

LETTER TO THE EDITOR**Bibliometric Analysis of the 100 Highly-cited Articles about COVID-19****Dear Editor**

The first outbreak of Coronavirus Disease 2019 (COVID-19) was recognized in December 2019 in Wuhan, China. On 30 January, 2020 the World Health Organization (WHO) declared the outbreak of COVID-19 as a public health emergency of international concern and on 11 March 2020 COVID-19 was considered as a pandemic disease. Since January 2020, COVID-19 became the top priority and leading subject in medical research and the published literature about COVID-19 rapidly increased. Several journals devoted a special issue on the subject of COVID-19.

Although bibliometric analysis through the evaluation of the citations of an article has its own limitations, yet, it can help in impact quantification. On August 6, 2020, A comprehensive search through the Scopus data base with "Coronavirus Disease 2019" and "COVID-19" as the main keywords resulted in 32186 manuscripts. The documents consisted of articles, letters, reviews, notes, editorials, short surveys, erratum, conference papers, data papers, and book chapters. With refinement of the keywords in the title, abstract, and keywords of the journals articles the 100 highly-cited articles were identified and analyzed for the geographic region, language, and number of citations of the published manuscript as well as the publishing journal. The abstracts were reviewed for the article types and levels of evidence. Table 1 demonstrates the characteristics of the aforementioned top 100 highly-cited articles.

Twenty-nine countries contributed to the 100 highly-cited articles about COVID-19. The two leading countries were China with 60 and United States with 21 articles. Sixteen countries had one contribution. Seventeen articles have been prepared with multi-national collaborations. The highest most cited article referred to Huang et al. with 4420 citations and the 100th cited article referred to Hellewell et al. with 186 citations (1, 2). The mean citation rate for the 100 top-cited articles was 529 ± 62 . All the 100 highly-cited articles were written in English. These 100 highly-cited articles were published in 52 journals. The three top journals were New England Journal of Medicine with 15 articles, the Lancet with 12 articles, and JAMA - Journal of the American Medical Association with 9 articles.

Among the 100 top-cited articles, 13 and 87 articles pertained to the basic and clinical sciences, respectively. One article was level I, three articles: level II, 20 articles: level III, 41 articles: level IV, and 22 articles were level V of evidence (3).

The main focuses among the 100 highly-cited articles were clinical characteristics, diagnosis, prognosis, and epidemiological aspects of COVID-19.

The 100 highly-cited articles about COVID-19 may establish a foundation on which the science on COVID-19 can be elaborated. The 100 top-cited articles lack high levels of evidence. Based on table 1, the majority of the articles were case series that in turn may incite questions for further high quality research.

We have to mention that the figure of 100 was arbitrary. Obtaining a high number of citations dose not necessary means that the study is the best and has a high level of evidence. This study by no means negates high quality outstanding articles that have been published recently and had not enough time to raise their citations yet. Findings on COVID-19 characteristics are rapidly changing and subject to selection bias. This study was a cross-sectional study on August 6, 2020; therefore, our findings will be changed overtime.

There is still no available report on vaccination and specific antiviral treatment for COVID-19. There is no robust evidence that antiviral treatments can significantly improve clinical outcomes; therefore, isolation and supportive treatments including oxygen therapy, fluid management and antibacterial treatment for probable secondary bacterial infections are the main stem of COVID-19 treatment. The current bibliometric study reflects the quality of the 100 top-cited articles about COVID-19 and can be helpful for educational aims and incite thinking on the insufficient and needed studies in the field.

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Table 1.

