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BIBLIOMETRIC ANALYSIS OF THE LITERATURE IN THE FIELD OF CORONAVIRUS

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bibliometric analysis of the literature in the field of coronavirus

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ABSTRACT

This paper presents a bibliometric analysis of the literature in the field of Coronavirus in MEDLINE data which has been covered in PubMed. The study period has been selected from the year 2000 to 2019. It is noticed that 10700 records available in the field of Coronavirus. It has been found that 41.71% of records are Research Support, Non U.S. Gov't, and 30.18% are Journal Articles. The United States is the major publisher in the field of Coronavirus followed by England, Netherlands, China, etc. It shows that 95.14% of the total records were in the English language. Relative Growth Rate (RGR) has been decreased and Doubling time (Dt) has been increased from the year 2001 to 2019 but in an inconsistent manner. It has been noticed that 24 journals grouped in zone-1. Similarly, the second zone contains 120 journals and 697 journals grouped in the third zone. There are 144 journals that have been identified as core journals in the field of Coronavirus. It has been shown that the United States published 49 core journals in the first position followed by England, Netherlands, China, Korea (South), etc.

Keywords: Coronavirus, Bibliometrics, Relative Growth Rate (RGR), Doubling time (Dt), Bradford's law.

INTRODUCTION

This paper presents a bibliometric analysis of the literature in the field of Coronavirus in MEDLINE data which has been covered in PubMed. The study period has been selected from the year 2000 to 2019. The bibliometric techniques like Relative Growth Rate (RGR), Doubling time (Dt), and Bradford's law of scattering have been used for this study. The said techniques help to identify the growth rate and to identify the core journals in the field of Coronavirus.

REVIEW OF LITERATURE

Growth rates in scientific areas were studied by different authors in different types of fields¹⁻³ and also there is the number of studies conducted by different authors to identify core journals by using Bradford's Law of scattering.⁴⁻⁸

CORONAVIRUS

Coronaviruses are a group of related viruses that cause diseases in mammals and birds. In humans, it causes respiratory tract infections and also it can range from mild to lethal. Mild illnesses include some cases of the common cold. But, more lethal varieties can cause SARS, MERS, and COVID-19. At present, no vaccines or antiviral drugs are available to prevent or treat human coronavirus infections.⁹

OBJECTIVES OF THE STUDY

The Objectives of this study are:

1. To study the Number of literature published in the field of Coronavirus.
2. To identify the publication types of literature in the field of Coronavirus.
3. To study the country of publication covered by the literature in the field of Coronavirus.

4. To find out the languages of publication covered by the literature in the field of Coronavirus.
5. To observe the growth of literature in the field of Coronavirus; and
6. To find the core journals in the field of Coronavirus.

METHODOLOGY

The records in the field of Coronavirus published during the year 2000 to 2019 in MEDLINE data which has been covered in PubMed¹⁰ were collected. The records were changed into FoxPro and loaded in SPSS for the analysis purpose. The keyword 'Coronavirus' has been used to collect the number of records available. The records received from the database in the field of Coronavirus have been analysed by using bibliometric techniques. The retrieved data were analyzed in terms of growth rate and core journals in the field of Coronavirus. To study the growth rate in the field of Coronavirus, the following bibliometric techniques i.e. Relative Growth Rate (RGR)¹¹ and Doubling time (Dt)¹² have been employed. Bradford Law¹³ has been utilized to find out the core journals in the field of Coronavirus.

THE NUMBER OF CORONAVIRUS RESEARCH PRODUCTIVITY

The research productivity in the field of Coronavirus covered in the database is shown in Table-1. It has been observed that a total of 10700 records in the field of Coronavirus in the study period. It is found that the maximum number of 788 records was published during the year 2015, followed by 783 records in the year 2004 and 775 records in the year 2016. It is noticed from the analysis that it is in an inconsistent manner. (Fig.1)

Table-1: Number of Literature published in the field of Coronavirus

S. No.	Year	No. of Records	%	Cumulative No. of Records	Cumulative %
1	2000	149	1.39	149	1.39
2	2001	224	2.09	373	3.49
3	2002	129	1.21	502	4.69
4	2003	631	5.90	1133	10.59
5	2004	783	7.32	1916	17.91
6	2005	713	6.66	2629	24.57
7	2006	664	6.21	3293	30.78
8	2007	477	4.46	3770	35.23
9	2008	457	4.27	4227	39.50
10	2009	405	3.79	4632	43.29
11	2010	383	3.58	5015	46.87
12	2011	371	3.47	5386	50.34
13	2012	396	3.70	5782	54.04
14	2013	556	5.20	6338	59.23
15	2014	707	6.61	7045	65.84
16	2015	788	7.36	7833	73.21
17	2016	775	7.24	8608	80.45
18	2017	694	6.49	9302	86.93
19	2018	698	6.52	10000	93.46
20	2019	700	6.54	10700	100.00
Total		10700	100.00		

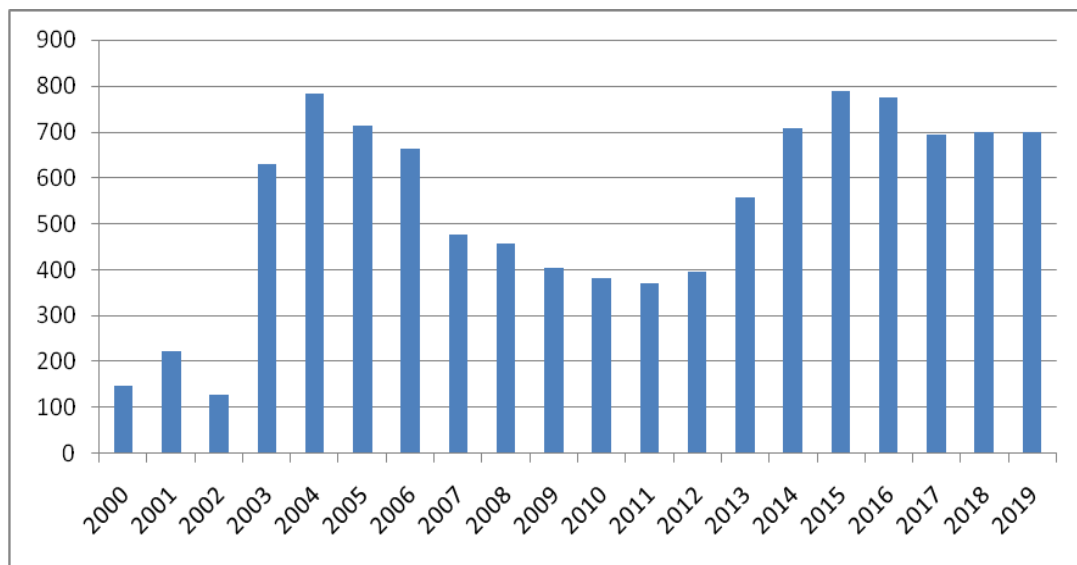


Figure-1: Number of Literature published in the field of Coronavirus

PUBLICATION TYPES DISTRIBUTION OF CORONAVIRUS RESEARCH

Table-2 reveals the distribution of the Coronavirus research output according to various publication types of MEDLINE. It has been found that 4463 (41.71%) records are Research Support, Non U.S. Gov't, 3229 (30.18%) are Journal Articles, 1074 (10.04%) records are Review, 409 (3.82%) records are Research Support, N.I.H., Extramural, 386 (3.61%) are Research Support, U.S. Gov't, P.H.S., and 288 (2.69%) records are Research Support, U.S. Gov't, Non P.H.S... The literature published in other publication types is 7.95 %. (Fig.2)

