

Research Article

The Effects of the Covid-19 Pandemic on the Number of Publications in Oncology Journals: A Big Data Analysis

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Abstract

Objectives: In this study, we aimed to analyze the publications of journals in the oncology category in the last four years and to investigate the effects of the Covid-19 pandemic on the number of publications in oncology journals.

Methods: Journals published regularly every year, and with SCImago Journal Rank indicator of at least 0.100, were included in this study. A search strategy based on cancer types was created using MeSH, and the number and characteristics of journals were recorded. Using simple linear regression, the relationship between the change in the number of publications in countries over the years and Covid-19 was investigated.

Results: 310 journals and 247,552 publications were evaluated. In 2020, the increase in the total number of publications was 18% compared to 2019, 19% compared to 2018, and 16% compared to 2017. When publications were ranked according to cancer types, breast cancer was the most common. When this increase is evaluated with simple linear regression model, 21.4% of the increase compared to 2019 could be explained by the number of Covid-19 cases. ($r=0.462, p=0.040$).

Conclusion: There was an increase in the number of publications in the field of oncology in 2020 due to the effects of the Covid-19 pandemic.

Keywords: Big data analysis, covid-19, cancer, publication, sars-cov-2

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To publish a study in a scientific journal after its completion is a long and tiring process. After the study data is collected, there are stages of converting the study into manuscript for publishing. There are stages such as submission, review, revision, editing, production, and publication for the study, which became a Manuscript sometimes after long years of research, to be published in a journal such as The Lancet.^[1] Until 2020, this process was progressing as the standard procedure, and each magazine was publishing a certain targeted number of publications. For example, JAMA Oncology had a similar number of publications per year with 119 Original Investigations in 2019 and

2018, and 112 Original Investigations in 2017.^[2,4]

Coronavirus pandemic started in Wuhan in December 2019.^[5] According to data from the World Health Organization (WHO), approximately 81 million people became infected with SARS-CoV-2 and 1.8 million people died due to Covid-19 in 2020.^[6] Due to the risk of collapse of health systems, "stay at home" orders, travel restrictions, social isolation rules, and finally curfews have been imposed in many countries around the world.^[7,8] The Covid-19 pandemic also had some effects on Oncology. Many scientific meetings and congresses were either canceled or had to be held online.^[9] Both patient examinations and visits of pa-

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tients enrolled in clinical trials began to be made over tele-medicine.^[10] For the studies, data collection, transformation into manuscript, and stages after acceptance by the journal have changed. The changes in the publication numbers of journals, which are an indicator that reflects on all of these processes, are unknown.

In this study, we aimed to analyze the number of the publications and the features of the publications in the journals in the field of oncology in the last four years, and to investigate the effects of covid-19 on the number of publications.

Methods

This big data analysis study was reported and summarized graphically in accordance with PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) (Fig. 1).^[11]

Eligibility and Criteria

367 journals with a SCImago Journal Rank (SJR) indicator of at least 0.100, publishing in the field of oncology according to Scopus® SCIMAGO Journal and Country Rank, were included.^[12] Journals whose publication life ended or did not publish regularly in the last three years were excluded from the study. In conclusion, the data of 310

journals were analyzed. (Appendix 1) Publications with document types of articles, reviews, erratum, editorials, notes, conference papers, and letters to the editors were included.

Search Strategy

All journals were sorted using the SourceIDs and the "OR" string (Appendix 2). In addition, a search strategy was created using Medical Subject Headings (MeSH) in order to categorize the publications according to cancer types (Appendix 3). While categorizing the publications according to cancer types, publications on bone neoplasms and central nervous system neoplasms were excluded from the study because of potential confounding factors and it was thought that search strategy would not give accurate results.

Scopus electronic database was scanned in two stages on 27th Jan 2021. In the first stage, the entire journal list was scanned, and the total number of publications was obtained. Subsequently, Document Type, Affiliation, Country data were obtained by limiting by years. The results were downloaded directly as a .csv file.

In the second stage, the query string "(Appendix 2) AND (Appendix 3)" was inputted to the Scopus advanced search box in order to search the number of publications according to cancer types in all journals. The total number of publications per year for each cancer type was obtained.

Data Extraction and Analysis

All results obtained were downloaded in .csv format and combined using Microsoft Excel. Covid-related data was received from <https://www.worldometers.info/coronavirus/>. The distribution of data was analyzed with the Kolmogorov Smirnov test. Normal distribution was provided with log-transformation for non-normal distribution and skewed distribution data. The relationship between the change in the number of publications by country and the Covid-19 data was evaluated with Pearson Correlation analysis. A predictive model using simple linear regression was produced to investigate the effect of Covid on publication numbers. $P < 0.05$ was considered statistically significant. Statistical analyses were performed using the SPSS Statistics software version 24 (SPSS Inc., Chicago, Ill).

Bias Risk of Data Obtained

Although Scopus has advanced search technologies, the MeSH used in literature searches may not fully reflect the number of publications according to cancer types and Covid-19 publication numbers. This risk is minimized since the same search strategy is used for all years and our primary goal is to compare the number of publications by years.

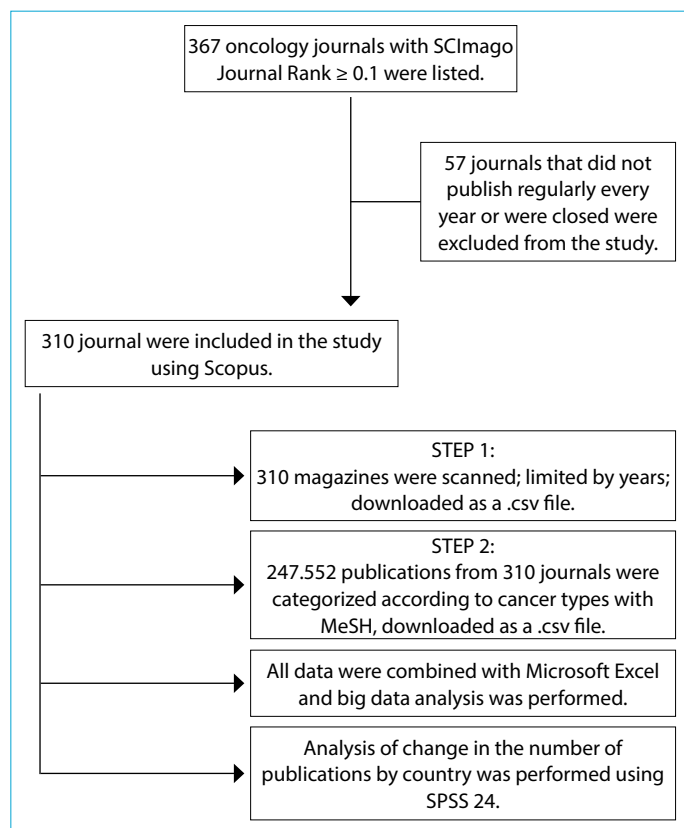


Figure 1. Data collection process of the study.