Rank	Articles	Cited by Scopus	Level of evidence/ type of the study	Geographical origin of the article
1	Huang C, Wang Y, Li X, et al. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. <i>Lancet</i> . 2020; 395(10223):497-506. doi:10.1016/S0140-6736(20)30183-5	4420	III prognostic/ Case control	China
2	Guan WJ, Ni ZY, Hu Y, et al. Clinical Characteristics of Coronavirus Disease 2019 in China. <i>N Engl J Med</i> . 2020; 382(18):1708-1720. doi:10.1056/NEJMoa2002032	2770	IV diagnostic / Case series	China
3	Zhu N, Zhang D, Wang W, et al. A Novel Coronavirus from Patients with Pneumonia in China, 2019. <i>N Engl J Med</i> . 2020; 382(8):727-733. doi:10.1056/NEJMoa2001017	2392	IV diagnostic/ Case series	China
4	Chen N, Zhou M, Dong X, et al. Epidemiological and clinical characteristics of 99 cases of 2019 novel coronavirus pneumonia in Wuhan, China: a descriptive study. <i>Lancet</i> . 2020;395(10223):507-513. doi:10.1016/S0140-6736(20)30211-7	2264	IV diagnostic/ Case series	China
5	Zhou F, Yu T, Du R, et al. Clinical course and risk factors for mortality of adult inpatients with COVID-19 in Wuhan, China: a retrospective cohort study <i>Lancet</i> . 2020; 395(10229):1054-1062. doi:10.1016/S0140-6736(20)30566-3	2078	III prognostic/ cohort	China
6	Zhou P, Yang XL, Wang XG, et al. A pneumonia outbreak associated with a new coronavirus of probable bat origin. <i>Nature</i> . 2020; 579(7798):270-273. doi:10.1038/s41586-020-2012-7	1697	Basic science	China
7	Wu Z, McGoogan JM. Characteristics of and Important Lessons From the Coronavirus Disease 2019 (COVID-19) Outbreak in China: Summary of a Report of 72 314 Cases From the Chinese Center for Disease Control and Prevention. <i>JAMA</i> . 2020;10.1001/jama.2020.2648. doi:10.1001/jama.2020.2648	1687	IV diagnostic / Case series	China
8	Chan JF, Yuan S, Kok KH, et al. A familial cluster of pneumonia associated with the 2019 novel coronavirus indicating person-to-person transmission: a study of a family cluster. <i>Lancet</i> . 2020; 395(10223):514-523. doi:10.1016/S0140-6736(20)30154-9	1250	IV diagnostic/ Case series	China
9	Lu R, Zhao X, Li J, et al. Genomic characterisation and epidemiology of 2019 novel coronavirus: implications for virus origins and receptor binding. <i>Lancet</i> . 2020; 395(10224):565-574. doi:10.1016/S0140-6736(20)30251-8	1208	IV diagnostic/ Case series	China
10	Hoffmann M, Kleine-Weber H, Schroeder S, et al. SARS-CoV-2 Cell Entry Depends on ACE2 and TMPRSS2 and Is Blocked by a Clinically Proven Protease Inhibitor. <i>Cell</i> . 2020; 181(2):271-280.e8. doi:10.1016/j.cell.2020.02.052	1011	IV therapeutic/ Case series	Germany
11	Xu Z, Shi L, Wang Y, et al. Pathological findings of COVID-19 associated with acute respiratory distress syndrome. <i>Lancet Respir Med</i> . 2020; 8(4):420-422. doi:10.1016/S2213-2600(20)30076-X	934	IV therapeutic/ Case report	China
12	Holshue ML, DeBolt C, Lindquist S, et al. First Case of 2019 Novel Coronavirus in the United States. <i>N Engl J Med</i> . 2020; 382(10):929-936. doi:10.1056/NEJMoa2001191	914	IV diagnostic / Case report	United States
13	Wang M, Cao R, Zhang L, et al. Remdesivir and chloroquine effectively inhibit the recently emerged novel coronavirus (2019-nCoV) in vitro. <i>Cell Res</i> . 2020; 30(3):269-271. doi:10.1038/s41422-020-0282-0	869	Basic science / therapeutic	China

Table 1 Continued.