Table-2: Publication Type in the field of Coronavirus

Publication Type	Total	%	Cumulative No. of Records	Cumulative %
Research Support, Non U.S. Gov't	4463	41.71	4463	41.71
Journal Article	3229	30.18	7692	71.89
Review	1074	10.04	8766	81.93
Research Support, N.I.H., Extramural	409	3.82	9175	85.75
Research Support, U.S. Gov't, P.H.S.	386	3.61	9561	89.36
Research Support, U.S. Gov't, Non P.H.S.	288	2.69	9849	92.05
Letter	176	1.64	10025	93.69
News	174	1.63	10199	95.32
Editorial	130	1.21	10329	96.53
Comment	126	1.18	10455	97.71
Research Support, N.I.H., Intramural	46	0.43	10501	98.14
Validation Study	37	0.35	10538	98.49
Systematic Review	27	0.25	10565	98.74
Case Reports	23	0.21	10588	98.95
Multicenter Study	17	0.16	10605	99.11
Introductory Journal Article	16	0.15	10621	99.26
Randomized Controlled Trial	14	0.13	10635	99.39
Published Erratum	13	0.12	10648	99.51
Congress	12	0.11	10660	99.63
Observational Study	10	0.09	10670	99.72
Video Audio Media	7	0.07	10677	99.79
Portrait	4	0.04	10681	99.82

Interview	3	0.03	10684	99.85
Meta Analysis	3	0.03	10687	99.88
Overall	3	0.03	10690	99.91
Book	2	0.02	10692	99.93
Newspaper Article	2	0.02	10694	99.94
Retracted Publication	2	0.02	10696	99.96
Patient Education Handout	1	0.01	10697	99.97
Personal Narrative	1	0.01	10698	99.98
Practice Guideline	1	0.01	10699	99.99
Randomized Controlled Trial, Veterinary	1	0.01	10700	100.00
Total	10700	100.00		

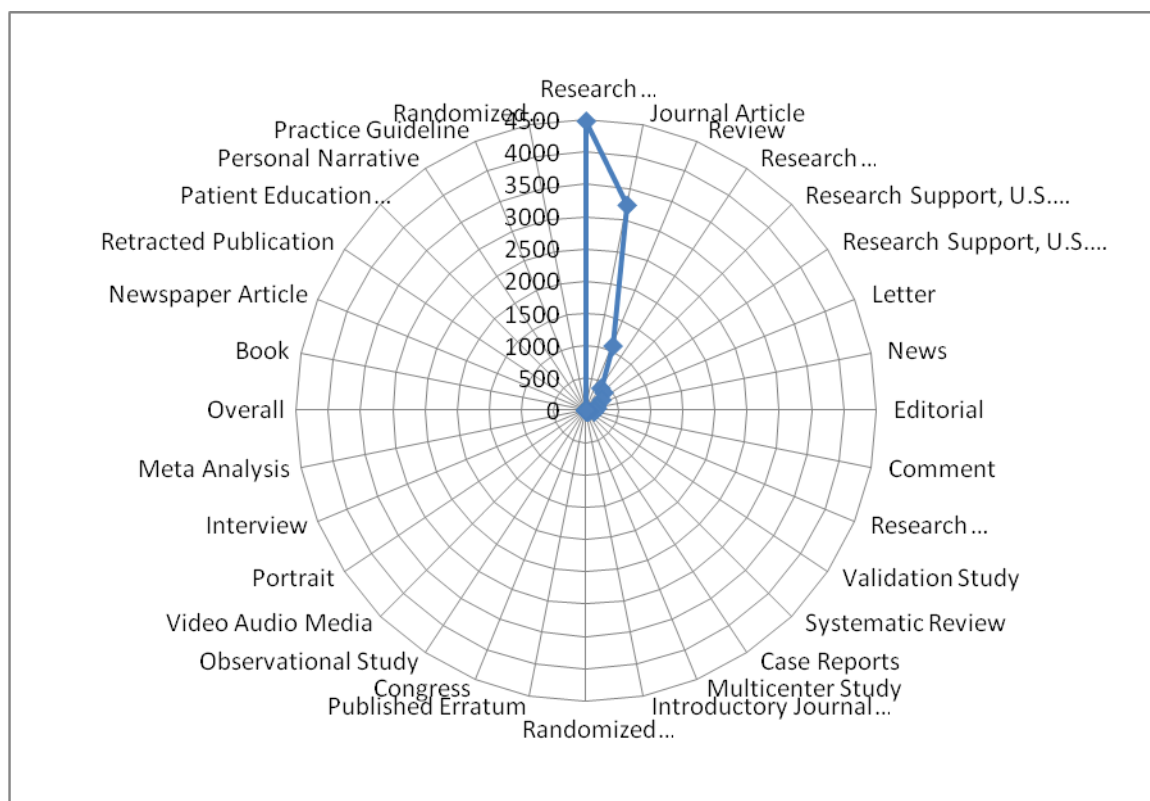


Figure-2: Publication Type in the field of Coronavirus

NUMBER OF RESEARCH OUTPUT ACCORDING TO COUNTRY

The country-wise production is presented in Table-3. It is seen from the table that the United States is the major publisher, published 4801 (44.87%)

records followed by England published 2319 (21.67%) records, Netherlands published 1201 (11.22%) records, China published 500 (4.67%) records, Switzerland published 327 (3.06%) records, Germany published 270 (2.52%) records, Austria published 167 (1.56%) records, Japan published 163 (1.52%) records, Korea (South) published 135 (1.26%) records, Canada published 117 (1.09%) records, France published 104 (0.97%) records, Sweden published 57 (0.53%) records, Australia published 51 (0.48%) records, Italy published 47 (0.44%) records, Egypt published 43 (0.40%) records, India published 41 (0.38%) records, etc. In total productivity, India ranks in the 16th position. (Fig.3)

Table-3: Number of Research Output according to Country-wise

Country	No. of records	%	Cumulative records	Cumulative %
United States	4801	44.87	4800	44.86
England	2319	21.67	7120	66.54
Netherlands	1201	11.22	8321	77.77
China	500	4.67	8821	82.44
Switzerland	327	3.06	9148	85.50
Germany	270	2.52	9418	88.02
Austria	167	1.56	9585	89.58
Japan	163	1.52	9748	91.10
Korea (South)	135	1.26	9883	92.36
Canada	117	1.09	10000	93.46
France	104	0.97	10104	94.43
Sweden	57	0.53	10161	94.96
Australia	51	0.48	10212	95.44
Italy	47	0.44	10259	95.88
Egypt	43	0.40	10302	96.28
India	41	0.38	10343	96.66
Singapore	38	0.36	10381	97.02
Russia (Federation)	31	0.29	10412	97.31
Brazil	28	0.26	10440	97.57
United Arab Emirates	27	0.25	10467	97.82
Slovakia	22	0.21	10489	98.03
New Zealand	20	0.19	10509	98.21