Since the same publication may be about two types of cancer, the sum of numbers of publications of all cancer types is expected to be higher than the total number of publications.

Results

Change in Total Number of Publications and Document Types by Years

When the publication numbers of 310 journals were examined, there were 70.483 publications in 2020, 59.302 publications in 2019, 58.717 publications in 2018, and 59.939 publications in 2017. In the total number of 2020 publications, the increase was 18.9% compared to 2019, 20.0% compared to 2018, and 17.6% compared to 2017. The number of articles published in 2020 increased, 17.9% compared to 2019, 17.6% compared to 2018, and 14.6%

compared to 2017. Similar increase existed in numbers of reviews, letters and notes published in 2020 (Table 1).

Number of Publications According to Cancer Types and Percentage Change by Years

When the publications were categorized, although studies on lung cancer were the most common in 2019 (number of publications (NoP) = 9.641), studies on breast cancer (NoP = 11.270) rose to the first place in 2020. Number of publications on breast cancer increased by 20.8% compared to 2019, 19.0% compared to 2018, and 21.5% compared to 2017. In terms of the number of publications in 2020, lung cancer (NoP = 10.923) ranked second and gastrointestinal cancers (NoP = 9.975) ranked third behind breast cancer. While the number of publications related to Covid-19 in oncology journals was only 2.156, it represented 3.0% of the total number of publications (Table 2).

Table 1. Total number of publications by years and their percentage change over years

Change From			Document type	2020	2019	2018	2017
2017 to 2020	2018 to 2020	2019 to 2020					
14.6%	17.6%	17.9%	Article	52294	44366	44454	45622
27.2%	27.8%	23.9%	Review	9164	7399	7172	7202
49.4%	43.7%	33.0%	Letter	3278	2465	2281	2194
55.9%	31.5%	14.4%	Note	2156	1885	1640	1383
-4.7%	15.1%	20.7%	Editorial	1589	1316	1380	1667
44.6%	33.7%	11.7%	Erratum	1336	1196	999	924
-29.7%	-15.8%	-1.3%	Others	666	675	791	947
17.6%	20.0%	18.9%	Total	70483	59302	58717	59939

*Decreasing ones are marked with bold.

Table 2. Number of publications according to cancer types and percentage change by years

Change From			Neoplasm Types	2020	2019	2018	2017
2017 to 2020	2017 to 2020	2017 to 2020					
21.5%	19.0%	20.8%	Breast	11270	9327	9470	9272
19.6%	17.1%	13.3%	Lung	10923	9641	9327	9132
12.0%	13.8%	9.1%	Gastrointestinal	9975	9143	8766	8904
20.3%	18.8%	15.4%	Head And Neck	7860	6812	6617	6536
7.5%	12.4%	11.5%	Male Genital	4436	3979	3948	4125
1.7%	13.2%	14.1%	Leukemia	4269	3743	3770	4198
-1.8%	-1.1%	0.0%	Lymphoma	3896	3897	3940	3966
22.4%	22.4%	15.5%	Gynecologic	3814	3301	3116	3116
0.9%	7.4%	3.9%	Urinary System	3787	3645	3526	3752
18.4%	19.4%	12.2%	Pancreatic	2902	2587	2430	2451
14.0%	14.2%	6.9%	Skin and melanom	2866	2680	2509	2514
24.6%	29.9%	25.5%	Multiple myeloma	1634	1302	1258	1311
24.6%	8.0%	14.6%	Soft Tissue	932	813	863	748
31.5%	24.6%	9.0%	Hepatobiliary	426	391	342	324

Analysis of the Authors According to Affiliation

When the authors' affiliations were examined, most publications came from the University of Texas MD Anderson Cancer Center in 2020. While "Chinese Academy of Medical Sciences" was 23rd in 2017 and 2018, it jumped to 13th in 2019, and 6th in 2020 (Table 3).

Analysis of the Number of Publications According to the Countries of the Authors

United States was the country with the highest number of publications with 19,416 studies in 2020. China ranked second with 17,521 publications and Italy ranked third with 5,221 publications. There were increases in the numbers of publications in 2020 in all 20 countries analyzed compared to 2018 and 2019 (Table 4).

When examined in the bivariate correlation analysis, there was a positive correlation between the change in the number of publications in 2020 compared to 2019 and the total number of cases in the countries ($r=0.462$, $p=0.040$). There were no statistical correlations with total number of deaths ($r=0.390$, $p=0.089$), total number of cases per one million population ($r=0.080$, $p=0.73$), number of deaths per one million population ($r=-0.017$, $p=0.943$), total number of tests ($r=0.390$, $p=0.089$), and the number of tests per one million population ($r=-0.194$, $p=0.412$).

A simple linear regression model was made to estimate the extent to which the number of Covid-19 cases predicts the change in the number of publications. There was a moderate correlation with the change in the number of publications by country ($r=0.462$) and the regression model predicted 21.4% ($p=0.40$) (Table 5).

Discussion

In this study, we performed a data analysis on the number of publications in oncology journals in 2020 and investigated the relationship between the number of publications by country and the covid-19 pandemic. 310 journals, that were published regularly in the field of oncology between 2016 and 2020 and had a SCImago Journal Rank (SJR) indicator score above 0.1, were scanned. Based on the screening results, 247,552 publications were analyzed. This analysis indicated that, in 2020, the increase in the total number of publications was 18% compared to 2019, 19% compared to 2018, and 16% compared to 2017. When the publications were examined according to cancer types, as of the date of screening, there were increases in the numbers of publications in all cancer types except Lymphoma. When the numbers of publications by country were examined, there was a moderate correlation between the number of covid cases and the change in the number of publications, and it was statistically significant ($r=0.462$, $p=0.040$). 21.4% of the increase in the number of publications by country can be explained with the number of covid cases in countries. With this study, it was concluded that the covid-19 pandemic caused an increase in the number of publications, and this increase was associated with the number of Covid-19 cases.

