A BIBLIOMETRIC ANALYSIS OF PNEUMONIA ARTICLES (2016-2020)

Pnömoni makalelerinin bibliyometrik analizi (2016-2020)

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Abstract

Lower respiratory infections are one of the leading factors of death in the world. During the COVID-19 pandemic, pneumonia comes to the fore from respiratory diseases. We aim to close the information gap regarding the characteristics of pneumonia articles published between the years 2016 and 2020 and indexed in the Web of Science (WoS) database by bibliometric analysis. We collected the data for this study from the articles published in the WoS, from 2016 to 2020 by using "pneumonia" as the keyword. Articles were found among the "Science Citation Index Expanded" of the WoS advanced search engine and 24,896 articles that met the criteria were included. MS Excel, Python, MS Power BI, and Flourish website were used for data extraction and visualization.This bibliometric analysis showed that while the number of articles published regarding pneumonia was more stable between 2016 and 2019 it has increased dramatically in 2020. It was seen that the countries that caused this significant increase were the United States of America and China. More than one-fifth of all articles were written in cross-country collaboration. The magnitude of the impact of COVID-19 on pneumonia research has been numerically demonstrated by this bibliometric analysis.

Keywords: Pneumonia, bibliometric Analysis, COVID-19, SARS-CoV-2.

Özet

Alt solunum yolu enfeksiyonları dünyadaki başlıca ölüm sebeplerinden biridir. COVID-19 pandemisinde pnömoni solunum yolu hastalıkları arasında öne çıkmıştır. Bu çalışmada COVID-19 pandemisini de kapsayan 2016-2020 yılları arasındaki dönemde, Web of Science (WoS) veri tabanında yer alan, pnömoni makalelerinin özelliklerinin incelenmesi amaçlandı. WoS veritabanında 2016-2020 yılları arasındaki literatür "pnömoni" anahtar kelimesi kullanılarak taranıp, makaleler "Science Citation Index Expanded" ile sınırlandırılarak, kriterleri karşılayan 24.896 makaleye ulaşıldı. İndirilen veriler, Python programı vasıtasıyla tasnif edildi. Verilerin görselleştirilmesinde MS Excel, Python, MS Power BI programları ve Flourish web sitesi kullanıldı. Bu çalışmayla beraber pnömoni hakkında yapılan çalışma sayısı 2016-2019 yılları arasında stabil bir şekilde seyrederken bu sayının 2020 yılında belirgin oranda arttığı gözlemlendi. Bu orandaki belirgin artışa neden olan ülkelerin de ABD ve Çin olduğu görüldü. Tüm makalelerin beşte birinden fazlası ülkeler arası iş birliğiyle yazıldı. Bu bibliyometrik analizle COVID-19'un pnömoni araştırmaları üzerindeki etkisinin büyüklüğü sayısal olarak gösterilmiş oldu.

Anahtar kelimeler: Pnömoni, bibliyometrik analiz, COVID-19, SARS-CoV-2.

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Introduction

Pneumonia is a disease of lower respiratory tract characterized by infection of the lung parenchyma and one of the leading causes of global morbidity and mortality. It can be caused by inhalation of a pathogenic microorganism, including bacteria, fungi, and viruses, in the community and hospital environment or by direct aspiration of them (1). The global mortality rate of pneumonia is increasing due to the aging of the populations and the changing virulence of the causative microorganisms. The resistance of microorganisms to drugs and the emergence of new pathogens make the treatment of pneumonia difficult (2).

According to the Institute for Health Metrics and Evaluation (IHME), the prevalence of lower respiratory infections ranked as fifth leading factor of death in the world between 2015 and 2019 (3). Also, World Health Organization (WHO) indicated lower respiratory infections, including pneumonia, among the deadliest group of infectious diseases (4). During the COVID-19 pandemic pneumonia came to the fore from respiratory diseases (5). Several studies have been conducted to understand the etiopathogenesis and explore the underlying mechanisms of pneumonia that occurred during the terminal stage of severe COVID-19 cases. Pneumonia was among the major topics of several articles published following the start of the pandemic.

Bibliometrics, meaning the application of statistical methods to the study of bibliographical data is a useful tool to understand the changing importance and interests to specific health issues. Despite the increasing importance of pneumonia, only two bibliometric studies have been conducted on it. One of these studies presented the bibliometric analysis results of the studies published between 1997 and 2013 and limited to the United Kingdom as a geographical region (6). The other included the bibliometric analysis results of the published studies during 2001-2015 (7). No article was published on bibliometric analysis of pneumonia research recently.

