For instance, before 2019, A total of 13,833 documents indexed in WoS Core Collection
were found in coronavirus literature and most of them identified the virus only as an animal disease the studies were focused on biological and genetic structure of the virus. Before pandemics the USA ranked in the first place in terms of contribution to the scientific literature \[36\]. In a study investigating the contributions of the countries during pandemics, the USA was the leading country to publish COVID-19 related articles with 1,806 research items followed by China (n=1,306), Italy (n=856) and the UK (n=817) \[37\]. Nevertheless, our results revealed that when highly cited articles are considered, China was determined to be the leading country. As mentioned above, as the source of the pandemics China published substantial amount of articles. Accordingly, Chinese authors put more articles on the highly cited list when compared to other countries.

In a previous bibliometric study, virology, clinical characteristics, and epidemiology of COVID-19 were found to be the major research foci with the highest volume of papers \[38\]. In our study, top WoS topics of research were found to be general internal medicine, infectious diseases and, biochemistry and molecular biology. In a systematic review, 27,570 COVID-19-related articles retrieved from PubMed database January 1 to July 1, 2020 were analyzed. It was reported that trend curves of topic popularity indicated that the most important issue was the prevention and control of COVID-19. Additionally, drug therapy was emphasized as the weak point in COVID-19 literature \[37\]. In a study on COVID-19 and SARS-CoV-2-related documents published until 23 April 2020, reports on the clinical and laboratory characteristics of the confirmed cases are of the most interest \[39\]. In a previous study, it was stated that most articles were published in the topic “General & Internal; Medicine” instead of the topic “Virology”. The reason for this choice may the higher impact factors of the journals in the category of “General & Internal; Medicine” \[40\]. In a study covering the period until May, the categories with the most COVID-19 related articles were “Medicine, internal and general” and “Infectious diseases” Remarkably, the number of studies in “Virology” and “Microbiology” was relatively low (less than 1% and 2%) \[41\]. In a more detailed study, publications were classified according to keywords. According to this classification, Infectious diseases and Pharmacology was the most common field of interest \[39\]. Accordingly in our study, the topic “virology” ranked 10th. Publications regarding “General Internal Medicine” were on the top of the list.

When highly cited articles were investigated, we observed that Huazhong University of Science Technology was in the first place regarding productivity. Accordingly, in a study investigating the ranking of universities, it was determined that Huazhong University of Science and Technology from China was the most productive institute on the number of publications, and University of Toronto from Canada ranked as Top 1 institute for global research collaboration \[7\]. In the beginning of the pandemic, researchers benefited from experiences of China since it was the origin of pandemic. Hence, publications from China were cited frequently. Nevertheless, need for a rapid experience sharing may cause some problems. Acceleration of publication production process in medical journals may result in decreased peer-review times. In this period, it was reported that time Indeed, the turnover time from submission to acceptance reduced by 49% \[42\]. Moreover, Some manuscripts were actually accepted on the day of submission \[37\]. Inevitable consequence of this rush is loss of quality and mistakes.

When entire literature was investigated in a study, publications came from 94 countries worldwide \[43\]. Even though our study include only highly cited publications, the number of countries involved is 97 since this is the latest research in this field. It is known that leading international journals published by commercial publishers or big research communities with ample resources and staff, quickly responded to this challenge and adopted their working style accordingly \[44\].

The “BMJ” published the highest number of papers (n=129) and “The Lancet” had the most citations (n=1439) \[45\]. However, in our study, when highly cited articles are considered, Journal of Medical Virology had the largest number. The primary COVID-19 related publications contribution is made by major research centers such as the United States, China, and European countries \[39\]. Accordingly in our study, highly cited publications were produced by China, the USA, Italy and the UK, respectively.
5. CONCLUSION

Literature on COVID-19 is rapidly growing. Rapid publication of research data is a necessity for information and experience sharing of different facilities and organizations. Our results revealed that highly cited publications are produced by large establishments from highly capitalized organizations and countries. However, a special attention must be paid for keeping the quality of the publications high and number of retractions and errors low. Satisfactory time for peer-review processes must be maintained even in high rank journals [37]. We found that Chinese authors were mostly cited. When top cited 25 articles were analyzed, clinical characteristics, diagnostic tools and treatment methods were mostly investigated. We agree with Tran et al. that there is a lack of research on the social stigma and discrimination toward people, places caused by COVID-19 [39].