The Covid pandemic has not only impacted human health, but also created changes in economic systems, human relations, scientific research and scientific publications.^[13,14] One of the foundations of scientific progress, "Interventional oncology studies" were suspended, clinical studies

Table 3. Change in the number of publications according to the Authors' Affiliation

2020 rank	2019 rank	2018 rank	2017 rank	AFFILIATION	2020	2019	2018	2017
1	1	1	1	University of Texas MD Anderson C.C.	1897	1632	1783	1721
2	2	3	3	Memorial Sloan-Kettering C.C.	1358	1181	1079	1126
3	3	2	2	Harvard Medical School	1275	1091	1156	1136
4	4	4	4	Dana-Farber Cancer Institute	1174	967	1022	981
5	5	5	5	Inserm	1156	895	892	880
6	13	23	23	CAMS&PUMC	943	596	437	457
7	6	6	8	University of Toronto	889	768	714	702
8	8	10	10	Mayo Clinic	809	686	616	608
9	7	8	9	Fudan University	807	754	671	693
10	9	7	7	National Cancer Institute NCI	788	659	673	724
11	11	13	13	German Cancer Research Center	728	647	553	561
12	12	12	12	Massachusetts General Hospital	718	598	599	561
13	10	11	6	Ministry of Education China	699	659	604	729
14	14	9	11	Brigham and Women's Hospital	694	581	638	567
15	16	15	15	Weill Cornell Medicine	652	534	505	507

C.C.: Cancer Center; CAMS&PUMC: Chinese Academy of Medical Sciences & Peking Union Medical College.

Table 4. Comparative analysis of countries with the highest number of publications in 2020

Change from			Country Name	2020	2019	2018	2017
2017 to 2020	2018 to 2020	2019 to 2020					
10.0%	10.9%	13.1%	United States	19416	17164	17512	17653
11.2%	21.2%	19.5%	China	17521	14664	14452	15757
45.2%	44.5%	31.8%	Italy	5221	3960	3614	3596
15.0%	7.9%	17.2%	Japan	4865	4151	4508	4230
27.2%	23.0%	21.0%	Germany	4438	3669	3609	3488
24.2%	26.2%	29.1%	United Kingdom	4025	3117	3189	3240
19.5%	17.8%	20.9%	France	3506	2900	2977	2934
22.7%	24.5%	18.4%	Canada	2994	2528	2405	2440
41.4%	35.6%	28.1%	Netherlands	2464	1924	1817	1742
35.6%	30.1%	32.4%	Spain	2249	1698	1729	1659
21.1%	12.6%	22.7%	Australia	2114	1723	1877	1745
63.4%	68.5%	45.0%	India	2109	1454	1252	1291
-6.4%	13.5%	8.5%	South Korea	1945	1792	1713	2078
35.3%	24.9%	22.5%	Switzerland	1395	1139	1117	1031
21.3%	17.2%	16.4%	Belgium	1099	944	938	906
61.1%	49.9%	54.7%	Brazil	1094	707	730	679
11.6%	17.2%	13.2%	Sweden	1079	953	921	967
65.1%	70.6%	53.6%	Turkey	1017	662	596	616
37.3%	27.7%	31.7%	Iran	997	757	781	726
44.6%	39.1%	45.3%	Austria	982	676	706	679

Table 5. Simple linear regression model with the change in the number of publications by country as a dependent variable: A simple linear regression was carried out to ascertain the extent to which change of publication numbers assessment scores can predict Covid-19 cases number. A moderate positive correlation was found between two variable ($r=0.462$) and the regression model predicted 21.4% of the variance. The model was a good fit for the data ($p=0.040$)

	B	SE B	β
Constant	-0.161	0.198	
Covid-19 case number (log-transformed)	0.073	0.033	0.462

had to be redesigned, and a need for fundamental changes in clinical studies emerged.^[15-17] In this crisis period, it was inevitable that the publishing processes of scientific publications were subject to changes. In the first half of 2020, the number of publications reaching journals started to increase, and the routine processes of journals began to undergo changes. 18 Editors of "Journal of Clinical Oncology", one of the most prestigious publications in the world, describe this time as "Medical journals are facing unprecedented times that will test our resolve to adhere to the tenets of good science and responsible reporting."^[19]

The study by Chahrour et al., which was one of the first few studies published after the start of Covid-19, reported an increase in publications sent from China during the Co-

vid-19 pandemic.^[20] Similarly, in the study by Gregorio-Chaviano et al., there was an increase in the contribution of Latin America to the literature.^[21] Our study confirms that this increase is also evident in oncology journals. In 2020, number of publications in the field of oncology increased, 17.9% compared to 2019, 17.6% compared to 2018, and 14.6% compared to 2017. While the lung cancer-related publications were the most common in the oncology journals in 2019, publications on breast cancer were the most prevalent in the literature in 2020. Because the number of cases of both the lung cancer (11.6%) and the breast cancer (11.6%) are very high worldwide, it is no surprise that the number of publications related to these two types of cancer is high.^[22]

The rule of "Social distancing", one of the slogans of the Covid-19 pandemic, has affected the organizations working on oncology and created many changes in the functioning of these organizations.^[24] In order to reduce the risk of Covid-19 for patients, ESMO recommended to minimize the number of visits to the hospital for discussion of risk-benefit models by multidisciplinary oncology boards, and these face-to-face meetings turned into virtual meetings.^[25] Almost all oncology meetings were canceled or held virtually in 2020. Perhaps the crisis created by the Covid-19 pandemic has created an opportunity for scientific publishing. University of Texas MD Anderson

Cancer Center has been the organization producing the highest number of publications uninterruptedly in the last four years, including 2020, and they continued to be in the first place by increasing the number of publications in 2020. The increase in the number of publications by authors affiliated with Chinese Academy of Medical Sciences & Peking Union Medical College (CAMS&PUMC), a research organization in the country where the impact of covid-19 pandemic was intense and curfews were strict, was noteworthy.^[7] Publications from affiliated authors to CAMS & PUMC were 23rd in 2017 and 2018, 13th in 2019, and 6th in 2020.