Our aim is to close the information gap regarding the characteristics of pneumonia articles published in the years 2016-2020 and indexed in the Web of Science (WoS) database by bibliometric analysis.

Material and Method

We collected the data of this study from the articles published in the WoS, during 2016-2020. Since the data used were open data, no ethical approval is required.

Key words " [(¬TS = pneumonia) AND (Language = English) AND (Document type = Article)] " are used for search from the "Science Citation Index Expanded" of the WoS advanced search engine and 25,654 articles were found including all the titles of organizations, editors, research areas, conferences, and book series. We downloaded all articles as Microsoft Excel (MS Excel) files.

These MS Excel files were manually merged into one MS Excel file. The number of articles included in the study was 24,896 following the exclusion of 721 articles without any publication date and 37 preprint articles (Figure 1).
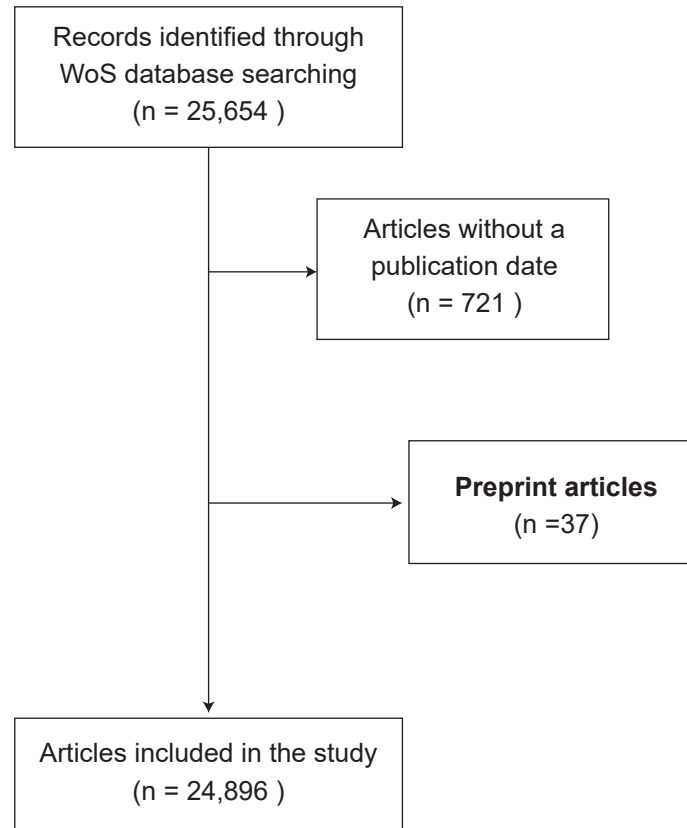
Figure 1: Flow diagram of literature filtering included in the study.

Within this bibliometric analysis the following criteria were used; source country of the publication, internationally collaborative publications, number of articles, number of citations to articles, journals, number of citations to journals, WoS categories, and keywords. Before analysis, the needed process of some extracted data was performed in the object-oriented programming language Phyton.

All the buried country information as plain text format in address columns and keywords were filtered. By using of "pandas", "re" and "itertools" modules in a python code, country names were filtered to an additional column, and date information was converted to the proper format. Within the same code, the count of contributed countries to the articles and the collaboration rates were summarized. Since an article can have multiple keywords and categories, these data had to be converted to a list format. By using of "pandas", "numpy" and "itertools" modules in a python code, the keywords and categories were converted to list format and then summarized within the same code. It was used the "matplotlib", "PIL", "os" and "wordcloud" modules to visualize the keywords as a word cloud graph. The publication dates were classified as quarters in Phyton's Pandas Module. All the converted data were exported to MS Excel for further analysis and visualization.

The Flourish Studio Website, one of the interfaces for data visualization, was used for presenting collaboration rates of countries by a chord diagram. To visualize as a world map of the density of the countries published most of the articles Microsoft Power BI was used. Data had also shown as frequency and percent.

Results

Table 1 lists the top 20 countries that contributed to the total 24,896 articles published in the field of pneumonia between 2016 and 2020. The USA, with 7,664, contributed to 30.78% of all articles and ranked first in the table. China is in the second place, with 4,688 articles contributing to 18.8% of the total. Japan followed them by contributing to 8.7% of the total with 2,165 articles.

The order of the countries is almost similar during the years 2016, 2017, 2018 and 2019 and USA is the leading country. However, China has the highest contribution in the year 2020 and 30.5% of the total articles are published from China. Italy, which ranks sixth in the total number of articles with a rate of 4.9%, ranked third with 7.5% in 2020. Density map and the distribution of the articles by countries are presented in Figure 2.