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REFERENCES

[1] Z. Sun, "Diagnostic value of chest CT in coronavirus disease 2019 (COVID-19)," Current Medical Imaging, vol. 16, pp. 274-275, 2020. Available at: https://doi.org/10.2174/1573405616999200320163751.

[2] WHO, "World Health Organization. Retrieved from https://www.who.int/emergencies/diseases/novel-Coronavirus-2019. [Accessed January 7, 2020]," 2019.

[3] D. Richman, R. Whitley, and F. Hayden, Clinical virology, 4th ed. Washington, DC: ASM Press, 2016.

[4] A. Erenler and A. Baydin, "Challenges in COVID-19 diagnosis," Bratislava Medical Journal, vol. 121, pp. 864-864, 2020.

[5] G. Mujica, Z. Sternberg, J. Solis, T. Ward, P. Carrasco, A. F. Henao-Martínez, and C. Franco-Paredes, "Defusing COVID-19: Lessons learned from a century of pandemics," Tropical Medicine and Infectious Disease, vol. 5, p. 182, 2020. Available at: https://doi.org/10.3390/tropicalmed5040182.

[6] WHO, "Retrieved from https://covid19.who.int/?gclid=CjwKCAiA_KzBRAJfEiwAhNY75yRkJsTDiFDUkQgtWnFPMmdFNSz4VQREGQlluWV5B0VbBLkUQeOsoCzmQQAvD_BwE," n.d.

[7] J. Wang and N. Hong, "The COVID-19 research landscape: Measuring topics and collaborations using scientific literature," Medicine, vol. 99, p. e22849, 2020. Available at: https://doi.org/10.1097/md.0000000000022849.

[8] W. Hood and C. Wilson, "The literature of bibliometrics," Scientometrics, and Informetrics. Scientometrics, vol. 52, pp. 291-314, 2001.

[9] M. E. Falagas, E. I. Pitsouni, G. A. Malietzis, and G. Pappas, "Comparison of PubMed, scopus, web of science, and Google scholar: Strengths and weaknesses," The FASEB Journal, vol. 22, pp. 338-342, 2008.

[10] W. Guan, Z. Ni, and Y. Hu, "Clinical characteristics of coronavirus disease 2019 in China," The New England Journal of Medicine, vol. 382, pp. 1708-1720, 2020. Available at: 10.1016/S0028-2791(20)30628-0.
Z. Xu, L. Shi, Y. Wang, J. Zhang, L. Huang, C. Zhang, S. Liu, P. Zhao, H. Liu, and L. Zhu, "Pathological findings of COVID-19 associated with acute respiratory distress syndrome," *The Lancet Respiratory Medicine*, vol. 8, pp. 420-422, 2020.Available at: https://doi.org/10.1016/s2213-2600(20)30076-x.

P. Gautret, J. Lagier, S. Honoré, V. Hoang, P. Colson, and D. Raoult, "Hydroxychloroquine and azithromycin as a treatment of COVID-19: Results of an open label non-randomized clinical trial revisited," *International Journal of Antimicrobial Agents*, vol. 57, p. 106243, 2021.Available at: 10.1016/j.ijantimicag.2020.106243.

L. Zou, F. Ruan, M. Huang, L. Liang, H. Huang, Z. Hong, J. Yu, M. Kang, Y. Song, and J. Xia, "SARS-CoV-2 viral load in upper respiratory specimens of infected patients," *New England Journal of Medicine*, vol. 382, pp. 1177-1179, 2020.Available at: https://doi.org/10.1056/nejmoa2001282.

B. Cao, Y. Wang, and D. Wen, "A trial of lopinavir-ritonavir in adults hospitalized with severe covid-19," *The New England Journal of Medicine*, vol. 382, pp. 1787-1799, 2020.Available at: 10.1056/NEJMoa2001282.