In the first half of 2020, the Italian health system went through a rigorous test, and faced the risk of its hospitals being completely filled with covid-19 patients.^[26] Subsequently, restrictions for the covid pandemic had to be tightened. These restrictions were not limited to Italy only. Almost all countries have had to implement a series of measures. During this period, covid-19 was progressing with high mortality in cancer patients. In the analysis by Saini et al., mortality rate in cancer patients was 25.6%.^[27] In 2020, the country with the highest number of deaths due to covid 19 was United States, followed by Brazil and India. During such a crisis that affected countries, there was an increase in the number of publications in all countries. Highest increases were seen in Brazil and Turkey. There was a moderate positive correlation between the increase in the number of publications of the countries and the number of covid-19 cases ($r=0.462$, $p=0.040$). When evaluated by simple linear regression, 21.4% of the change in the number of publications can be explained by the number of cases in countries.

There are some limitations regarding this study. Since there will be a few publications indexed after the date of scanning, this rate of increase will be even more in searches to be made in the coming days. The number of publications by cancer types is a search strategy and does not provide the exact number of cancer types. However, using the same search strategy for other years helps to reach the right analysis. These increases are only related to publication productivity and provide limited information on cancer research. With these results, we cannot conclude that the cancer treatment research processes have been positively affected. Because we know that it may take years for a study to turn into a publication. This analysis reflects only the publications shared with the oncology world, some of which were completed before Covid-19 pandemic and were in journal processes. The effects of Covid-19 on cancer treatment studies will emerge in the following years.

Conclusion

In conclusion, there was an increase in the number of publications in the field of oncology in 2020 due to the effects of the Covid-19 pandemic. In the countries with a high number of cases, there was an increase in the number of publications in journals, which is a measure of the whole process of studies from data collection to publication.

Disclosures

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Appendix 1. List of journals with SJR score above 0.1 and their Source ID numbers

Sourceid	Title	Sourceid	Title
28773	CA - A Cancer Journal for Clinicians	19400157274	Journal of Breast Cancer
12464	Nature Reviews Cancer	29763	European Journal of Cancer Prevention
12354	The Lancet Oncology	28690	Advances in Cancer Research
29093	Cancer Cell	29311	Current Cancer Drug Targets
29949	Journal of Clinical Oncology	26016	Leukemia and Lymphoma
17700156734	Nature Reviews Clinical Oncology	14200154738	Cancer Microenvironment
21100420583	JAMA Oncology	5200153018	Cancer Biomarkers
21100212318	Cancer Discovery	12427	Melanoma Research
12459	Journal of the National Cancer Institute	21100465104	Advances in Radiation Oncology
29263	Clinical Cancer Research	29100	Cancer Control
12429	Molecular Cancer	21100851285	World Journal of Gastrointestinal Oncology
12499	Neuro-Oncology	130149	Hereditary Cancer in Clinical Practice
21100466864	Journal for ImmunoTherapy of Cancer	4200151510	Future Oncology
29183	Cancer Research	3500148006	Clinical and Translational Oncology
26015	Leukemia	21100218036	Radiation Oncology Journal
21100445640	Trends in Cancer	29762	European Journal of Cancer Care
12611	Drug Resistance Updates	13152	Surgical Oncology Clinics of North America
29213	Cancer Treatment Reviews	19700175456	Clinical Lymphoma, Myeloma and Leukemia
21100867475	npj Breast Cancer	28752	Brachytherapy
146215	Journal of the National Comprehensive Cancer Network : JNCCN	25450	Best Practice and Research in Clinical Haematology
29761	European Journal of Cancer	19700175043	Cancer Management and Research
17900156736	Journal of Hematology and Oncology	27197	Cancer Nursing
6400153137	Journal of Thoracic Oncology	26017	Leukemia Research
28785	Cancer	21100448930	Chinese Clinical Oncology
21100205926	Blood Cancer Journal	29927	Japanese Journal of Clinical Oncology
29124	Cancer Epidemiology Biomarkers and Prevention	21100218027	Journal of Gastric Cancer
80280	Biochimica et Biophysica Acta - Reviews on Cancer	4700151712	Cancer Informatics
28787	Cancer and Metastasis Reviews	15500154704	Head and Neck Pathology
29945	Journal of Carcinogenesis	25979	Hematological Oncology
12531	Oncologist	4000148109	Breast Care
21100941105	JCO Precision Oncology	28728	Anticancer Research
29794	Gastric Cancer	19600157316	Hormones and Cancer
27467	Gynecologic Oncology	29872	Integrative Cancer Therapies
12435	Molecular Cancer Therapeutics	21100470767	Prostate Cancer
21100255413	Oncolmmunology	13231	World Journal of Surgical Oncology
28770	British Journal of Cancer	17600155056	Biologics: Targets and Therapy
28764	Breast Cancer Research	12646	Pathology and Oncology Research
12430	Molecular Cancer Research	21100202716	Thoracic Cancer
29160	Cancer Letters	19700176021	Oncology Letters
19700175160	Therapeutic Advances in Medical Oncology	12599	Breast Journal
5800207508	Molecular Oncology	29979	Journal of Psychosocial Oncology
29309	Critical Reviews in Oncology/Hematology	13118	Sarcoma
29873	International Journal of Cancer	13308	Nutrition and Cancer
29951	Journal of Experimental and Clinical Cancer Research	12100155640	Current Opinion in Supportive and Palliative Care
17191	International Journal of Radiation Oncology Biology Physics	28727	Anti-Cancer Drugs
25472	Blood Reviews	130008	Photodiagnosis and Photodynamic Therapy

Appendix 1. CONT.