Table 1: Top 20 countries with the highest number of publications by total number of articles between 2016-2020.

Country*	2016		2017		2018		2019		2020		Total**	
	n	%	n	%	n	%	n	%	n	%	n	%
USA	1,517	35.20%	1,522	33.97%	1,412	31.72%	1,462	32.10%	1,751	24.66%	1,751	24.66%
China	533	12.37%	565	12.61%	628	14.11%	795	17.45%	2,167	30.52%	2,167	30.52%
Japan	397	9.21%	425	9.49%	438	9.84%	444	9.75%	461	6.49%	461	6.49%
England	273	6.33%	344	7.68%	279	6.27%	279	6.13%	379	5.34%	379	5.34%
Germany	248	5.75%	234	5.22%	248	5.57%	224	4.92%	324	4.56%	324	4.56%
Italy	175	4.06%	178	3.97%	171	3.84%	177	3.89%	530	7.46%	530	7.46%
France	209	4.85%	238	5.31%	225	5.06%	208	4.57%	323	4.55%	323	4.55%
Spain	158	3.67%	191	4.26%	193	4.34%	186	4.08%	287	4.04%	287	4.04%
Canada	190	4.41%	186	4.15%	187	4.20%	214	4.70%	223	3.14%	223	3.14%
South Korea	161	3.74%	146	3.26%	182	4.09%	200	4.39%	260	3.66%	260	3.66%
Australia	147	3.41%	159	3.55%	166	3.73%	196	4.30%	236	3.32%	236	3.32%
Netherlands	134	3.11%	173	3.86%	154	3.46%	146	3.21%	190	2.68%	190	2.68%
India	109	2.53%	145	3.24%	133	2.99%	152	3.34%	226	3.18%	226	3.18%
Brazil	121	2.81%	144	3.21%	107	2.40%	132	2.90%	179	2.52%	179	2.52%
Taiwan	123	2.85%	131	2.92%	104	2.34%	155	3.40%	158	2.23%	158	2.23%
Switzerland	113	2.62%	137	3.06%	135	3.03%	146	3.21%	140	1.97%	140	1.97%
Turkey	116	2.69%	86	1.92%	95	2.13%	92	2.02%	160	2.25%	160	2.25%
Sweden	67	1.55%	85	1.90%	73	1.64%	77	1.69%	93	1.31%	93	1.31%
Belgium	65	1.51%	69	1.54%	84	1.89%	79	1.73%	94	1.32%	94	1.32%
Iran	38	0.88%	53	1.18%	64	1.44%	73	1.60%	124	1.75%	124	1.75%

n: Document Quantity

* Countries are listed based on their total number of articles

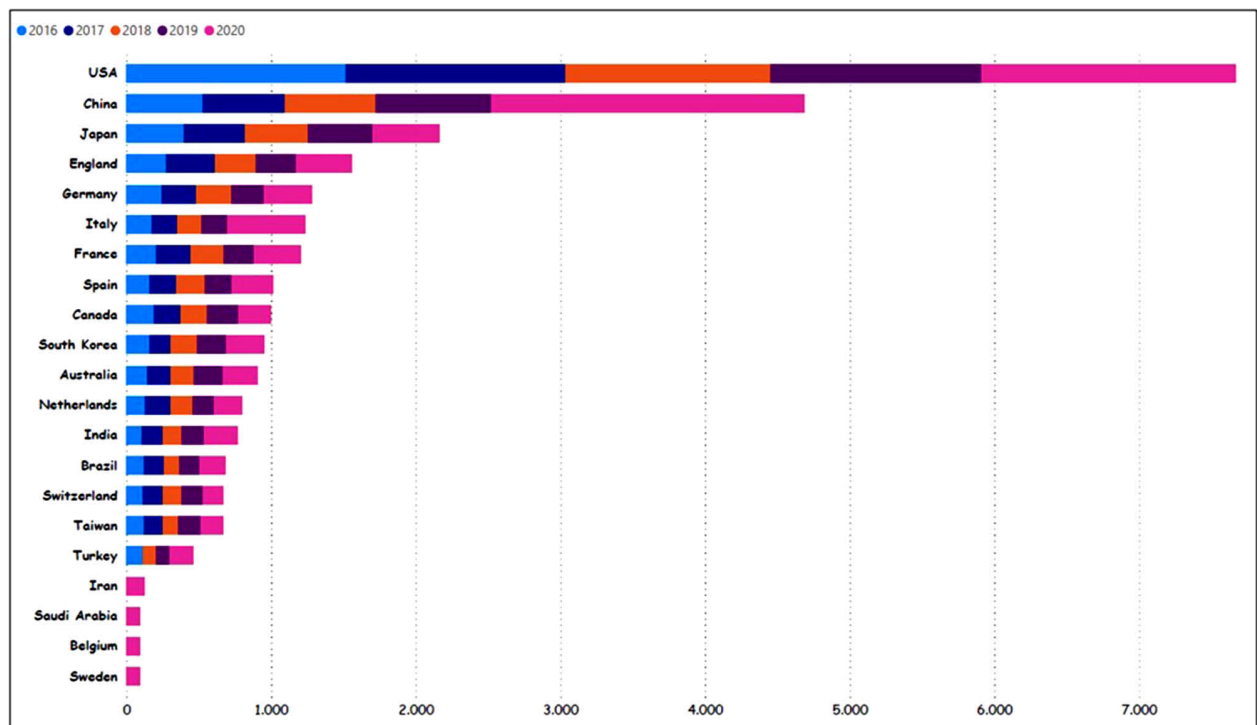*** Some articles are produced by more than one country*