Saudi Arabia	19	0.18	10528	98.39
Hungary	18	0.17	10546	98.56
Spain	18	0.17	10564	98.73
Denmark	16	0.15	10580	98.88
Poland	15	0.14	10595	99.02
Iran	12	0.11	10607	99.13
Philippines	10	0.09	10617	99.22
Turkey	10	0.09	10627	99.32
Ireland	8	0.07	10635	99.39
Pakistan	8	0.07	10643	99.47
Norway	7	0.07	10650	99.53
South Africa	7	0.07	10657	99.60
Argentina	6	0.06	10663	99.65
Mexico	5	0.05	10668	99.70
Thailand	5	0.05	10673	99.75
Greece	4	0.04	10677	99.79
Israel	2	0.02	10679	99.80
Oman	2	0.02	10681	99.82
Romania	2	0.02	10683	99.84
Scotland	2	0.02	10685	99.86
Belgium	1	0.01	10686	99.87
Chile	1	0.01	10687	99.88
Croatia	1	0.01	10688	99.89
Czech Republic	1	0.01	10689	99.90
Finland	1	0.01	10690	99.91
Indonesia	1	0.01	10691	99.92
Jamaica	1	0.01	10692	99.93
Lebanon	1	0.01	10693	99.93
Libya	1	0.01	10694	99.94
Nepal	1	0.01	10695	99.95
Nigeria	1	0.01	10696	99.96
Serbia	1	0.01	10697	99.97
Tunisia	1	0.01	10698	99.98
Ukraine	1	0.01	10699	99.99
Venezuela	1	0.01	10700	100.00
Total	10700	100.00		

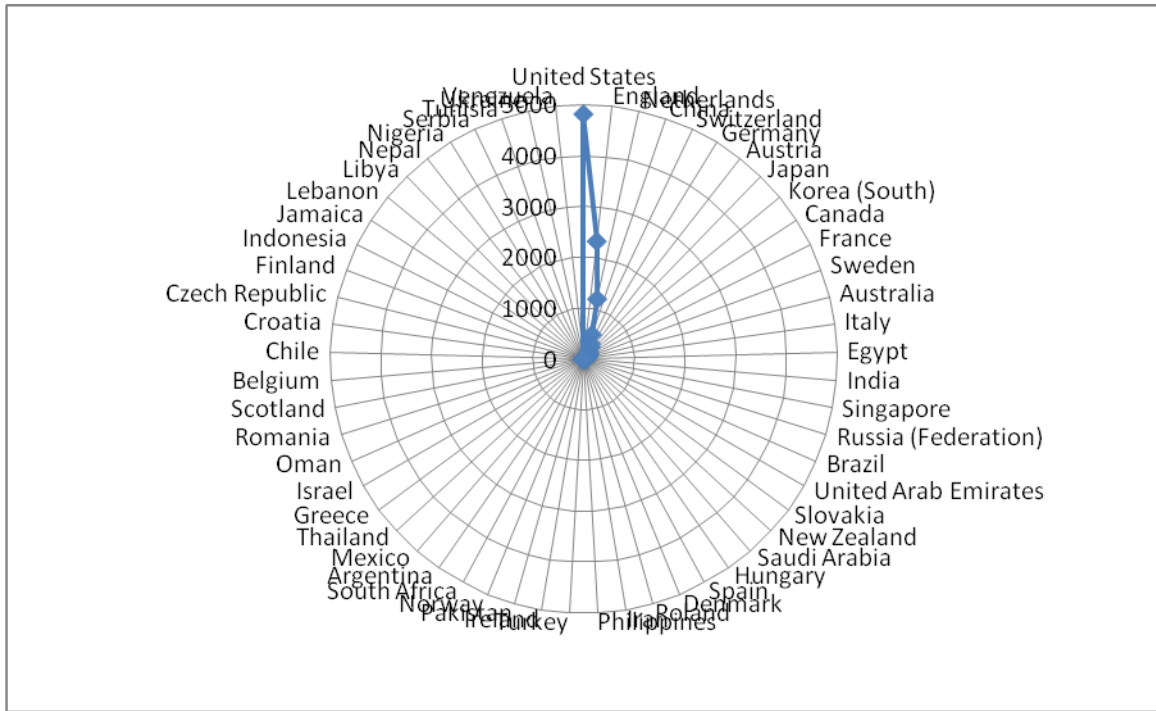


Figure-3: Number of Research Output According to Country-wise

DISTRIBUTION OF LANGUAGES IN THE LITERATURE OF CORONAVIRUS

Table-4 shows the distribution of citations according to language during the study period i.e. from the year 2000 to 2019. As the table shows that out of a total of 10700 records, 10180 of them were in English language forming 95.14% of the total followed by Chinese (285 records), French (59 records), Japanese (38 records), German (36 records), Russian (30 records), Spanish (29 records), Polish (8 records), Dutch (7 records), Italian (7 records), Norwegian (5 records), Turkish (5 records), Danish (2 records), Hebrew (2 records), Hungarian (2 records), Finnish (1 record), Korean (1 record), Portuguese (1 record), Serbian (1 record), and Swedish (1 record). (Fig.4)

Table-4: Distribution of Languages in the literature of Coronavirus

S. No.	Language	No. of records	%	Cumulative Records	Cumulative %
1.	English	10180	95.14	10180	95.14

2.	Chinese	285	2.66	10465	97.80
3.	French	59	0.55	10524	98.36
4.	Japanese	38	0.36	10562	98.71
5.	German	36	0.34	10598	99.05
6.	Russian	30	0.28	10628	99.33
7.	Spanish	29	0.27	10657	99.60
8.	Polish	8	0.07	10665	99.67
9.	Dutch	7	0.07	10672	99.74
10.	Italian	7	0.07	10679	99.80
11.	Norwegian	5	0.05	10684	99.85
12.	Turkish	5	0.05	10689	99.90
13.	Danish	2	0.02	10691	99.92
14.	Hebrew	2	0.02	10693	99.93
15.	Hungarian	2	0.02	10695	99.95
16.	Finnish	1	0.01	10696	99.96
17.	Korean	1	0.01	10697	99.97
18.	Portuguese	1	0.01	10698	99.98
19.	Serbian	1	0.01	10699	99.99
20.	Swedish	1	0.01	10700	100.00
Total		10700	100.00		

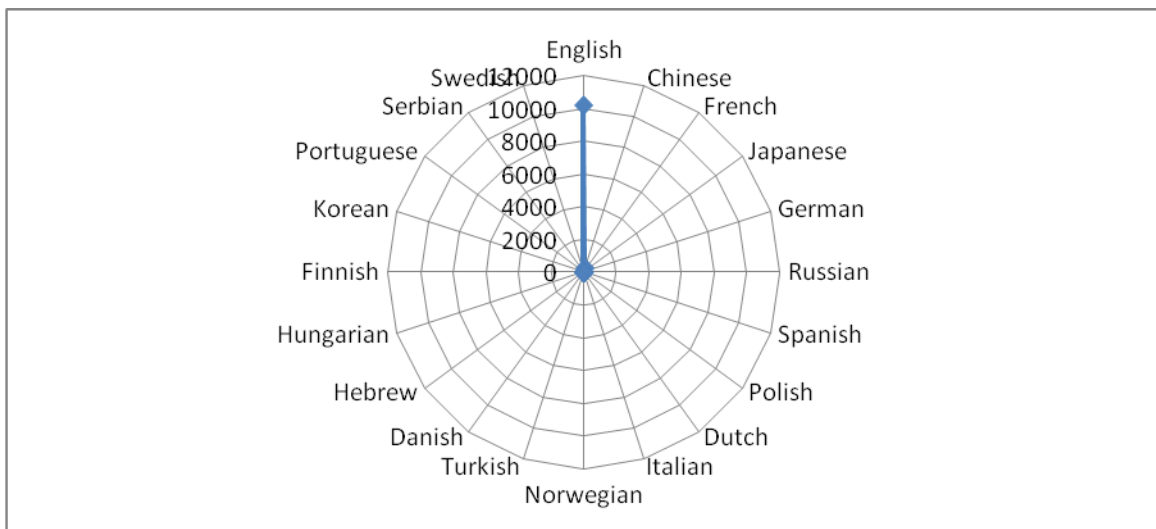


Figure-4: Distribution of Languages in the literature of Coronavirus

RELATIVE GROWTH RATE (RGR) AND DOUBLING TIME (Dt)