14	Mehta P, McAuley DF, Brown M, et al. COVID-19: consider cytokine storm syndromes and immunosuppression. <i>Lancet</i> . 2020; 395(10229):1033-1034. doi:10.1016/S0140-6736(20)30628-0	836	V therapeutic/ Expert opinion	United Kingdom
15	Gautret P, Lagier JC, Parola P, et al. Hydroxychloroquine and azithromycin as a treatment of COVID-19: results of an open-label non-randomized clinical trial. <i>Int J Antimicrob Agents</i> . 2020;56(1):105949. doi:10.1016/j.ijantimicag.2020.105949	760	II therapeutic/ control trial	France
16	Wu F, Zhao S, Yu B, et al. A new coronavirus associated with human respiratory disease in China. <i>Nature</i> . 2020;579(7798):265-269. doi:10.1038/s41586-020-2008-3	707	IV diagnostic/ Case report	China and Australia
17	Wu C, Chen X, Cai Y, et al. Risk Factors Associated With Acute Respiratory Distress Syndrome and Death in Patients With Coronavirus Disease 2019 Pneumonia in Wuhan, China. <i>JAMA Intern Med</i> . 2020;180(7):1-11. doi:10.1001/jamainternmed.2020.0994	699	III prognostic / cohort	China
18	Cao B, Wang Y, Wen D, et al. A Trial of Lopinavir-Ritonavir in Adults Hospitalized with Severe Covid-19. <i>N Engl J Med</i> . 2020;382(19):1787-1799. doi:10.1056/NEJMoa2001282	672	II therapeutic/ control trial	China, United Kingdom and United states
19	Liang W, Guan W, Chen R, et al. Cancer patients in SARS-CoV-2 infection: a nationwide analysis in China. <i>Lancet Oncol</i> . 2020;21(3):335-337. doi:10.1016/S1470-2045(20)30096-6	663	III economic and decision analysis/ cohort	China
20	Zou L, Ruan F, Huang M, et al. SARS-CoV-2 Viral Load in Upper Respiratory Specimens of Infected Patients. <i>N Engl J Med</i> . 2020;382(12):1177-1179. doi:10.1056/NEJMc2001737	636	IV prognostic/ Case series	China
21	Rothe C, Schunk M, Sothmann P, et al. Transmission of 2019-nCoV Infection from an Asymptomatic Contact in Germany. <i>N Engl J Med</i> . 2020;382(10):970-971. doi:10.1056/NEJMc2001468	630	IV prognostic/ Case report	Germany
22	Chen H, Guo J, Wang C, et al. Clinical characteristics and intrauterine vertical transmission potential of COVID-19 infection in nine pregnant women: a retrospective review of medical records. <i>Lancet</i> . 2020;395(10226):809-815. doi:10.1016/S0140-6736(20)30360-3	570	IV prognostic/ Case series	China and United States
23	Ai T, Yang Z, Hou H, et al. Correlation of Chest CT and RT-PCR Testing for Coronavirus Disease 2019 (COVID-19) in China: A Report of 1014 Cases. <i>Radiology</i> . 2020;296(2):E32-E40. doi:10.1148/radiol.2020200642	564	III diagnostic/ Case control	China and Netherlands
24	Bai Y, Yao L, Wei T, et al. Presumed Asymptomatic Carrier Transmission of COVID-19. <i>JAMA</i> . 2020;323(14):1406-1407. doi:10.1001/jama.2020.2565	520	IV prognostic/ Case series	China
25	Wan Y, Shang J, Graham R, Baric RS, Li F. Receptor Recognition by the Novel Coronavirus from Wuhan: an Analysis Based on Decade-Long Structural Studies of SARS Coronavirus. <i>J Virol</i> . 2020; 94(7):e00127-20. Published 2020 Mar 17. doi:10.1128/JVI.00127-20	469	Basic science	United States
26	Epidemiology Working Group for NCIP Epidemic Response, Chinese Center for Disease Control and Prevention. <i>Zhonghua Liu Xing Bing Xue Za Zhi</i> . 2020;41(2):145-151. doi:10.3760/cma.j.issn.0254-6450.2020.02.003	454	III economic and decision analysis/ cohort	China

Table 1 Continued.