Figure 1: Distribution of articles by countries (2016-2020).

In Table 2, the international collaboration rates of the top 20 countries are compared. In total 12,017 of 28,925 articles (41.54%) were collaborative publications. As it is seen from the Table, England, Belgium and Sweden have the highest collaboration rates (80.12%, 79.03% and 75.70% respectively). Collaborations of 20 countries are visualized as a network diagram in Figure 3.

Table 2: International collaboration rates of the top 20 publishing countries (n=24,896).

| Rank	Country	Articles	Single-country Articles		Multi-country Articles (Collaborative studies)	
			n	%	n	%
1	USA	7,664	4,678	61.04	2,986	38.96
2	China	4,688	3,784	80.72	904	19.28
3	Japan	2,165	1,808	83.51	357	16.49
4	England	1,554	309	19.88	1,245	80.12
5	Germany	1,278	516	40.38	762	59.62
6	Italy	1,231	673	54.67	558	45.33
7	France	1,203	563	46.80	640	53.20
8	Spain	1,015	464	45.71	551	54.29
9	Canada	1,000	326	32.60	674	67.40
10	South Korea	949	770	81.14	179	18.86
11	Australia	904	296	32.74	608	67.26
12	Netherlands	797	274	34.38	523	65.62
13	India	765	494	64.58	271	35.42
14	Brazil	683	388	56.81	295	43.19
15	Switzerland	671	169	25.19	502	74.81
16	Taiwan	671	529	78.84	142	21.16
17	Turkey	549	435	79.23	114	20.77
18	Sweden	395	96	24.30	299	75.70
19	Belgium	391	82	20.97	309	79.03
20	Iran	352	254	72.16	98	27.84
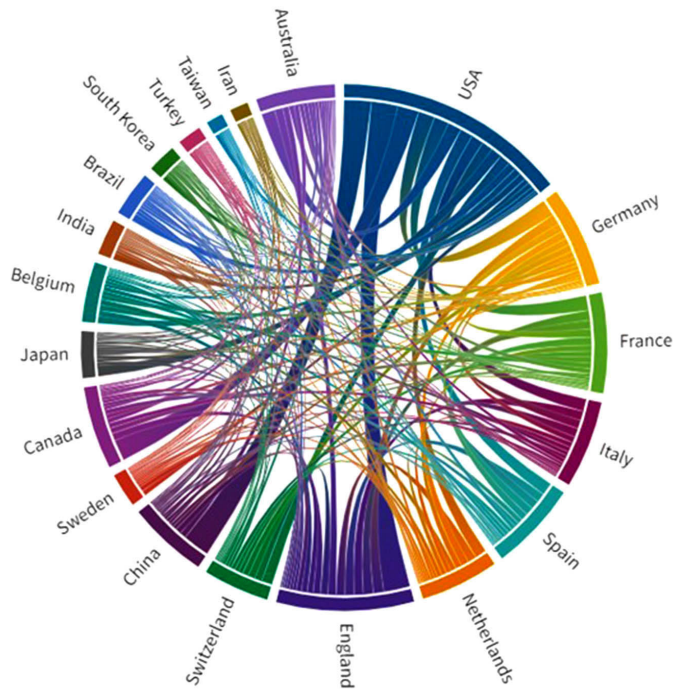
Figure 3: The collaboration network diagram for the top 20 publishing countries.

The quarterly distribution of the articles and citations is presented in Figure 4. As it is seen, articles are mostly published in the second quarter of each year. Second quarter of the 2020 is the period with highest number of articles published (n=2,097 articles). Articles published in that quarter received 44,030 citations in total, and the citation rate per article is 21. The third quarter of 2020 has the second highest number of publications with 2,085 articles.