The scrutiny of data in the field of Coronavirus has been done with the help of parameters such as Relative Growth Rate (RGR) and Doubling Time (Dt). It is presented in Table-5 and Fig. 5 that RGR has been decreased from the year 2001 (0.92) to 2019 (0.07), but in an inconsistent manner. On the other hand, the Doubling Time (Dt) has also shown an inconsistent manner. The data in Table-5 exposes that Doubling time (Dt) has increased from 0.75 in the year 2001 to 10.19 in the year 2019 but in an inconsistent manner. (Fig.5&6)

Table-5: RGR and Dt for Coronavirus Research Output by Year-wise

Year	No. of Records	Cumulative Total of Records	W ₁	W ₂	$1 - 2^{\bar{R}^{(aa^{-1} \text{ year}^{-1})}}$ RGR	Dt(a)
2000	149	149		5.00		
2001	224	373	5.00	5.92	0.92	0.75
2002	129	502	5.92	6.22	0.30	2.32
2003	631	1133	6.22	7.03	0.81	0.85
2004	783	1916	7.03	7.56	0.53	1.31
2005	713	2629	7.56	7.87	0.31	2.20
2006	664	3293	7.87	8.10	0.23	3.02
2007	477	3770	8.1	8.23	0.13	5.14
2008	457	4227	8.23	8.35	0.12	5.81
2009	405	4632	8.35	8.44	0.09	7.64
2010	383	5015	8.44	8.52	0.08	8.64
2011	371	5386	8.52	8.59	0.07	9.68
2012	396	5782	8.59	8.66	0.07	9.56
2013	556	6338	8.66	8.75	0.09	7.35
2014	707	7045	8.75	8.86	0.11	6.30
2015	788	7833	8.86	8.97	0.11	6.53
2016	775	8608	8.97	9.06	0.09	7.66
2017	694	9302	9.06	9.14	0.08	8.89
2018	698	10000	9.14	9.21	0.07	9.85
2019	700	10700	9.21	9.28	0.07	10.19

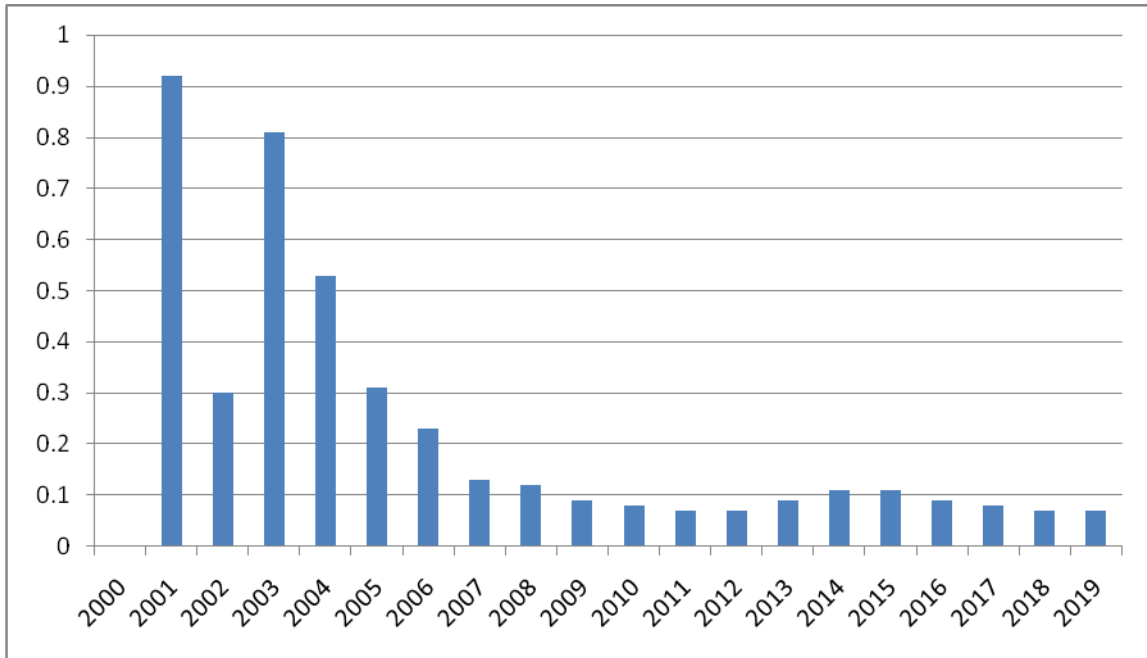


Figure-5: Relative Growth Rate for Research Output in the field of Coronavirus

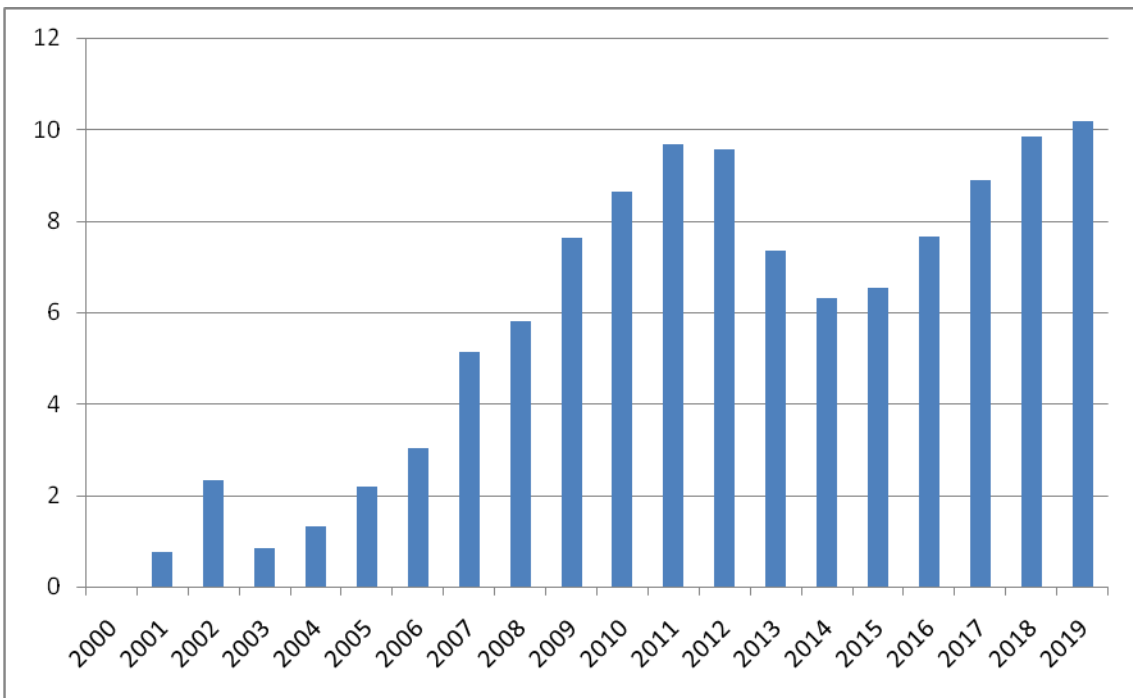


Figure-6: Doubling time for Research output in the field of Coronavirus

DISTRIBUTION OF JOURNALS IN THE FIELD OF CORONAVIRUS BASED ON BRADFORD LAW OF SCATTERING

As per the Bradford Law, journal articles (3229 records) in the field of Coronavirus have been selected for this study. The journals are grouped into three zones producing a similar number of journal articles in the field of Coronavirus. The distribution of the journal by zone-wise is given in Table-6. It has been noticed from Table-6 that 24 journals grouped in zone-1 published 1076 journal articles accounting for one-third of the total output. Likewise, the second zone contains 120 journals that have published 1131 journal articles, and 697 journals grouped in the third zone have published 1022 journal articles. Zone-1&2 journals have been identified as core journals in the field of Coronavirus. (Fig.7)