C. WuáC and X. CaiáY, "ZhouáX, DuáC etáal. Risk factors associated with acute respiratory distress syndrome and death in patients with coronavirus disease 2019 pneumonia in Wuhan, China," *JAMA Internal Medicine*, vol. 180, pp. 1-11, 2020.Available at: https://doi.org/10.1001/jama.2020.0994.

S. Richardson, J. S. Hirsch, M. Narasimhan, J. M. Crawford, T. McGinn, K. W. Davidson, D. P. Barnaby, L. B. Becker, J. D. Chelico, and S. L. Cohen, "Presenting characteristics, comorbidities, and outcomes among 5700 patients hospitalized with COVID-19 in the New York City area," *Jama*, vol. 323, pp. 2052-2059, 2020.Available at: https://doi.org/10.1001/jama.2020.6775.

L. Mao, H. Jin, and M. Wang, "Neurologic manifestations of hospitalized patients with coronavirus disease 2019 in Wuhan, China," *JAMA Neurology*, vol. 77, pp. 683-690, 2020.Available at: https://doi.org/10.1001/jamanetwol.2020.1127.

T. Ai, Z. Yang, and H. Hou, "Correlation of chest CT and RT-PCR testing for coronavirus disease 2019 (COVID-19) in China: A report of 1014 cases," *Radiology*, vol. 296, pp. E32-E40, 2020.

W. Wang, Y. Xu, R. Gao, R. Lu, K. Han, G. Wu, and W. Tan, "Detection of SARS-CoV-2 in different types of clinical specimens," *Jama*, vol. 323, pp. 1843-1844, 2020.

R. Wolffel, V. Corman, and W. Guggemos, "Virological assessment of hospitalized cases of coronavirus disease," *Nature*, vol. 581, pp. 465-469, 2020.

H. Chen, J. Guo, C. Wang, F. Lao, X. Yu, W. Zhang, and Y. Zhang, "Clinical characteristics and intrauterine vertical transmission potential of COVID-19 infection in nine pregnant women: a retrospective review of medical records," *The Lancet*, vol. 395, pp. 809-815, 2020.Available at: https://doi.org/10.1016/s0140-6736(20)30360-3.

Q. Ruan, K. Yang, W. Wang, L. Jiang, and J. Song, "Clinical predictors of mortality due to COVID-19 based on an analysis of data of 150 patients from Wuhan, China," *Intensive Care Medicine*, vol. 46, pp. 846-848, 2020.Available at: https://doi.org/10.1007/s00134-020-05991-x.

Y. Bai, L. Yao, T. Wei, F. Tian, D.-Y. Jin, L. Chen, and M. Wang, "Presumed asymptomatic carrier transmission of COVID-19," *JAMA*, vol. 323, pp. 1406-1407, 2020.Available at: https://doi.org/10.1001/jama.2020.2565.

G. Grasselli, A. Zaninelli, and A. Zanella, "Baseline characteristics and outcomes of 1591 patients infected with SARS-CoV-2 admitted to ICUs of the Lombardy Region, Italy," *JAMA*, vol. 323, pp. 1574-1581, 2020.Available at: 10.1001/jama.2020.5394.

Z. Varga, A. Flammer, P. Steiger, M. Haberecker, R. Andermatt, and A. Zinkernagel, "Infection of endothelial cells and endothelitis in COVID-19," *Lancet*, vol. 395, pp. 1417-1418, 2020.

E. Dong, H. Du, and L. Gardner, "An interactive web-based dashboard to track COVID-19 in real time [published correction appears]," *Lancet Infectious Diseases*, vol. 20, pp. 533-534, 2020.Available at: 10.1016/S1473-3099(20)30120-1.

F. Klok, M. Kruij, and N. van der Meer, "Incidence of thrombotic complications in critically ill ICU patients with COVID-19," *Thrombosis Research*, vol. 191, pp. 145-147, 2020.Available at: 10.1016/j.thromres.2020.04.013.
G. Onder, G. Rezza, and S. Brusaferro, "Case-fatality rate and characteristics of patients dying in relation to COVID-19 in Italy," JAMA, vol. 323, pp. 1775-1776, 2020. Available at: https://doi.org/10.1001/jama.2020.4683.