These articles received a total of 18,751 citations and citation rate was 8.99 per article. Although the number of published articles was lowest (n=1,253) during the first quarter of the 2020 than the other quarters, these articles have the highest citation rate per article which is 45.93. The distribution of the published articles and citations regarding pneumonia are parallel to the progress of the COVID-19 pandemic.
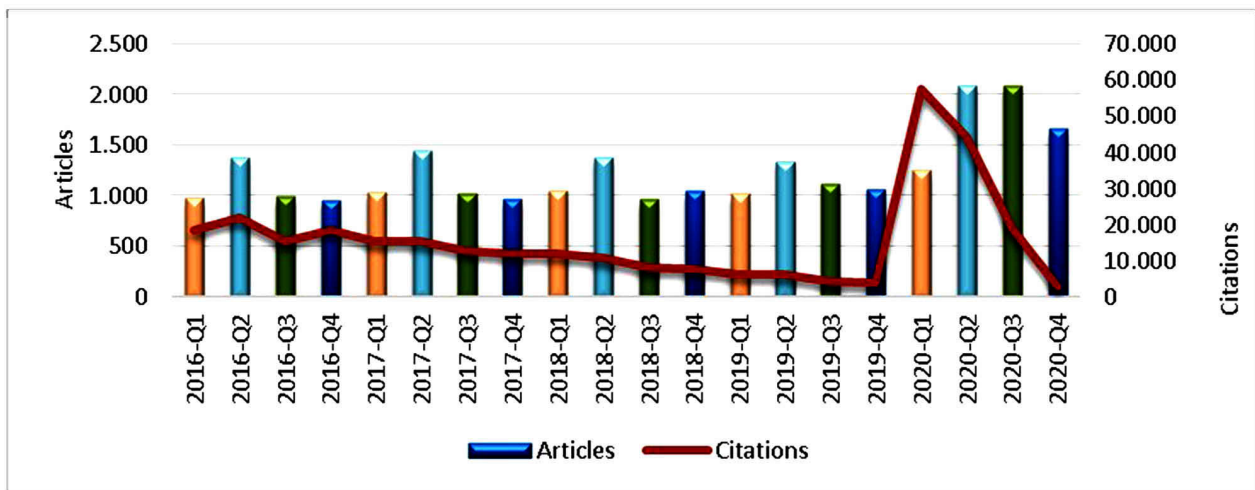

Figure 4: Distribution of articles and citations by quarters (2016-2020).

The articles were published in 2,998 different scientific journals. In Figure 5, the number of articles and the number of citations of the top 20 journals are visualized and graphed. The top 20 journals included 16.82% of the total number of articles. The top 20 articles received 12.91% of a total of 311,352 citations. The average number of citations per article is 12.51. PLOS One ranked first among journals with the highest number of publications with 753 (3.2% of the total). This journal has 7.61 citations per article. It is followed by Medicine with 360 articles and 4.16 citations per article, and Scientific Reports with 352 articles and 8.09 citations per article. Although the journal Clinical Infectious Disease published less articles (n=235), citation per article is 32.67 and highest among the 20 journals.
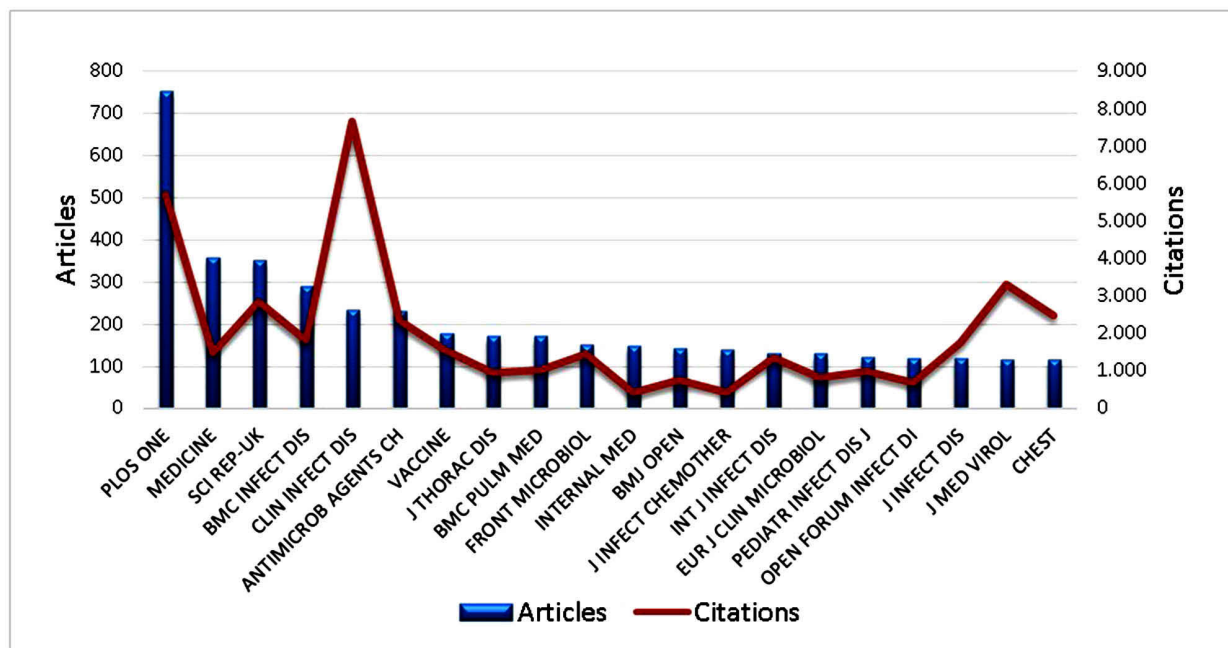