Table-6: Distribution by Zone of cited journals and journal articles in the field of Coronavirus

Zone	No. of Journals		No. of journal articles		Cumulative No. of journal articles
	No.	(%)	No.	(%)	
Zone 1	24	2.85	1076	33.32	1076
Zone 2	120	14.27	1131	35.03	2207
Zone 3	697	82.88	1022	31.65	3229
Total	841	100.00	3229	100.00	

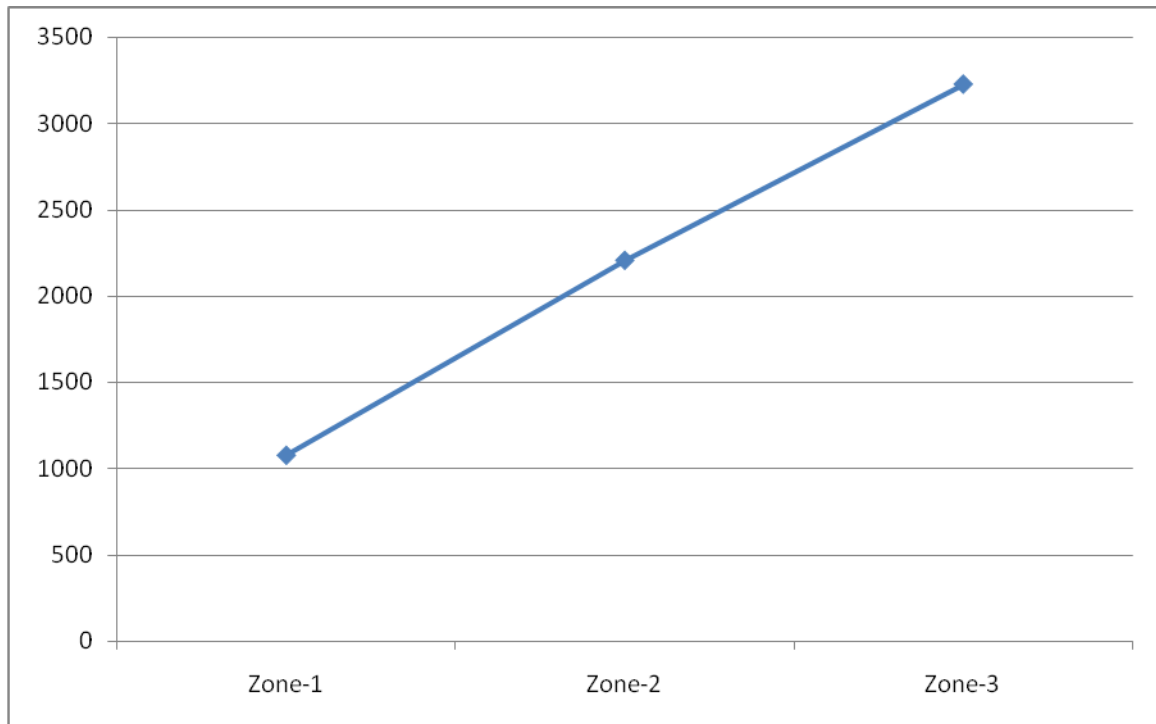


Figure-7: Distributions of Journals by Zones in the field of Coronavirus

RANKING OF CORE JOURNALS IN CORONAVIRUS RESEARCH

Ranking of the core journals along with the country of publications based on the research output in the field of Coronavirus is presented in Table-7. The core journals in the field of coronavirus up to ten ranks are as follows:

1. 'Emerging Infectious Diseases' published in the United States with 89 contributions amounting to 2.76% of total contributions.
2. 'Veterinary Microbiology' published in the Netherlands with 78 contributions amounting to 2.42%.
3. 'Journal of Virology' published in the United States with 75 contributions amounting to 2.32%.

4. 'Archives of Virology' published in Austria with 71 contributions amounting to 2.2%.
5. 'Avian Diseases' published in the United States with 55 contributions amounting to 1.7%.
6. 'Advances in Experimental Medicine and Biology' published in the United States with 54 contributions amounting to 1.67%.
7. 'The Journal of Veterinary Medical Science' published in Japan with 52 contributions amounting to 1.61%.
8. 'BMC Veterinary Research' published in England with 50 contributions amounting to 1.55%.
9. 'PloS One' published in the United States with 50 contributions amounting to 1.55%.
10. 'Avian Pathology' published in England with 44 contributions amounting to 1.36%.
11. 'Virus Genes' published in the United States with 43 contributions amounting to 1.33%

Out of the top ten ranks, the United States journal is dominating and contributes the journal articles to the first rank, Netherlands journal contributes the journal articles to the second position, once again one more United States journal contributes the journal articles to the third position, Austria journal contributes the journal articles to the fourth position, again the United States journal contributes the journal articles to the fifth and

sixth position, Japan journal contributes the journal articles to the seventh position, England and the United States journal contributes the journal articles to the eighth position, England journal contributes the journal articles to the ninth position and one more United States journal contributes the journal articles to the tenth position.

Table-7: Ranking of Core Journals in Coronavirus Research

S. No.	Name of the Journal	No. of Records	%	Country of Publication
1.	Emerging Infectious Diseases	89	2.76	United States
2.	Veterinary Microbiology	78	2.42	Netherlands
3.	Journal of Virology	75	2.32	United States
4.	Archives of Virology	71	2.2	Austria
5.	Avian Diseases	55	1.7	United States
6.	Advances in Experimental Medicine and Biology	54	1.67	United States
7.	The Journal of Veterinary Medical Science	52	1.61	Japan
8.	BMC Veterinary Research	50	1.55	England
9.	PloS One	50	1.55	United States
10.	Avian Pathology	44	1.36	England
11.	Virus Genes	43	1.33	United States
12.	Journal of Virological Methods	41	1.27	Netherlands
13.	Viruses	40	1.24	Switzerland
14.	Transboundary and Emerging Diseases	37	1.15	Germany
15.	MMWR. Morbidity and Mortality Weekly Report	33	1.02	United States
16.	Poultry Science	33	1.02	England
17.	Journal of Veterinary Diagnostic Investigation	32	0.99	United States
18.	Virology	30	0.93	United States
19.	Methods in Molecular Biology	29	0.9	United States
20.	The Journal of General Virology	29	0.9	England
21.	Virus Research	29	0.9	Netherlands
22.	Euro Surveillance	28	0.87	Sweden
23.	Emerging Microbes & Infections	27	0.84	United States
24.	Journal of Feline Medicine and Surgery	27	0.84	England
25.	Journal of Medical Virology	26	0.81	United States
26.	Research in Veterinary Science	24	0.74	England