H. Shi, X. Han, N. Jiang, Y. Cao, O. Alwalid, J. Gu, Y. Fan, and C. Zheng, "Radiological findings from 81 patients with COVID-19 pneumonia in Wuhan, China: A descriptive study," The Lancet Infectious Diseases, vol. 20, pp. 425-434, 2020. Available at: https://doi.org/10.1016/s1473-3099(20)30086-4.

C.-C. Lai, T.-P. Shih, W.-C. Ko, H.-J. Tang, and P.-R. Hsuah, "Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and coronavirus disease-2019 (COVID-19): The epidemic and the challenges," International Journal of Antimicrobial Agents, vol. 55, p. 105924, 2020. Available at: 10.1016/j.ijantimicag.2020.105924.

J. Gao, Z. Tian, and X. Yang, "Breakthrough: Chloroquine phosphate has shown apparent efficacy in treatment of COVID-19 associated pneumonia in clinical studies," Biocoi Trends, vol. 14, pp. 72-73, 2020. Available at: https://doi.org/10.5582/bst.2020.01047.

C. Martinez-Perez, C. Alvarez-Peregrina, C. Villa-Collar, and M. Á. Sánchez-Tena, "Citation network analysis of the novel coronavirus disease 2019 (COVID-19)," International Journal of Environmental Research and Public Health, vol. 17, p. 7690, 2020. Available at: https://doi.org/10.3390/ijerph17207690.

E. Senel and F. E. Topal, "Holistic analysis of coronavirus literature: A scientometric study of the global Publications relevant to SARS-CoV-2 (COVID-19), MERS-CoV (MERS) and SARS-CoV (SARS)," Disaster Medicine and Public Health Preparedness, pp. 1-8, 2020. Available at: https://doi.org/10.1017/dmp.2020.300.

N. Grammes, D. Millenaar, T. Fehlmann, F. Kern, M. Bölhm, F. Mahfoud, and A. Keller, "Research output and international cooperation among countries during the COVID-19 pandemic: Scientometric analysis," Journal of Medical Internet Research, vol. 22, p. e24514, 2020. Available at: https://doi.org/10.2196/24514.

J. Lou, S.-J. Tian, S.-M. Niu, X.-Q. Kang, H.-X. Lian, L.-X. Zhang, and J.-J. Zhang, "Coronavirus disease 2019: A bibliometric analysis and review," European Review for Medical and Pharmacological Sciences, vol. 24, pp. 3411-3421, 2020.

B. X. Tran, G. H. Ha, L. H. Nguyen, G. T. Vu, M. T. Hoang, H. T. Le, C. A. Latkin, C. S. Ho, and R. C. Ho, "Studies of novel coronavirus disease 19 (Covid-19) pandemic: A global analysis of literature," International Journal of Environmental Research and Public Health, vol. 17, pp. 1-20, 2020.

H. I. Okagbue and J. A. T. da Silva, "Correlation between the citescore and journal impact factor of top-ranked library and information science journals," Scientometrics, vol. 124, pp. 797-801, 2020. Available at: https://doi.org/10.1007/s11192-020-03457-x.

J. M. Pericás, A. Arenas, O. Turrallardona-Murphy, H. Valero, and D. Nicolás, "Published evidence on COVID-19 in top-ranked journals: A descriptive study," European Journal of Internal Medicine, vol. 79, pp. 120-122, 2020. Available at: https://doi.org/10.1016/j.ejim.2020.07.005.

S. P. Horbach, "Pandemic publishing: Medical journals strongly speed up their publication process for COVID-19," Quantitative Science Studies, vol. 1, pp. 1056-1067, 2020. Available at: https://doi.org/10.1162/qss_a_00076.

F. De Felice and A. Polimeni, "Coronavirus disease (COVID-19): A machine learning bibliometric analysis," In Vivo, vol. 34, pp. 1613-1617, 2020. Available at: https://doi.org/10.21873/inivivo.11951.

M. Mubarak, "COVID-19 and biomedical publishing: Challenges and prospects," Journal of College of Physicians and Surgeons Pakistan, vol. 30, pp. 92-93, 2020. Available at: 10.29271/jcpsp.2020.supp2.92.