Figure 5: Distribution of articles and citations by journals .

Table 3 presents the 20 most cited journals in the field of pneumonia. These journals received 40.87% of the citations received by all scanned journals (n=2,998). The average number of citations per article received by these journals is 50.35. Lancet ranked first with 978.27 citations per article, and it is followed by the New England Journal of Medicine with 519.51 and Nature with 391.35 citations per article. Although PLOS One is the journal with the highest number of articles (n=753) the number of citations per article is 7.61.

Table 3: Top 20 most cited journals and publications in the field of pneumonia between 2016-2020.

Rank	Journal Title	Citations	%	Articles	%	Citations per Article
1	The Lancet	32,283	10.37	33	0.13	978.27
2	The New England Journal of Medicine	20,261	6.51	39	0.16	519.51
3	JAMA-Journal of The American Medical Association	10,726	3.44	35	0.14	306.46
4	Clinical Infectious Diseases	7,678	2.47	235	0.94	32.67
5	Nature	6,653	2.14	17	0.07	391.35
6	Lancet Oncology	5,751	1.85	45	0.18	127.80
7	PLOS One	5,728	1.84	753	3.02	7.61
8	Lancet Respiratory Medicine	4,825	1.55	49	0.20	98.47
9	Lancet Infectious Diseases	4,492	1.44	38	0.15	118.21
10	American Journal of Respiratory And Critical Care	4,240	1.36	89	0.36	47.64
11	Journal of Medical Virology	3,318	1.07	116	0.47	28.60
12	Scientific Reports	2,846	0.91	352	1.41	8.09
13	European Respiratory Journal	2,545	0.82	86	0.35	29.59
14	Chest	2,502	0.80	116	0.47	21.57
15	International Journal of Antimicrobial Agents	2,469	0.79	69	0.28	35.78
16	Antimicrobial Agents and Chemotherapy	2,347	0.75	233	0.94	10.07
17	Journal of Infection	2,307	0.74	81	0.33	28.48
18	Journal ofThrombosis and Haemostasis	2,232	0.72	14	0.06	159.43
19	Critical Care Medicine	2,062	0.66	109	0.44	18.92
20	Cell	1,980	0.64	18	0.07	110.00
	Other Journals	184,107	59.13	22,369	89.83	8.23
	TOTAL	311,352	100.00	24,896	100	12.51

Table 4 lists the 10 most cited articles in the last five years. Nine of the top 10 articles were written in 2020, and all of them were about the Covid-19. Five of these 10 articles were published in The Lancet Journal, three in the New England Journal of Medicine, and one in Nature and JAMA-Journal of the American Medical Association. The most cited article was titled "Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China" published in The Lancet Journal and the total number of citations was 9,584. This number corresponds to 3.08% of the citations received in the last five years. Among the articles published from 2016 to 2019, only "Global, regional, and national life expectancy, all-cause mortality, and cause-specific mortality for 249 causes of death, 1980-2015: a systematic analysis for the Global Burden of Disease Study 2015" article was included in this list.

Table 4: Top 10 most cited pneumonia articles published between 2016-2020.

