

Scientometric Analysis of Pediatric Research Output in Global: A Study

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Abstract - Pediatric is a division of medicine dealing with the well-being and health check care of infants, children and adolescents. Pediatric is a newly developed medical branch, it was started developing only in the mid-19th century. “Abraham Jacobi” (1830–1919) is the father of pediatric. The American Academy of Pediatric [AAP] suggested that, the people should be under pediatric care up to the age of 21^[1]. In human life attempting to examine the contribution of medical care and its advancement, the goal must be addressed to the medical care. In this analysis the pediatric research output in global from the year 2001-2016, the data were retrieved from web of science [WOS] by Thomson Reuters, presently maintained by Clarivate Analytics. The total records published during this study period [2001-2016] 20615 publications. The outcome of this analysis combined together and provided as a result by the use of Scientometric’s statistic and mathematical methods. When the researcher provides the comprehensive classification by using the research indicator, the major responsibility can hold by the quantitative studies. This quantitative or statistical and mathematical method is called as Scientometric analysis.
Keywords: Scientometric Analysis, Pediatric Research

I. INTRODUCTION

Scientometric is also a science to evaluate the quality of a subject. Scientometric analysis is a quantitative arithmetical study of science and technology. Recently launched any leading journals related to informetrics or any important industry conferences or an issue of research journals, if one were to pick up that would find Scientometric output. Presently the Scientometric is a novel scientific field in world wide. In 2016 the journal “The Scientometric of nature” carried out a Scientometric research through D.Kalita^[2], Seraj S, Miles L^[3] – The Journal of Pediatrics 2014 [Children with chronic liver disease], Balistreri WF^[4] [Disease during treatment of children with hepatitis C], Jonas MM, Balistreri W^[5] [Peginterferon for chronic hepatitis C in Children], Schwarz KB, Gonzales-PeraltaR^[6] [Children and adolescents with chronic hepatitis C], Ryckman FC, Bucuvalas JC^[7], [semin pediatric surg.]

II. OBJECTIVES

1. To evaluate the year wise publication of Pediatric research output in Global.
2. To analyze the growth rate of publications by using the tool of RGR and Doubling Time.
3. To assess the ranking of authors based on their publications.
4. To examine the association of journals.

5. To find out the country wise collaboration of the pediatric research in global

III. METHODOLOGY

For this analysis the data were collected from the database of web of science [WOS] which was maintained by Thomson Reuters. Presently this is maintained by the name of Clarivate Analytics web of science. From the data retrieved the analysis of pediatric research output in global was analyzed. The bibliographic statistics like pediatric research output, journals, authors, country wise distribution etc., were studied by using the software Histicite.

IV. ANALYSIS

Totally 20615 pediatric research records were published during the study period of sixteen years [2001-2016]. The research results were analyzed by using scientometric indicators.

A. Year-wise Publications

TABLE I YEAR-WISE DISTRIBUTION OF PUBLICATIONS

Sl. No	Publication Year	Records	%	TLCS	TGCS
1	2001	478	2.3	946	15410
2	2002	493	2.4	946	14958
3	2003	546	2.6	1143	15738
4	2004	591	2.9	1280	16926
5	2005	716	3.5	1608	22458
6	2006	839	4.1	1392	20235
7	2007	875	4.2	1319	17869
8	2008	1105	5.4	1518	22675
9	2009	1697	8.2	2938	47653
10	2010	1828	8.9	2473	41886
11	2011	1950	9.5	1981	37131
12	2012	2068	10	1467	30798
13	2013	1866	9.1	976	17825
14	2014	1764	8.6	537	10512
15	2015	1995	9.7	248	6317
16	2016	1804	8.8	42	2079
	Total	20615	100	20814	34047

TLCS * -Total Local Citation Score, TGCS **-Total Global Citation Score

Table I state that the year wise distribution of Pediatric research output in global from the year 2001-2016. A total of 20615 records were published during the study period [2001-2016]. The maximum publication provided in the year 2012 with 2068 records and the Total Global Citation Score is 30798, the Total Local Citation Score is 1467, second highest score of publications produced in the year 2015 with 1995 records and the Total Global Citation Score

is 6317, the Total Local Citation Score is 248. In the study period the year 2009 has got the maximum Global Citation score of 47653 with 1697 records. The lowest number of publication published in the year 2001 with 478 records having a Global Citation Score of 15410. This results declares that the minimum number of publications also have the high Global Citation Scores.