Sourceid	Title	Sourceid	Title
21100782975	Liver Cancer	21100920649	Physics and Imaging in Radiation Oncology
21100873339	ESMO Open	18800156706	Molecular Medicine Reports
6300153105	Current Opinion in HIV and AIDS	17270	Medical Dosimetry
17876	Radiotherapy and Oncology	19700174993	Journal of Contemporary Brachytherapy
21100461974	Molecular Therapy - Oncolytics	21100268079	Journal of Cancer Policy
29152	Cancer Immunology, Immunotherapy	4000148021	Asia-Pacific Journal of Clinical Oncology
19700188419	Cancers	5800173385	Recent Patents on Anti-Cancer Drug Discovery
21100237607	Cancer Biology and Medicine	19600161810	Hematology/Oncology and Stem Cell Therapy
28766	Breast Cancer Research and Treatment	21100453533	International Journal of Breast Cancer
29187	Cancer Science	21100868959	Journal of global oncology
13065	Prostate Cancer and Prostatic Diseases	19700177321	ecancermedicalscience
13120	Seminars in Oncology	29928	Journal of Cancer Education
12628	Oral Oncology	21100316070	Oncology Research and Treatment
12391	Lung Cancer	29495	International Journal of Biological Markers
15700154704	Oncology Reviews	28794	Cancer Biotherapy and Radiopharmaceuticals
39465	Annals of Surgical Oncology	13158	Technology in Cancer Research and Treatment
21100275443	Frontiers in Oncology	19600166305	Current Breast Cancer Reports
11200153565	Pigment Cell and Melanoma Research	17866	Radiology and Oncology
5400152645	Journal of Cancer Survivorship	21100855885	Gynecologic Oncology Reports
26035	Endocrine-Related Cancer	40173	Asian Pacific Journal of Cancer Prevention
19900191708	Oncotarget	19700190321	International Journal of Hematology-Oncology and Stem Cell Research
22477	Investigational New Drugs	20570	Chemotherapy
9500153979	Cancer Journal	29947	Journal of Chemotherapy
29321	Current Oncology Reports	21100853993	Neuro-Oncology Practice
21100448905	Translational Lung Cancer Research	12552	Oncology
21100904922	European urology oncology	15738	Pediatric Hematology and Oncology
21100468501	Open Forum Infectious Diseases	25907	Clinical Advances in Hematology and Oncology
4700152489	Targeted Oncology	19500157301	Current Colorectal Cancer Reports
29325	Current Problems in Cancer	145443	Journal of Cancer Research and Therapeutics
19700175259	Journal of Geriatric Oncology	21100228140	Leukemia Research Reports
21100866005	Cancer Communications	21100215177	International Journal of Surgical Oncology
19700175783	Breast Cancer: Targets and Therapy	23056	Journal of Oncology Pharmacy Practice
29265	Clinical Lung Cancer	21100897027	JCO clinical cancer informatics
12595	Breast	130070	Wspolczesna Onkologia
11500153509	Journal of Oncology Practice	54509	Reports of Practical Oncology and Radiotherapy
29767	European Journal of Surgical Oncology	13175	Tumori
15800154704	Cancer Prevention Research	29956	Journal of Pediatric Hematology/Oncology
17600155059	Cancer cytopathology	21100434604	Journal of Skin Cancer
21100199848	Cancer Research and Treatment	29572	Journal of Biological Regulators and Homeostatic Agents
29256	Clinical and Experimental Metastasis	15400154800	Journal of Gastrointestinal Cancer
20474	Prostate	27596	Clinical Journal of Oncology Nursing
28796	Cancer Causes and Control	28749	Journal of B.U.ON.
19700183300	Lung Cancer: Targets and Therapy	29181	Cancer radiotherapie : journal de la Societe francaise de radiotherapie oncologique
21100317990	Cancer Medicine	19700174915	Current Urology
29326	Current Treatment Options in Oncology	19700175022	Memo - Magazine of European Medical Oncology
19700173005	Cancer Nanotechnology	21100455430	Translational Cancer Research

Appendix 1. CONT.

Sourceid	Title	Sourceid	Title
21100924772	Clinical and Translational Radiation Oncology	19700182045	Case Reports in Oncology
29264	Clinical Colorectal Cancer	6100153013	Journal of the Egyptian National Cancer Institute
19700174965	Breast Cancer: Basic and Clinical Research	12596	Breast Disease
19700175016	Journal of Gynecologic Oncology	28771	Bulletin du Cancer
29323	Current Opinion in Oncology	11300153316	Journal of Medical Imaging and Radiation Oncology
19900192710	Cellular Oncology	21100831023	International Journal of Cancer Management
19700175014	Translational Oncology	29732	Experimental Oncology
21100428409	United European Gastroenterology Journal	29865	Indian Journal of Cancer
29097	Cancer Chemotherapy and Pharmacology	21100827188	Cancer Treatment and Research Communications
25935	Cytotherapy	19700174939	Indian Journal of Medical and Paediatric Oncology
29816	Hematology/Oncology Clinics of North America	19700175135	Rare Tumors
29954	Journal of Neuro-Oncology	13072	Recent Results in Cancer Research
13069	Psycho-Oncology	19700175030	Rehabilitation Oncology
28668	Acta Oncologica	4000148111	Medecine Palliative
13121	Seminars in Radiation Oncology	21100204904	Indian Journal of Surgical Oncology
28747	BMC Cancer	13235	Chinese Journal of Oncology
19900194500	Practical Radiation Oncology	29212	Cancer Treatment and Research
17700155032	Cancer Epidemiology	11200153517	Journal of Leukemia and Lymphoma
29903	International Journal of Oncology	29985	Klinicka Onkologie
12647	Pediatric Blood and Cancer	11700154711	Psicooncologia
29260	Clinical Breast Cancer	19119	Chinese Journal of Lung Cancer
21100248801	Journal of Cancer	21100329540	Middle East Journal of Cancer
21725	Journal of Surgical Oncology	29764	European Journal of Gynaecological Oncology
29271	Clinical Oncology	25421	Acta Haematologica Polonica
28792	Cancer Biology and Therapy	21100244204	Cancer Research and Clinic
29930	Journal of Cancer Research and Clinical Oncology	19700200818	Hematologia
12593	Oncology Research	145705	Journal of Radiotherapy in Practice
21100869982	Bladder Cancer	21100396656	Iranian Journal of Blood and Cancer
19700171807	Clinical Medicine Insights: Oncology	21100207641	European Oncology and Haematology
29897	International Journal of Clinical Oncology	28709	Annals of Cancer Research and Therapy
13147	Supportive Care in Cancer	4700152601	Current Cancer Therapy Reviews
28705	American Journal of Clinical Oncology: Cancer Clinical Trials	35635	Magyar Onkologia
13205	Urologic Oncology: Seminars and Original Investigations	21100239608	Pediatric Hematology/Oncology and Immunopathology
29094	Cancer Cell International	4400151605	UHOD - Uluslararası Hematoloji-Onkoloji Dergisi
28711	Annals of Oncology	12600	Onkologe
5800179603	Radiation Oncology	21100850734	Siberian Journal of Oncology
29319	Current Oncology	21100790705	Onkourologiya
27518	International Journal of Gynecological Cancer	19700174992	European Journal of Oncology Pharmacy
12403	Medical Oncology	21100838772	Oncogematologiya
29158	Cancer Investigation	29789	Japanese Journal of Cancer and Chemotherapy
5000156906	Current Hematologic Malignancy Reports	21100867682	Surgery, Gastroenterology and Oncology
4000148813	Clinical Genitourinary Cancer	21100905960	Indian Journal of Gynecologic Oncology
12568	Oncology Reports	12520	Nowotwory
19700175057	Immunotherapy	10300153303	Psycho-Oncologie
21355	Expert Review of Anticancer Therapy	19700174883	Turk Onkoloji Dergisi
23462	Journal of Mammary Gland Biology and Neoplasia	5700165167	Chinese Journal of Cancer Prevention and Treatment
13149	Surgical Oncology	21100376681	Revista de Senologia y Patologia Mamaria