27	Gao J, Tian Z, Yang X. Breakthrough: Chloroquine phosphate has shown apparent efficacy in treatment of COVID-19 associated pneumonia in clinical studies. <i>Biosci Trends</i> . 2020;14(1):72-73. doi:10.5582/bst.2020.01047	454	V therapeutic/Expert opinion	China
28	Lai CC, Shih TP, Ko WC, Tang HJ, Hsueh PR. Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and coronavirus disease-2019 (COVID-19): The epidemic and the challenges. <i>Int J Antimicrob Agents</i> . 2020;55(3):105924. doi:10.1016/j.ijantimicag.2020.105924	446	V economic and decision analysis/Expert opinion	Taiwan
29	Ruan Q, Yang K, Wang W, Jiang L, Song J. Clinical predictors of mortality due to COVID-19 based on an analysis of data of 150 patients from Wuhan, China. <i>Intensive Care Med</i> . 2020;46(5):846-848. doi:10.1007/s00134-020-05991-x	440	IV prognostic/ Case series	China
30	Mao L, Jin H, Wang M, et al. Neurologic Manifestations of Hospitalized Patients With Coronavirus Disease 2019 in Wuhan, China. <i>JAMA Neurol</i> . 2020;77(6):1-9. doi:10.1001/jamaneurol.2020.1127	432	IV diagnostic/ Case series	China and United States
31	Shi H, Han X, Jiang N, et al. Radiological findings from 81 patients with COVID-19 pneumonia in Wuhan, China: a descriptive study. <i>Lancet Infect Dis</i> . 2020;20(4):425-434. doi:10.1016/S1473-3099(20)30086-4	429	III diagnostic/ case control	China
32	Russell CD, Millar JE, Baillie JK. Clinical evidence does not support corticosteroid treatment for 2019-nCoV lung injury. <i>Lancet</i> . 2020;395(10223):473-475. doi:10.1016/S0140-6736(20)30317-2	396	V therapeutic/ Expert opinion	United Kingdom
33	Onder G, Rezza G, Brusaferro S. Case-Fatality Rate and Characteristics of Patients Dying in Relation to COVID-19. <i>JAMA</i> . 2020;10.1001/jama.2020.4683. doi:10.1001/jama.2020.4683	393	III prognostic/ cohort	Italy
34	Zhang JJ, Dong X, Cao YY, et al. Clinical characteristics of 140 patients infected with SARS-CoV-2 in Wuhan, China. <i>Allergy</i> . 2020;75(7):1730-1741. doi:10.1111/all.14238	389	IV diagnostic/ Case series	China and Switzerland
35	Fang L, Karakiulakis G, Roth M. Are patients with hypertension and diabetes mellitus at increased risk for COVID-19 infection?. <i>Lancet Respir Med</i> . 2020;8(4):e21. doi:10.1016/S2213-2600(20)30116-8	388	V prognostic/ Expert opinion	Switzerland
36	Remuzzi A, Remuzzi G. COVID-19 and Italy: what next?. <i>Lancet</i> . 2020;395(10231):1225-1228. doi:10.1016/S0140-6736(20)30627-9	378	III economic and decision analysis/ pooled analysis	Italy
37	Dong E, Du H, Gardner L. An interactive web-based dashboard to track COVID-19 in real time [published correction appears in <i>Lancet Infect Dis</i> . 2020 Jun 12;]. <i>Lancet Infect Dis</i> . 2020;20(5):533-534. doi:10.1016/S1473-3099(20)30120-1	377	V economic and decision analysis/ Expert opinion	United States
38	Richardson S, Hirsch JS, Narasimhan M, et al. Presenting Characteristics, Comorbidities, and Outcomes Among 5700 Patients Hospitalized With COVID-19 in the New York City Area. <i>JAMA</i> . 2020; 323(20):2052-2059. doi:10.1001/jama.2020.6775	366	IV prognostic/ Case series	United States
39	Wölfel R, Corman VM, Guggemos W, et al. Virological assessment of hospitalized patients with COVID-2019. <i>Nature</i> . 2020;581(7809):465-469. doi:10.1038/s41586-020-2196-x	364	Basic science/ Diagnosis	Germany

Table 1 Continued.