S. No.	Name of the Journal	No. of Records	%	Country of Publication
27.	BMC Infectious Diseases	23	0.71	England
28.	Journal of Clinical Microbiology	23	0.71	United States
29.	Vaccine	23	0.71	Netherlands
30.	The Veterinary Record	22	0.68	England
31.	Preventive Veterinary Medicine	21	0.65	Netherlands
32.	Biochemical and Biophysical Research Communications	20	0.62	United States
33.	Journal of Infection and Public Health	20	0.62	England
34.	Clinical Infectious Diseases	19	0.59	United States
35.	International Journal of Infectious Diseases : IJID	17	0.53	Canada
36.	JAMA	16	0.5	United States
37.	Japanese Journal of Infectious Diseases	16	0.5	Japan
38.	American Journal of Infection Control	15	0.46	United States
39.	Antiviral Research	15	0.46	Netherlands
40.	Frontiers in Microbiology	15	0.46	Switzerland
41.	Genome Announcements	15	0.46	United States
42.	Journal of Clinical Virology	15	0.46	Netherlands
43.	Veterinary Research	15	0.46	England
44.	Epidemiology and Health	14	0.43	Korea (South)
45.	Virology Journal	14	0.43	England
46.	Bing Du XueBao = Chinese Journal of Virology	12	0.37	China
47.	Journal of Wildlife Diseases	12	0.37	United States
48.	Lancet	12	0.37	England
49.	ActaVirologica	11	0.34	Slovakia
50.	Chinese Science Bulletin = KexueTongbao	11	0.34	China
51.	Pediatrics	11	0.34	United States
52.	The Journal of Hospital Infection	11	0.34	England
53.	The New England Journal of Medicine	11	0.34	United States
54.	Travel Medicine and Infectious Disease	11	0.34	Netherlands
55.	Tropical Animal Health and Production	11	0.34	United States
56.	Veterinary Immunology and Immunopathology	11	0.34	Netherlands
57.	VirologicaSinica	11	0.34	China
58.	ZhonghuaShi Yan He Lin Chuang Bing Du XueZaZhi = ZhonghuaShiyan He Linchuang	11	0.34	China
59.	Journal of Veterinary Internal Medicine	10	0.31	United States

S. No.	Name of the Journal	No. of Records	%	Country of Publication
60.	ZhonghuaYu Fang Yi XueZaZhi [Chinese Journal of Preventive Medicine]	10	0.31	China
61.	Applied Microbiology and Biotechnology	9	0.28	Germany
62.	Brazilian Journal of Microbiology	9	0.28	Brazil
63.	Clinical and Vaccine Immunology : CVI	9	0.28	United States
64.	Clinical Microbiology and Infection	9	0.28	England
65.	Journal of Comparative Pathology	9	0.28	England
66.	Journal of Korean Medical Science	9	0.28	Korea (South)
67.	Microbial Pathogenesis	9	0.28	England
68.	Nature	9	0.28	England
69.	The Journal of Biological Chemistry	9	0.28	United States
70.	The Journal of Infectious Diseases	9	0.28	United States
71.	The Lancet. Infectious Diseases	9	0.28	United States
72.	Voprosy Virusologii	9	0.28	Russia(Federation)
73.	Xi Bao Yu Fen ZiMian Yi XueZaZhi = Chinese Journal of Cellular and Molecular	9	0.28	China
74.	ZhonghuaErKeZaZhi = Chinese Journal of Pediatrics	9	0.28	China
75.	ZhonghuaLiu Xing Bing XueZaZhi = ZhonghuaLiuxingbingxueZazhi	9	0.28	China
76.	ActaVeterinariaHungarica	8	0.25	Hungary
77.	Eastern Mediterranean Health Journal = La Revue De Sante De La Mediterranee	8	0.25	Egypt
78.	Infection & Chemotherapy	8	0.25	Korea (South)
79.	Infection Control and Hospital Epidemiology	8	0.25	United States
80.	International Journal of Molecular Sciences	8	0.25	Switzerland
81.	Intervirology	8	0.25	Switzerland
82.	Journal of Infection in Developing Countries	8	0.25	Italy
83.	Journal of Microbiology and Biotechnology	8	0.25	Korea (South)
84.	Journal of Neuroimmunology	8	0.25	Netherlands
85.	Journal of Veterinary Science	8	0.25	Korea (South)
86.	Oncotarget	8	0.25	United States
87.	PloS Pathogens	8	0.25	United States
88.	ReleveEpidemiologiqueHebdomadaire	8	0.25	Switzerland
89.	Scandinavian Journal of Infectious Diseases	8	0.25	England
90.	The Canadian Veterinary Journal = La Revue	8	0.25	Canada

S. No.	Name of the Journal	No. of Records	%	Country of Publication
	VeterinaireCanadienne			
91.	The Journal of Small Animal Practice	8	0.25	England
92.	The Pediatric Infectious Disease Journal	8	0.25	United States
93.	Annals of Laboratory Medicine	7	0.22	Korea (South)
94.	Comparative Medicine	7	0.22	United States
95.	Epidemiology and Infection	7	0.22	England
96.	European Journal of Clinical Microbiology & Infectious Diseases	7	0.22	Germany
97.	European Journal of Medicinal Chemistry	7	0.22	France
98.	European Journal of Wildlife Research	7	0.22	Germany
99.	International Journal of Environmental Research and Public Health	7	0.22	Switzerland
100	Open Forum Infectious Diseases	7	0.22	United States
101	Proceedings of the National Academy of Sciences of the United States of America	7	0.22	United States
102	Revue Scientifique Et Technique	7	0.22	France
103	Saudi Medical Journal	7	0.22	Saudi Arabia
104	Scientific Reports	7	0.22	England
105	The Lancet. Respiratory Medicine	7	0.22	England
106	Veterinary Pathology	7	0.22	United States
107	Western Pacific Surveillance and Response Journal : WPSAR	7	0.22	Philippines
108	Advances in Virology	6	0.19	United States
109	Biomed Research International	6	0.19	United States
110	BMC Research Notes	6	0.19	England
111	Deutsche MedizinischeWochenschrift(1946)	6	0.19	Germany
112	Health Security	6	0.19	United States
113	Journal of Animal Science	6	0.19	United States
114	Journal of Dairy Science	6	0.19	United States
115	Journal of Thoracic Disease	6	0.19	China
116	Medical Hypotheses	6	0.19	United States
117	Microbiology Resource Announcements	6	0.19	United States
118	New Microbes and New Infections	6	0.19	England
119	Pathogens (Basel, Switzerland)	6	0.19	Switzerland
120	PloS Currents	6	0.19	United States
121	The New Microbiologica	6	0.19	Italy