Appendix 1. CONT.

Sourceid	Title	Sourceid	Title
28755	Brain Tumor Pathology	19700175017	Gastric and Breast Cancer
5700191215	Infectious Agents and Cancer	13234	Chinese Journal of Clinical Oncology
19700175000	OncoTargets and Therapy	19700174884	Tumor
21100206283	Journal of Bone Oncology	13207	Voprosy Onkologii
21100459104	Experimental Hematology and Oncology	21100278305	Gaceta Mexicana de Oncologia
4000149001	Cancer Imaging	21100240200	Onkologie (Czech Republic)
17600155049	Journal of Oncology	19700174948	Cancer and Chemotherapy Reviews
12554	Oncology	21100787823	Hepato-Gastro and Oncologie Digestive
21100773851	Journal of Gastrointestinal Oncology	28729	Archive of Oncology
19700174927	Journal of Ovarian Research	19700175062	Journal of Practical Oncology
29769	Familial Cancer	21100218319	Japanese Journal of Head and Neck Cancer
21100459267	Journal of Adolescent and Young Adult Oncology	59708	Japanese Journal of Lung Cancer
83418	Breast Cancer	19700174803	Onkologia i Radioterapia
17911	Strahlentherapie und Onkologie	5200153053	Best Practice Onkologie
19700175053	International Journal of Women's Health	13075	Revisiones en Cancer
17293	Molecular Imaging and Biology	13173	Tumor Diagnostik und Therapie

Appendix 2. Search strategy for 310 journals in the field of oncology by Source ID

SOURCE-ID (28773 OR 12464 OR 12354 OR 29093 OR 29949 OR 17700156734 OR 21100420583 OR 21100212318 OR 12459 OR 29263 OR 12429 OR 12499 OR 21100466864 OR 29183 OR 26015 OR 21100445640 OR 12611 OR 29213 OR 21100867475 OR 146215 OR 29761 OR 17900156736 OR 6400153137 OR 28785 OR 21100205926 OR 29124 OR 80280 OR 28787 OR 29945 OR 12531 OR 21100941105 OR 29794 OR 27467 OR 12435 OR 21100255413 OR 28770 OR 28764 OR 12430 OR 29160 OR 19700175160 OR 5800207508 OR 29309 OR 29873 OR 29951 OR 17191 OR 25472 OR 21100782975 OR 21100873339 OR 6300153105 OR 17876 OR 21100461974 OR 29152 OR 19700188419 OR 21100237607 OR 28766 OR 29187 OR 13065 OR 13120 OR 12628 OR 12391 OR 15700154704 OR 39465 OR 21100275443 OR 11200153565 OR 5400152645 OR 26035 OR 19900191708 OR 22477 OR 9500153979 OR 29321 OR 21100448905 OR 21100904922 OR 21100468501 OR 4700152489 OR 29325 OR 19700175259 OR 21100866005 OR 19700175783 OR 29265 OR 12595 OR 11500153509 OR 29767 OR 15800154704 OR 17600155059 OR 21100199848 OR 29256 OR 20474 OR 28796 OR 19700183300 OR 21100317990 OR 29326 OR 19700173005 OR 21100924772 OR 29264 OR 19700174965 OR 19700175016 OR 29323 OR 19900192710 OR 19700175014 OR 21100428409 OR 29097 OR 25935 OR 29816 OR 29954 OR 13069 OR 28668 OR 13121 OR 28747 OR 19900194500 OR 17700155032 OR 29903 OR 12647 OR 29260 OR 21100248801 OR 21725 OR 29271 OR 28792 OR 29930 OR 12593 OR 21100869982 OR 19700171807 OR 29897 OR 13147 OR 28705 OR 13205 OR 29094 OR 28711 OR 5800179603 OR 29319 OR 27518 OR 12403 OR 29158 OR 5000156906 OR 4000148813 OR 12568 OR 19700175057 OR 21355 OR 23462 OR 13149 OR 28755 OR 5700191215 OR 19700175000 OR 21100206283 OR 21100459104 OR 4000149001 OR 17600155049 OR 12554 OR 21100773851 OR 19700174927 OR 29769 OR 21100459267 OR 83418 OR 17911 OR 19700175053 OR 17293 OR 19400157274 OR 29763 OR 28690 OR 29311 OR 26016 OR 14200154738 OR 5200153018 OR 12427 OR 21100465104 OR 29100 OR 21100851285 OR 130149 OR 4200151510 OR 3500148006 OR 21100218036 OR 29762 OR 13152 OR 19700175456 OR 28752 OR 25450 OR 19700175043 OR 27197 OR 26017 OR 21100448930 OR 29927 OR 21100218027 OR 4700151712 OR 15500154704 OR 25979 OR 4000148109 OR 28728 OR 19600157316 OR 29872 OR 21100470767 OR 13231 OR 17600155056 OR 12646 OR 21100202716 OR 19700176021 OR 12599 OR 29979 OR 13118 OR 13308 OR 12100155640 OR 28727 OR 130008 OR 21100920649 OR 18800156706 OR 17270 OR 19700174993 OR 21100268079 OR 4000148021 OR 5800173385 OR 19600161810 OR 21100453533 OR 21100868959 OR 19700177321 OR 29928 OR 21100316070 OR 29495 OR 28794 OR 13158 OR 19600166305 OR 17866 OR 21100855885 OR 40173 OR 19700190321 OR 20570 OR 29947 OR 21100853993 OR 12552 OR 15738 OR 25907 OR 19500157301 OR 145443 OR 21100228140 OR 21100215177 OR 23056 OR 21100897027 OR 130070 OR 54509 OR 13175 OR 29956 OR 21100434604 OR 29572 OR 15400154800 OR 27596 OR 28749 OR 29181 OR 19700174915 OR 19700175022 OR 21100455430 OR 19700182045 OR 6100153013 OR 12596 OR 28771 OR 11300153316 OR 21100831023 OR 29732 OR 29865 OR 21100827188 OR 19700174939 OR 19700175135 OR 13072 OR 19700175030 OR 4000148111 OR 21100204904 OR 13235 OR 29212 OR 11200153517 OR 29985 OR 11700154711 OR 19119 OR 21100329540 OR 29764 OR 25421 OR 21100244204 OR 19700200818 OR 145705 OR 21100396656 OR 21100207641 OR 28709 OR 4700152601 OR 35635 OR 21100239608 OR 4400151605 OR 12600 OR 21100850734 OR 21100790705 OR 19700174992 OR 21100838772 OR 29789 OR 21100867682 OR 21100905960 OR 12520 OR 10300153303 OR 19700174883 OR 5700165167 OR 21100376681 OR 19700175017 OR 13234 OR 19700174884 OR 13207 OR 21100278305 OR 21100240200 OR 19700174948 OR 21100787823 OR 28729 OR 19700175062 OR 21100218319 OR 59708 OR 19700174803 OR 5200153053 OR 13075 OR 13173)