40	Grasselli G, Zangrillo A, Zanella A, et al. Baseline Characteristics and Outcomes of 1591 Patients Infected With SARS-CoV-2 Admitted to ICUs of the Lombardy Region, Italy. <i>JAMA</i> . 2020; 323(16):1574-1581. doi:10.1001/jama.2020.5394	357	IV prognostic/ Case series	Italy
41	Dong Y, Mo X, Hu Y, et al. Epidemiology of COVID-19 Among Children in China. <i>Pediatrics</i> . 2020;145(6):e20200702. doi:10.1542/peds.2020-0702	349	III economic and decision analysis/ pooled analysis	China
42	Lauer SA, Grantz KH, Bi Q, et al. The Incubation Period of Coronavirus Disease 2019 (COVID-19) From Publicly Reported Confirmed Cases: Estimation and Application. <i>Ann Intern Med</i> . 2020;172(9):577-582. doi:10.7326/M20-0504	348	Basic science	United States
43	Qin C, Zhou L, Hu Z, et al. Dysregulation of Immune Response in Patients With Coronavirus 2019 (COVID-19) in Wuhan, China. <i>Clin Infect Dis</i> . 2020; 71(15):762-768. doi:10.1093/cid/ciaa248	347	IV prognostic/ Case series	China
44	Kampf G, Todt D, Pfaender S, Steinmann E. Persistence of coronaviruses on inanimate surfaces and their inactivation with biocidal agents [published correction appears in <i>J Hosp Infect</i> . 2020 Jun 17;]. <i>J Hosp Infect</i> . 2020; 104(3):246-251. doi:10.1016/j.jhin.2020.01.022	342	Basic science/ Review	Germany
45	Rothan HA, Byrareddy SN. The epidemiology and pathogenesis of coronavirus disease (COVID-19) outbreak. <i>J Autoimmun</i> . 2020; 109:102433. doi:10.1016/j.jaut.2020.102433	328	V economic and decision analysis/ Expert opinion	United States
46	Zheng YY, Ma YT, Zhang JY, Xie X. COVID-19 and the cardiovascular system. <i>Nat Rev Cardiol</i> . 2020;17(5):259-260. doi:10.1038/s41569-020-0360-5	327	V therapeutic/ Expert opinion	China
47	Shi S, Qin M, Shen B, et al. Association of Cardiac Injury With Mortality in Hospitalized Patients With COVID-19 in Wuhan, China. <i>JAMA Cardiol</i> . 2020; 5(7):802-810. doi:10.1001/jamacardio.2020.0950	326	III prognostic/ Cohort	China
48	Chen T, Wu D, Chen H, et al. Clinical characteristics of 113 deceased patients with coronavirus disease 2019: retrospective study. <i>BMJ</i> . 2020;368:m1091. doi:10.1136/bmj.m1091	321	IV diagnostic/ Case series	China
49	Wang C, Pan R, Wan X, et al. Immediate Psychological Responses and Associated Factors during the Initial Stage of the 2019 Coronavirus Disease (COVID-19) Epidemic among the General Population in China. <i>Int J Environ Res Public Health</i> . 2020; 17(5):1729. Published 2020 Mar 6. doi:10.3390/ijerph17051729	321	IV prognostic/ Case series	China and Singapore
50	Chung M, Bernheim A, Mei X, et al. CT Imaging Features of 2019 Novel Coronavirus (2019-nCoV). <i>Radiology</i> . 2020; 295(1):202-207. doi:10.1148/radiol.2020200230	311	IV diagnostic/ Case series	China and United States
51	Chan JF, Kok KH, Zhu Z, et al. Genomic characterization of the 2019 novel human-pathogenic coronavirus isolated from a patient with atypical pneumonia after visiting Wuhan. <i>Emerg Microbes Infect</i> . 2020; 9(1):221-236. doi:10.1080/22221751.2020.1719902	305	Basic science	China
52	Guo YR, Cao QD, Hong ZS, et al. The origin, transmission and clinical therapies on coronavirus disease 2019 (COVID-19) outbreak - an update on the status. <i>Mil Med Res</i> . 2020;7(1):11. Published 2020 Mar 13. doi:10.1186/s40779-020-00240-0	297	V diagnostic/ Expert opinion	China and Singapore

Table 1 Continued.