S. No.	Name of the Journal	No. of Records	%	Country of Publication
122	Virus Evolution	6	0.19	England
123	ZhurnalMikrobiologii, Epidemiologii, I Immunobiologii	6	0.19	Russia (Federation)
124	ActaVeterinariaScandinavica	5	0.15	England
125	Ajr. American Journal of Roentgenology	5	0.15	United States
126	Annals of Thoracic Medicine	5	0.15	India
127	Archives De Pediatrie : OrganeOfficiel De La SocieteFrancaise De Pediatrie	5	0.15	France
128	Bioorganic & Medicinal Chemistry	5	0.15	England
129	Canadian Journal of Veterinary Research = Revue Canadienne De Recherche	5	0.15	Canada
130	Clinical and Diagnostic Laboratory Immunology	5	0.15	United States
131	Current Infectious Disease Reports	5	0.15	United States
132	DNA and Cell Biology	5	0.15	United States
133	Experimental Animals	5	0.15	Japan
134	Future Virology	5	0.15	England
135	Hong Kong Medical Journal = XianggangYi XueZaZhi	5	0.15	China
136	International Journal of General Medicine	5	0.15	New Zealand
137	Journal of Immunology	5	0.15	United States
138	Journal of Infection and Chemotherapy	5	0.15	Netherlands
139	Journal of Preventive Medicine and Public Health = YebangUihakhoeChi	5	0.15	Korea (South)
140	Journal of Travel Medicine	5	0.15	England
141	One Health (Amsterdam, Netherlands)	5	0.15	Netherlands
142	Sheng Wu Gong Cheng XueBao = Chinese Journal Of Biotechnology	5	0.15	China
143	The American Journal of Tropical Medicine and Hygiene	5	0.15	United States
144	Veterinary Journal	5	0.15	England

DISTRIBUTION OF JOURNALS BY COUNTRY-WISE IN ZONES IN THE FIELD OF CORONAVIURS

The distribution of journals by country of publication in zone-1 in Table-8 and Zone-2 is presented in Tables-9 and the combined of Zone-1 & Zone 2 is presented in Table-10 respectively.

DISTRIBUTION OF JOURNALS BY COUNTRY IN THE FIRST ZONE IN THE FIELD OF CORONAVIURS

The United States with the main contributions, published 11(45.83%) journals out of 24(100%) journals in zone-1 followed by England 5 (20.83%) journals in the second position, Netherlands 3 (12.50%) journals in the third position. The fourth position was shared by the countries i.e. Austria 1 (4.17%) journal, Germany 1 (4.17%) journal, Japan 1 (4.17%) journal, Sweden 1 (4.17%) journal, and Switzerland 1(4.17%) journal. (Fig.8)

Table-8: Distribution of Journals by country in the First Zone

Country of origin	Total No. of Journals	%	Cumulative Total	Cumulative %
United States	11	45.83	11	45.83
England	5	20.83	16	66.67
Netherlands	3	12.50	19	79.17
Austria	1	4.17	20	83.33
Germany	1	4.17	21	87.50
Japan	1	4.17	22	91.67
Sweden	1	4.17	23	95.83
Switzerland	1	4.17	24	100.00
Total	24	100.00		

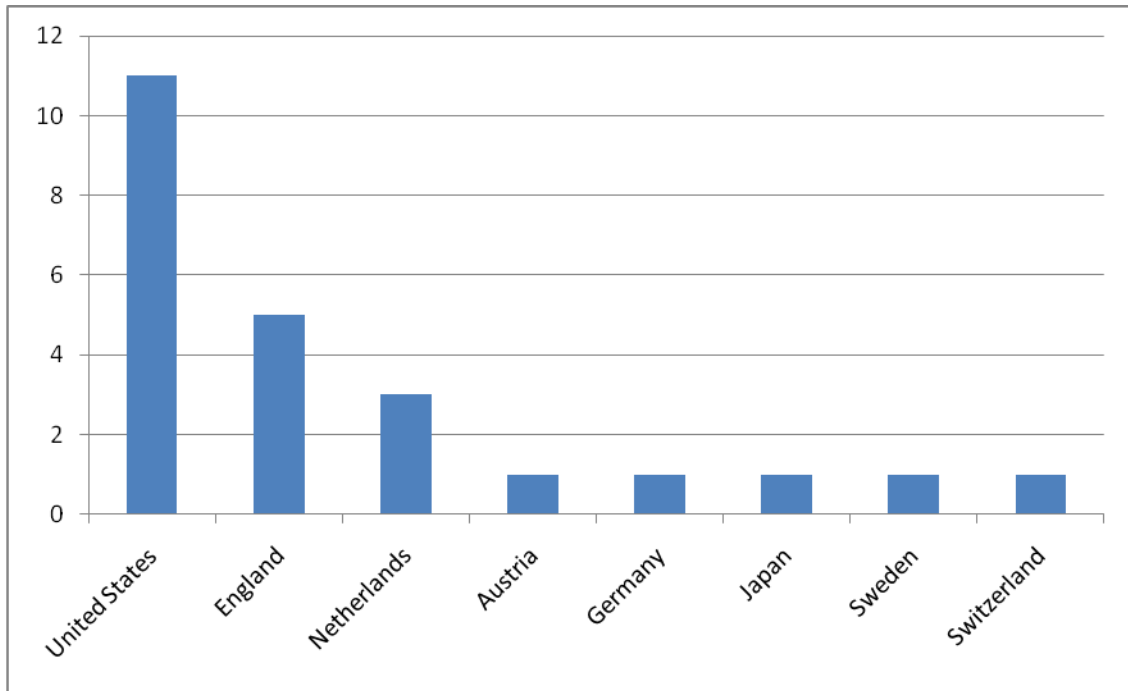


Figure-8: Distribution of Journals by country in the First Zone

DISTRIBUTION OF JOURNALS BY COUNTRY IN THE SECOND ZONE IN THE FIELD OF CORONAVIRUS

The distributions of journals by country of publication in zone-2 are displayed in the Tables-9. In zone-2, the United States published 38 (31.67%) journals out of 120 (100%) journals followed by England 25 (20.83%) journals, China 11 (9.17%) journals, Netherlands 9 (7.50%) journals, Korea (South) 7 (5.83%) journals, Switzerland 6 (5.00%) journals, Germany 4 (3.33%) journals, Canada 3 (2.50%) journals, France 3 (2.50%) journals, Italy 2 (1.67%) journals, Japan 2 (1.67%) journals, Russia (Federation) 2 (1.67%) journals, Brazil 1 (0.83%) journal, Egypt 1 (0.83%) journal, Hungary 1 (0.83%) journal, India 1 (0.83%) journal, New Zealand 1 (0.83%) journal, Philippines 1 (0.83%) journal, Saudi Arabia 1 (0.83%) journal, and Slovakia 1 (0.83%) journal. (Fig.9)

Table-9: Distribution of Journals by country in the Second Zone

Country of origin	Total No. of Journals	%	Cumulative Total	Cumulative %
United States	38	31.67	38	31.67
England	25	20.83	63	52.50
China	11	9.17	74	61.67
Netherlands	9	7.50	83	69.17
Korea (South)	7	5.83	90	75.00
Switzerland	6	5.00	96	80.00
Germany	4	3.33	100	83.33
Canada	3	2.50	103	85.83
France	3	2.50	106	88.33
Italy	2	1.67	108	90.00
Japan	2	1.67	110	91.67
Russia (Federation)	2	1.67	112	93.33
Brazil	1	0.83	113	94.17
Egypt	1	0.83	114	95.00
Hungary	1	0.83	115	95.83
India	1	0.83	116	96.67
New Zealand	1	0.83	117	97.50
Philippines	1	0.83	118	98.33
Saudi Arabia	1	0.83	119	99.17
Slovakia	1	0.83	120	100.00
Total	120	100.00		