Appendix 3. Search words created for Scopus advanced search using MeSH

For Male Genital Neoplasms

TITLE-ABS-KEY (penile) or (prostat*) or (testis) or (testicular) and (neoplasia*) or (neoplasm) or (tumor*) or (cancer*) or (malignancy*) or (malignant neoplasm) or (sertoli-leydig cell tumor*) or (leydig cell tumor*) or (sertoli cell tumor*) or (androblastoma*) or (arrhenoblastoma*)

For Woman Gynecologic Neoplasms

TITLE-ABS-KEY (endometrium) or (endometrioid) or (cervical) or (cervix) or (vagina*) or (vulva*) and (neoplasia*) or (neoplasm) or (tumor*) or (cancer*) or (malignancy*) or (malignant neoplasm) or (granulosa cell tumor) or (luteoma) or (luteinoma) or (pregnancy luteoma) or (gestational luteoma) or (meig* syndrome) or (sertoli leydig cell tumor) or (androblastoma) or (arrhenoblastoma) or (tumor leydig cell) or (tumor sertoli cell) or (thecoma) or (theca cell tumor) or (endometrioid adenocarcinoma) or (endometrial stromal tumor) or (endometrial stromal sarcoma) or (fallopian tube neoplasm) or (fallopian tube cancer*) or (gestational trophoblastic neoplasm*) or (cancer of the vagina) or (uterine sarcoma) or (sarcoma endometrial stromal) or (female genital tract malignancy)

For Breast Neoplasms

TITLE-ABS-KEY (breast) or (human mammary) and (neoplasia*) or (neoplasm) or (tumor*) or (cancer*) or (malignancy*) or (malignant neoplasm) or (mammary paget disease) or (mammary paget's disease) or (phyllodes tumor) or (hereditary breast and ovarian cancer syndrome) or (cystosarcoma phyllodes) or (invasive ductal carcinoma) or (invasive lobular carcinoma) or (infiltrating duct* carcinoma) or (mammary ductal carcinoma) or (hereditary breast and ovarian cancer syndrome)

For Gastrointestinal Neoplasms

TITLE-ABS-KEY (colorectal) or (colon) or (rektal) or (rectum) or (sigmoid) or (anal) or (anus) or (perianal) or (intestinal) or (cecal) or (appendiceal) or (appendix) or (duodenal) or (duodenum) or (ileal) or (ileum) or (jejunal) or (jejunum) or (perianal and gland) or (circumanal gland) or (anal and gland) or (stomach) or (gastric) and (neoplasia*) or (neoplasm) or (tumor*) or (cancer*) or (malignancy*) or (malignant neoplasm) or (familial polyposis syndrome) or (familial polyposis coli) or (familial adenomatous polyposis) or (familial adenomatous polyposis coli) or (gardner syndrome) or (hereditary nonpolyposis colorectal neoplasm) or (hereditary nonpolyposis colorectal cancer) or (lynch syndrome) or (lynch cancer family syndrome i) or (familial nonpolyposis)

For Head And Neck Neoplasms

TITLE-ABS-KEY (laryngeal) or (larynx) or (mouth) or (oral) or (gingival) or (lip) or (palatal) or (salivary and gland) or (parotid) or (sublingual and gland) or (head and neck) or (esophageal) or (esophagus) or (thyroid) or (parathyroid) or (tracheal) or (facial) and (neoplasia*) or (neoplasm) or (tumor*) or (cancer*) or (malignancy*) or (malignant neoplasm) or (congenital epuli*) or (oral leukoplakia) or (oral leukokeratos*) or (keratosis oral) or (hairy leukoplakia) or (otorhinolaryngologic)

For Lung Neoplasms

TITLE-ABS-KEY (lung) and (neoplasia*) or (neoplasm) or (tumor*) or (cancer*) or (malignancy*) or (malignant neoplasm) or (nsccl) or (sclc) or (lung carcinoid tumor) or (adenocarcinoma of lung) or (bronchogenic carcinoma) or (bronchial carcinoma) or (oat cell carcinoma) or (pancoast tumor) or (pancoast* syndrome) or (pulmonary blastoma) or (pulmonary sclerosing hemangioma) or (multiple pulmonary nodules) or (mesothelioma)