53	Chen Y, Liu Q, Guo D. Emerging coronaviruses: Genome structure, replication, and pathogenesis. <i>J Med Virol.</i> 2020; 92(4):418-423. doi:10.1002/jmv.25681	294	V diagnostic/ Expert opinion	China
54	Guo T, Fan Y, Chen M, et al. Cardiovascular Implications of Fatal Outcomes of Patients With Coronavirus Disease 2019 (COVID-19). <i>JAMA Cardiol.</i> 2020;5(7):1-8. doi:10.1001/jamacardio.2020.1017	294	IV therapeutic/ Case series	China
55	Vaduganathan M, Vardeny O, Michel T, McMurray JJV, Pfeffer MA, Solomon SD. Renin-Angiotensin-Aldosterone System Inhibitors in Patients with Covid-19. <i>N Engl J Med.</i> 2020;382(17):1653-1659. doi:10.1056/NEJMSr2005760	291	V therapeutic/ Expert opinion	United States
56	Shen C, Wang Z, Zhao F, et al. Treatment of 5 Critically Ill Patients With COVID-19 With Convalescent Plasma. <i>JAMA.</i> 2020;323(16):1582-1589. doi:10.1001/jama.2020.4783	287	IV therapeutic/ Case series	China
57	Jin YH, Cai L, Cheng ZS, et al. A rapid advice guideline for the diagnosis and treatment of 2019 novel coronavirus (2019-nCoV) infected pneumonia (standard version). <i>Mil Med Res.</i> 2020;7(1):4. Published 2020 Feb 6. doi:10.1186/s40779-020-0233-6	287	V therapeutic and diagnostic/ Expert opinion	China
58	Emanuel EJ, Persad G, Upshur R, et al. Fair Allocation of Scarce Medical Resources in the Time of Covid-19. <i>N Engl J Med.</i> 2020;382(21):2049-2055. doi:10.1056/NEJMs2005114	286	V economic and decision analysis / expert opinion	United States
59	Grein J, Ohmagari N, Shin D, et al. Compassionate Use of Remdesivir for Patients with Severe Covid-19. <i>N Engl J Med.</i> 2020;382(24):2327-2336. doi:10.1056/NEJMoa2007016	283	III therapeutic/ Cohort	United States
60	Yan R, Zhang Y, Li Y, Xia L, Guo Y, Zhou Q. Structural basis for the recognition of SARS-CoV-2 by full-length human ACE2. <i>Science.</i> 2020;367(6485):1444-1448. doi:10.1126/science.abb2762	282	Basic science	China
61	Xu X, Chen P, Wang J, et al. Evolution of the novel coronavirus from the ongoing Wuhan outbreak and modeling of its spike protein for risk of human transmission. <i>Sci China Life Sci.</i> 2020;63(3):457-460. doi:10.1007/s11427-020-1637-5	281	Basic science	China
62	Chen G, Wu D, Guo W, et al. Clinical and immunological features of severe and moderate coronavirus disease 2019. <i>J Clin Invest.</i> 2020;130(5):2620-2629. doi:10.1172/JCI137244	279	IV therapeutic/ Case series	China
63	Tang N, Bai H, Chen X, Gong J, Li D, Sun Z. Anticoagulant treatment is associated with decreased mortality in severe coronavirus disease 2019 patients with coagulopathy. <i>J Thromb Haemost.</i> 2020;18(5):1094-1099. doi:10.1111/jth.14817	279	IV therapeutic/ Case series	China
64	Li YC, Bai WZ, Hashikawa T. The neuroinvasive potential of SARS-CoV2 may play a role in the respiratory failure of COVID-19 patients. <i>J Med Virol.</i> 2020;92(6):552-555. doi:10.1002/jmv.25728	278	V therapeutic/ Review	China and Japan
65	Varga Z, Flammer AJ, Steiger P, et al. Endothelial cell infection and endotheliitis in COVID-19. <i>Lancet.</i> 2020;395(10234):1417-1418. doi:10.1016/S0140-6736(20)30937-5	277	IV therapeutic/ Case series	Switzerland
66	Sohrabi C, Alsafi Z, O'Neill N, et al. World Health Organization declares global emergency: A review of the 2019 novel coronavirus (COVID-19). <i>Int J Surg.</i> 2020;76:71-76. doi:10.1016/j.ijsu.2020.02.03	276	V therapeutic/ Review	United Kingdom

Table 1 Continued.