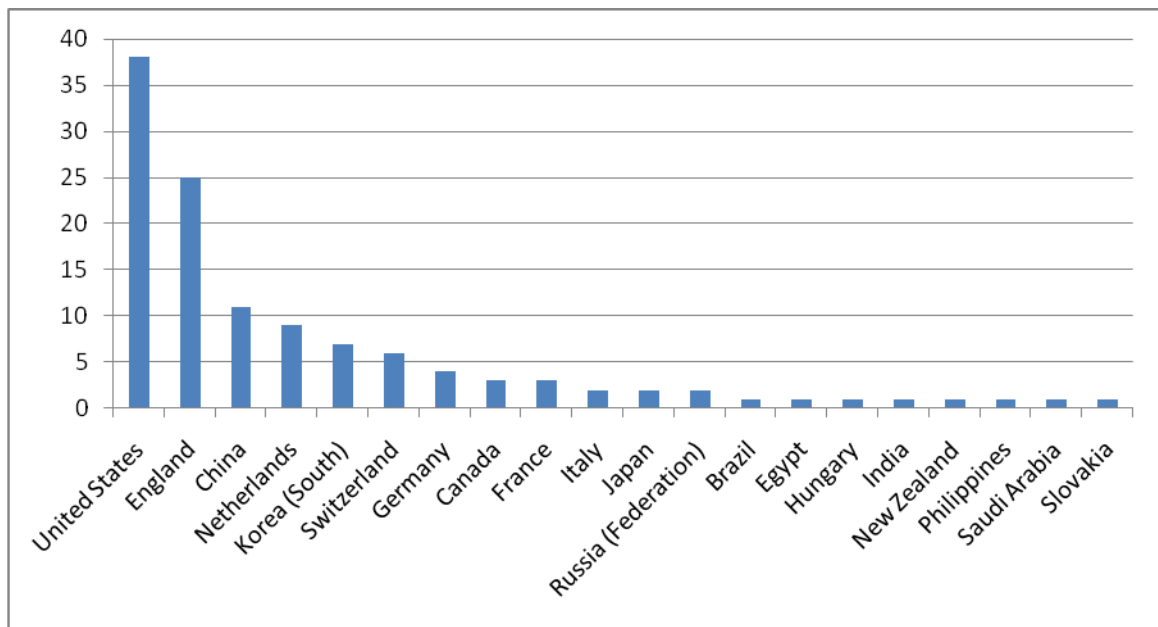


Figure-9: Distribution of Journals by country in the Zone-2

DISTRIBUTION OF JOURNALS BY COUNTRY IN THE COMBINED OF FIRST & SECOND ZONES IN THE FIELD OF CORONAVIURS

The journals by country of publication in zone-1 and zone-2 combined have been presented in the Tables-10. The journals are presented in zone-1 and zone-2 combined has been identified as core journals in the field of Coronavirus. It has been presented that the United States published 49 core journals (34.03%) out of 144 (100%) core journals in the first position followed by England 30 (20.83%) core journals, Netherlands 12 (8.33%) core journals, China 11 (7.64%) core journals, Korea (South) 7 (4.86%) core journals, Switzerland 7 (4.86%) core journals, Germany 5 (3.47%) core journals, Canada 3 (2.08%) core journals, France 3 (2.08%) core journals, Japan 3 (2.08%) core journals, Italy 2 (1.39%) core journals, Russia (Federation) 2 (1.39%) core journals, Austria 1 (0.69%) core journal, Brazil 1 (0.69%) core journal, Egypt 1 (0.69%) core journal, Hungary 1 (0.69%) core journal, India 1 (0.69%) core journal, New Zealand 1 (0.69%) core journal, Philippines 1 (0.69%) core journal, Saudi Arabia 1 (0.69%) core journal, Slovakia 1 (0.69%) core journal, and Sweden 1 (0.69%) core journal. (Fig.10)

It has been exposed to the study that these countries are the main publishers of literature in the field of Coronavirus. The study may be understood as the research in the field of Coronavirus may be concentrated in these countries. It may be the MEDLINE database has covered more journals published from these countries in the field of Coronavirus.

Table-10: Distribution of Journals by country in the Combined of First & Second Zones in the field of Coronavirus

Country of origin	Total No. of Journals	%	Cumulative Total	Cumulative %
United States	49	34.03	49	34.03
England	30	20.83	79	54.86
Netherlands	12	8.33	91	63.19
China	11	7.64	102	70.83
Korea (South)	7	4.86	109	75.69
Switzerland	7	4.86	116	80.56
Germany	5	3.47	121	84.03
Canada	3	2.08	124	86.11
France	3	2.08	127	88.19
Japan	3	2.08	130	90.28
Italy	2	1.39	132	91.67
Russia (Federation)	2	1.39	134	93.06
Austria	1	0.69	135	93.75
Brazil	1	0.69	136	94.44
Egypt	1	0.69	137	95.14
Hungary	1	0.69	138	95.83
India	1	0.69	139	96.53
New Zealand	1	0.69	140	97.22
Philippines	1	0.69	141	97.92
Saudi Arabia	1	0.69	142	98.61
Slovakia	1	0.69	143	99.31
Sweden	1	0.69	144	100.00
Total	144	100.00		

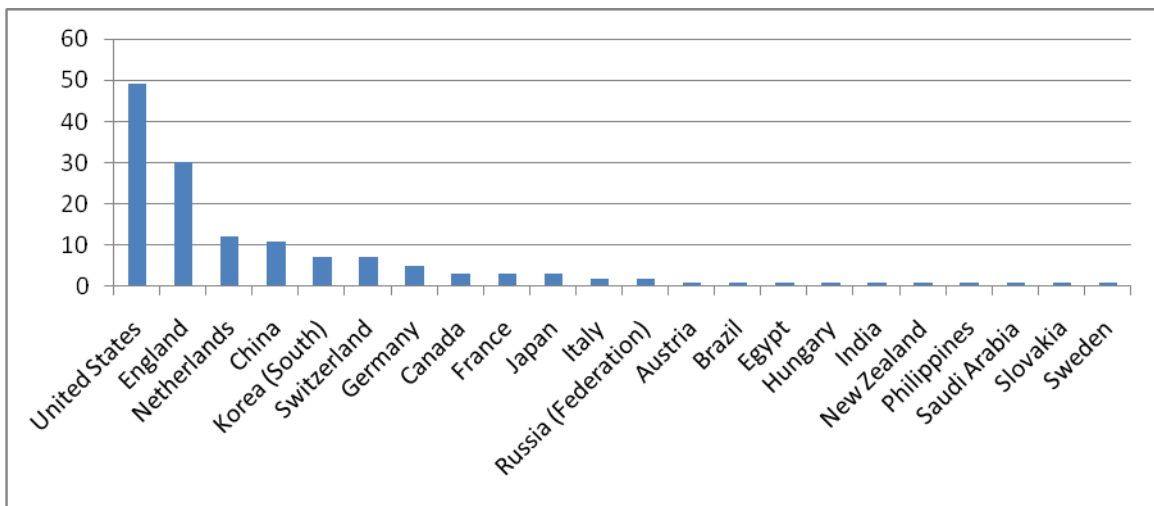


Figure-10: Distribution of Journals by country in zone-1 and zone-2 combined

CONCLUSION

In the field of medicine, the results show that Coronavirus literature growth is in an inconsistent manner throughout the study period. It has been shown in the study that a maximum number of records covered by Research Support, Non U.S. Gov't in the field of Coronavirus. The United States in the field of Coronavirus literature covered the maximum numbers of records followed by England, Netherlands, and China. The English language dominates literature in the field of Coronavirus. A total of 144 core journals have been identified in the field of Coronavirus.

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