Rank	Article Title	Journal	Publication Year	Citations	Citations (%)
1	Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China	The Lancet	2020	9,584	3.08
2	Clinical Characteristics of Coronavirus Disease 2019 in China	The New England Journal of Medicine	2020	5,859	1.88
3	Clinical Characteristics of 138 Hospitalized Patients With 2019 Novel Coronavirus-Infected Pneumonia in Wuhan, China	JAMA	2020	5,427	1.74
4	A Novel Coronavirus from Patients with Pneumonia in China, 2019	The New England Journal of Medicine	2020	5,119	1.64
5	Clinical course and risk factors for mortality of adult inpatients with COVID-19 in Wuhan, China: a retrospective cohort study	The Lancet	2020	4,977	1.60
6	Epidemiological and clinical characteristics of 99 cases of 2019 novel coronavirus pneumonia in Wuhan, China: a descriptive study	The Lancet	2020	4,882	1.57
7	A pneumonia outbreak associated with a new coronavirus of probable bat origin	Nature	2020	3,967	1.27
8	Early Transmission Dynamics in Wuhan, China, of Novel Coronavirus-Infected Pneumonia	The New England Journal of Medicine	2020	3,244	1.04
9	Global, regional, and national life expectancy, all-cause mortality, and cause-specific mortality for 249 causes of death, 1980-2015: a systematic analysis for the Global Burden of Disease Study 2015	The Lancet	2016	2,657	0.85
10	Genomic characterization and epidemiology of 2019 novel coronavirus: implications for virus origins and receptor binding	The Lancet	2020	2,595	0.83

24,896 pneumonia studies were published in 177 different subject categories in the Web of Science database. These categories were used 38,375 times in 24,896 articles. The first 20 categories in the table made up 27,526 (71.74%) of them.

It can be seen in Table 5 that the top five subject categories are "infectious diseases" (3,479 articles), "microbiology" (2,691 articles), "immunology" (2,365 articles), "medicine, general & internal" (2,267 articles), and "respiratory system" (2,234 articles).

Table 5: Top 20 Web of Science categories in pneumonia related publications in 2016-2020.

Rank	WoS Category	n*	%
1	Infectious Diseases	3,479	9.07
2	Microbiology	2,691	7.01
3	Immunology	2,365	6.16
4	Medicine, General & Internal	2,267	5.91
5	Respiratory System	2,234	5.82
6	Pharmacology & Pharmacy	1,792	4.67
7	Surgery	1,462	3.81
8	Multidisciplinary Sciences	1,326	3.46
9	Medicine, Research & Experimental	1,320	3.44
10	Public, Environmental & Occupational Health	1,221	3.18
11	Pediatrics	1,176	3.06
12	Critical Care Medicine	1,108	2.89
13	Veterinary Sciences	946	2.47
14	Oncology	802	2.09
15	Cardiac & Cardiovascular Systems	646	1.68
16	Clinical Neurology	594	1.55
17	Biochemistry & Molecular Biology	551	1.44
18	Radiology, Nuclear Medicine & Medical Imaging	543	1.41
19	Virology	532	1.39
20	Cell Biology	471	1.23

An article can have more than one category.

Table 6 contains the first 20 keywords provided and indexed by the author in pneumonia studies published between 2016-2020. The most indexed keyword among pneumonia studies in the last five years was the word 'Covid-19' used in 1,403 articles. In second place was "Mortality" used in 843 and "SARS-CoV-2" used in 677 articles in third place. Among the first 20 keywords, there were three keywords related to the Covid-19 pandemic that emerged at the end of 2019 ('Covid-19', 1,403 times; 'SARS-CoV-2', 677 times; 'Coronavirus', 328 times). These three keywords were used only in articles published in 2020.

Table 6: The first 20 keywords provided and indexed by the author in Pneumonia studies published between 2016-2020.

Rank	Keyword	2016	2017	2018	2019	2020	Total*
1	COVID-19	0	0	0	0	1,403	1,403
2	Mortality	146	130	164	170	233	843
3	SARS-CoV-2	0	0	0	0	677	677
4	Community-acquired-pneumonia	83	124	94	114	131	546
5	Children	80	104	96	92	153	525
6	Streptococcus-pneumoniae	71	94	100	92	89	446
7	Ventilator-associated-pneumonia	85	87	92	95	68	427
8	Infection	77	74	82	66	123	422
9	Sepsis	72	89	79	73	87	400
10	Epidemiology	60	47	74	69	128	378
11	Risk-factors	57	51	74	60	99	341
12	Coronavirus	0	0	0	0	328	328
13	Interstitial-lung-disease	47	59	55	70	82	313
14	Influenza	49	53	62	66	79	309
15	Prognosis	45	35	45	52	102	279
16	Pseudomonas-aeruginosa	38	60	60	62	59	279
17	Inflammation	40	47	54	45	85	271
18	Dysphagia	43	45	46	73	63	270
19	Idiopathic-pulmonary-fibrosis	42	42	55	47	45	231
20	Staphylococcus-aureus	27	58	51	60	33	229

An article can have more than one category.