For Skin Neoplasms

TITLE-ABS-KEY (melanoma) or (malignant melanoma) or (melanotic freckle) or (malignant lentigo) or (lentigo maligna) or (cutaneous squamous cell carcinoma) or (csccl) or (nevroid basal cell carcinoma syndrome) or (gorlin syndrome) or (sebaceous carcinoma) or (merkel cell carcinoma)

For Soft Tissue Neoplasms

TITLE-ABS-KEY ("soft tissue") and (neoplasia*) or (neoplasm) or (tumor*) or (cancer*) or (malignancy*) or (malignant neoplasm) or (soft tissue sarcoma)

For Urinary System Neoplasms

TITLE-ABS-KEY (urological) or (kidney) or (bladder) or (urethral) and (neoplasia*) or (neoplasm) or (tumor*) or (cancer*) or (malignancy*) or (malignant neoplasm) or (renal cell adenocarcinoma) or (renal cell carcinoma) or (clear cell renal carcinoma) or (nephroid carcinoma) or (clear cell renal cell carcinoma) or (hypernephroid carcinoma) or (hypernephroma) or (grawitz tumor) or (collecting duct carcinoma) or (mesoblastic nephroma) or (wilm* tumor) or (nephroblastoma) or (denys drash syndrome) or (wagr syndrome) or (wagr contiguous gene syndrome) or (renal angiomyolipomas) or (renal pelvis tumors)

For Hepatobiliary Neoplasms

TITLE-ABS-KEY (hepatobiliary) or (gallbladder) or (gall bladder) and (neoplasia*) or (neoplasm) or (tumor*) or (cancer*) or (malignancy*) or (malignant neoplasm) or (hepatocellular carcinoma) or (hcc) or (hepatoma)

For Pancreatic Neoplasms

TITLE-ABS-KEY (pancreas) or (pancreatic) and (neoplasia*) or (neoplasm) or (tumor*) or (cancer*) or (malignancy*) or (malignant neoplasm) or (islet cell adenoma) or (island cell tumor) or (nesidioblastoma) or (insulinoma) or (insuloma) or (beta cell tumor) or (beta cell adenoma) or (gastrinoma) or (gastrin-producing tumor) or (glucagonoma) or (alpha cell tumor) or (alpha-cell adenoma) or (somatostatinoma) or (vipoma) or (vip secreting tumor) or (diarrheogenic tumor)

Appendix 3. CONT.**For Lymphoma**

TITLE-ABS-KEY (Lymphoma*) or (Malignant Lymphogranuloma*) or (Hodgkin* Granuloma) or (Hodgkin* Disease) or (Malignant Granuloma*) or (Burkitt Tumor) or (Burkitt Leukemia) or (Burkitt Cell Leukemia) or (L3 Lymphocytic Leukemia) or (Burkitt's Leukemia) or (Burkitts Leukemia) or (Leukemia, Lymphoblastic, Burkitt-Type) or (Lymphomatoid Granulomatoses) or (Reticulosarcoma*) or (Brill-Symmers Disease) or (Brill Symmers Disease) or (Immunoblastic Sarcoma*) or (Immunoblastoma*) or (Slack Skin, Granulomatous) or (IPSID) or (Heavy Chain Disease, IgA Type) or (alpha Chain Disease) or (Reticulolymphosarcoma*) or (Germinoblastomas*) or (Germinoblastic Sarcoma)

For Leukemia

TITLE-ABS-KEY (Leukemia*) or (Leukoses) or (Leukosis) or ("Bovine Lymphosarcoma") or ("Lymphoma L5178") or ("Leukemic Reticuloendotheliosis") or ("Small Cell Lymphoma*") or ("Pre B ALL") or (T-ALL) or (ATLL) or ("Childhood ALL") or ("Blast Cris?s") or ("Blast Phase*") or (ANLL) or ("Myeloid Sarcoma") or ("Myeloid Cell Tumor, Extramedullary") or ("Chloroma*") or ("Extramedullary Myeloid Cell Tumor") or ("Granulocytic Sarcoma*") or ("Erythroleukemia*") or ("Erythremic Myelos*") or ("Di Guglielmo* Disease") or ("M3 ANLL") or ("AML M3")

For Multiple myeloma

TITLE-ABS-KEY (Multiple myeloma*) or (Myelomatosis) or (Myelomatoses) or (Kahler Disease) or ("Plasmacytic Leukemia*") or ("Plasma Cell Leukemia*") or ("Plasma Cell Myeloma*") or ("Myeloma* Multiple*")

Appendix 4. Covid-19 data by country for 2020*

	Total Cases	Total Deaths	Total Cases/1M	Deaths/1M pop.	Total Tests	Tests/1M pop.
United States	20.422.939	353.751	61.519	1.066	253.525.461	763.686
China	87.052	4.634	60	3	160.000.000	111.163
Italy	2.107.166	74.159	34.877	1.227	26.598.607	440.250
Japan	230.304	3.414	1.824	27	4.851.937	38.422
Germany	1.743.478	34.104	20.776	406	34.801.593	414.707
United Kingdom	2.488.780	73.512	36.565	1.080	54.892.984	806.479
France	2.620.425	64.632	40.101	989	35.025.374	535.998
Canada	581.395	15.606	15.337	412	13.775.115	363.385
Netherlands	796.981	11.432	46.461	666	5.770.408	336.390
Spain	1.936.718	50.837	41.415	1.087	27.016.086	577.712
Australia	28.405	909	1.108	35	11.256.947	438.907
India	10.286.329	149.018	7.417	107	172.049.274	124.063
South Korea	60.740	900	1.184	18	1.377.915	40.874
Switzerland	452.296	7.645	52.070	880	3.559.277	409.756
Belgium	644.242	19.441	55.467	1.674	6.900.875	594.137
Brazil	7.675.973	194.976	35.984	914	28.600.000	134.073
Sweden	437.379	8.727	43.173	861	4.272.532	421.735
Turkey	2.208.652	20.881	26.048	246	24.504.567	288.994
Iran	1.225.142	55.223	14.494	653	7.566.946	89.519
Austria	360.815	6.222	39.948	689	3.812.271	422.077

*Worldometer - real time world statistics; Coronavirus update (live) <https://web.archive.org/web/20210101002814/https://www.worldometers.info/coronavirus/> Accessed 12th Jan 2021.