67	Lai J, Ma S, Wang Y, et al. Factors Associated With Mental Health Outcomes Among Health Care Workers Exposed to Coronavirus Disease 2019. <i>JAMA Netw Open</i> . 2020;3(3):e203976. doi:10.1001/jamanetworkopen.2020.3976	273	III therapeutic/ cross sectional	China
68	Fang Y, Zhang H, Xie J, et al. Sensitivity of Chest CT for COVID-19: Comparison to RT-PCR. <i>Radiology</i> . 2020;296(2):E115-E117. doi:10.1148/radiol.2020200432	270	III diagnostic/ Case control	China
69	Yang J, Zheng Y, Gou X, et al. Prevalence of comorbidities and its effects in patients infected with SARS-CoV-2: a systematic review and meta-analysis. <i>Int J Infect Dis</i> . 2020;94:91-95. doi:10.1016/j.ijid.2020.03.017	265	II therapeutic/ systematic review and meta-analysis	China
70	Zhang W, Du RH, Li B, et al. Molecular and serological investigation of 2019-nCoV infected patients: implication of multiple shedding routes. <i>Emerg Microbes Infect</i> . 2020;9(1):386-389. Published 2020 Feb 17. doi:10.1080/22221751.2020.1729071	264	Basic science	China
71	Liu Y, Gayle AA, Wilder-Smith A, Rocklöv J. The reproductive number of COVID-19 is higher compared to SARS coronavirus. <i>J Travel Med</i> . 2020;27(2):taaa021. doi:10.1093/jtm/taaa021	262	Basic science	China and Sweden
72	To KK, Tsang OT, Leung WS, et al. Temporal profiles of viral load in posterior oropharyngeal saliva samples and serum antibody responses during infection by SARS-CoV-2: an observational cohort study. <i>Lancet Infect Dis</i> . 2020;20(5):565-574. doi:10.1016/S1473-3099(20)30196-1	251	III diagnostic/ Cohort	China
73	Bhatraju PK, Ghassemieh BJ, Nichols M, et al. Covid-19 in Critically Ill Patients in the Seattle Region - Case Series. <i>N Engl J Med</i> . 2020;382(21):2012-2022. doi:10.1056/NEJMoa2004500	249	IV therapeutic/ Case series	United States
74	Grasselli G, Pesenti A, Cecconi M. Critical Care Utilization for the COVID-19 Outbreak in Lombardy, Italy: Early Experience and Forecast During an Emergency Response. <i>JAMA</i> . 2020;10.1001/jama.2020.4031. doi:10.1001/jama.2020.4031	247	V therapeutic/ Expert opinion	Italy
75	Arentz M, Yim E, Klaff L, et al. Characteristics and Outcomes of 21 Critically Ill Patients With COVID-19 in Washington State. <i>JAMA</i> . 2020;323(16):1612-1614. doi:10.1001/jama.2020.4326	244	IV prognostic/ Case series	United States
76	Hollander JE, Carr BG. Virtually Perfect? Telemedicine for Covid-19. <i>N Engl J Med</i> . 2020;382(18):1679-1681. doi:10.1056/NEJMp2003539	243	V economic and decision analysis / expert opinion	United States
77	Zhang Y, Xiao M, Zhang S, et al. Coagulopathy and Antiphospholipid Antibodies in Patients with Covid-19. <i>N Engl J Med</i> . 2020;382(17):e38. doi:10.1056/NEJMc2007575	239	IV therapeutic/ Case report	China
78	Pan F, Ye T, Sun P, et al. Time Course of Lung Changes at Chest CT during Recovery from Coronavirus Disease 2019 (COVID-19). <i>Radiology</i> . 2020;295(3):715-721. doi:10.1148/radiol.2020200370	238	IV therapeutic/ Case series	China and United Kingdom
79	Bernheim A, Mei X, Huang M, et al. Chest CT Findings in Coronavirus Disease-19 (COVID-19): Relationship to Duration of Infection. <i>Radiology</i> . 2020;295(3):200463. doi:10.1148/radiol.2020200463	235	IV diagnostic/ Case series	United States and China

Table 1 Continued.

80	Liu Y, Yang Y, Zhang C, et al. Clinical and biochemical indexes from 2019-nCoV infected patients linked to viral loads and lung injury. <i>Sci China Life Sci.</i> 2020;63(3):364-374. doi:10.1007/s11427-020-1643-8	234	IV therapeutic/ Case series	China
81	Guan WJ, Liang WH, Zhao Y, et al. Comorbidity and its impact on 1590 patients with COVID-19 in China: a nationwide analysis. <i>Eur Respir J.</i> 2020;55(5):2000547. Published 2020 May 14. doi:10.1183/13993003.00547-2020	233	IV prognostic/ Case series	China
82	Klok FA, Kruip MJHA, van der Meer NJM, et al. Incidence of thrombotic complications in critically ill ICU patients with COVID-19. <i>Thromb Res.</i> 2020;191:145-147. doi:10.1016/j.thromres.2020.04.013	231	IV prognostic/ Case series	Netherlands
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Table 1 Continued.

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