Discussion

This bibliometric analysis showed that while the number of articles published regarding pneumonia was more stable between 2016 and 2019 it has increased dramatically in 2020. The most important reason for this increase should be the COVID-19 pandemic that emerged in the last weeks of 2019.

Among the increase in pneumonia publications during 2020 China has the leading role with 2167 published articles in 2020. Its reason may be that the starting point of the pandemic is China (8). The USA, which kept its place as the first place with a significant difference in the previous period, has also increased the number of publications in 2020, however, because the number of studies in the whole world increased substantially it fell to second place. Previously, Italy ranked tenth in the number of articles, but in 2020, it doubled the number of publications and rose to third place, showing the highest rise among European countries. One of the reasons for this may be that Italy was the first country to be affected by the pandemic among European countries.

The proportion of collaborative publications between 2016 and 2020 is 23.43% and indicates a significant increase when compared with the previous years (7). The factors affecting this may be the progress of science, the facilitation of communication between countries, the development of technology, and the need for collaboration of countries to cope with the COVID-19 pandemic. Although the USA is the numerical leader in international collaborative publications, England has the highest percentage of collaborated publications. This result may be concluded because of high-level of scientific expertise and research capacity in both countries. However, it may also be concluded as a language bias since our study included articles in English language.

China has increased its pneumonia related publications rapidly in recent years. Although it ranks second in the total number of articles published, it has the second low percentage of collaborative publications. While the collaborative publication rates of European countries are high rates of Asian countries are low. The reason for this may be that European countries have joint scientific institutions under the European Union, so they can collaborate easily. Furthermore, Europe is in a position to interact more easily all over the world geographically.

As it is seen in Table 3, second quarters of each year between 2016 and 2019 have the highest numbers of publications. In 2020 there was a significant increase in the number of articles during second and third quarters. Another important finding is the enormous increase in the number of citations during the first and second quarters of 2020. This is an expected finding since the COVID-19 pandemic had started at the end of 2019 and became a focus of interest during the beginnings of the year 2020.

The journal Plos One has the highest number of published articles on pneumonia, but the journal with the highest citation rate was Clinical Infectious Diseases. According to the number of articles, the first 20 journals achieved a large share among all journals.

As expected, majority of the highly cited articles are published in the year 2020 following the start of the COVID-19 pandemic. The pandemic has guided the scientific community. All these articles were published in high-impact factor journals. The reason for this may be Elsevier has created a specific COVID-19 resource center (9).

The distribution of the top 20 Web of Science categories indicates that pneumonia research is multidisciplinary and associated with many areas of medicine. The fact that pneumonia is one of the deadliest infectious diseases worldwide, it can be community-acquired and hospital-acquired and occurs in all age groups make it interest of several disciplines.

The etiology, symptoms, and complications of pneumonia were used extensively in keywords. Although the keyword "COVID-19" appears only in articles

published in 2020, it has significantly exceeded all keywords in research on pneumonia in the last five years. The use of the keyword "Influenza" also showed an increasing trend between 2016-2020. The similarity of the transmission routes and the clinics of the two diseases may be the reason for the fact that this regular increase became more evident with the COVID-19 pandemic. It is important to note that the keyword "Children" is among the top 20 keywords. Although the incidence of COVID-19 pneumonia is relatively low in children it is known that pneumonia plays a significant role on the global mortality rates among children under-five years. The reason for the keyword "mortality" to come to the fore may be that pneumonia is one of the deadliest infectious diseases in the World (3). At the same time, the increased use of this word in 2020 may be associated with the COVID-19 pandemic.

Our study has some limitations as every study does. Use of one database (WoS) and one language (English) are the major limitations. Among the two other bibliometric studies regarding pneumonia, Ramos-Rincón et al.'s databases included PubMed in addition to WoS (7). Second study by Head et al. has also used one database (Scopus) and limited to the UK regionally (6). Our study and Ramos-Rincón et al.'s study can be concluded more comprehensive than Head et al.'s study since they included all the published studies in the relevant databases (6,7). As in the other two studies, this present study included only English articles from the relevant database because it is the commonly used language in literature. Despite all limitations we conclude that bibliometric analysis is an important tool and should be used to understand the changing patterns and trends of the health problems.

Conclusion

This bibliometric analysis showed that while the number of articles published regarding pneumonia was more stable between 2016 and 2019 it has increased dramatically in 2020. The most important reason for this increase should be the COVID-19 pandemic that emerged in the last weeks of 2019. We observed that China has increased its pneumonia-related publications rapidly in recent years.

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