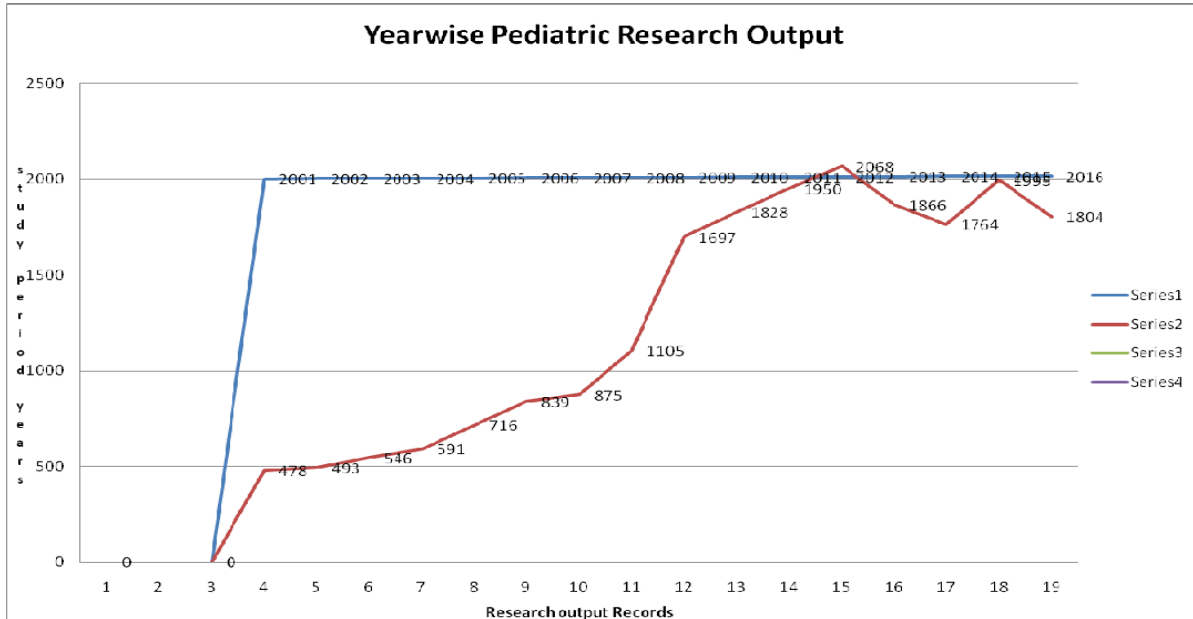


Fig. 1 Year-wise Pediatric Research Output

B. Relative Growth Rate (Rgr) and Doubling Time (Dt)

TABLE II RELATIVE GROWTH RATE AND DOUBLING TIME OF PUBLICATIONS

Sl. No.	Year	Records	Cumulative Number of Article	Log1c	Log2c	[R(p)]	Mean [R(p)]	[Dt(p)]	Mean [Dt(p)]
1	2001	478	478	-	6.169	-	0.371	-	1.16
2	2002	493	971	6.169	6.878	0.709		0.977	
3	2003	546	1517	6.878	7.324	0.446		1.553	
4	2004	591	2108	7.324	7.653	0.329	0.246	2.106	2.86
5	2005	716	2824	7.653	7.945	0.292		2.373	
6	2006	839	3663	7.945	8.206	0.261		2.655	
7	2007	875	4538	8.206	8.420	0.214		3.238	
8	2008	1105	5643	8.420	8.638	0.218	0.212	3.178	3.35
9	2009	1697	7340	8.638	8.901	0.263		2.634	
10	2010	1828	9168	8.901	9.123	0.222		3.121	
11	2011	1950	11118	9.123	9.316	0.193	0.111	3.590	6.31
12	2012	2068	13186	9.316	9.486	0.17		4.076	
13	2013	1866	15052	9.486	9.619	0.133		5.210	
14	2014	1764	16816	9.619	9.730	0.111		6.243	
15	2015	1995	18811	9.730	9.842	0.112	0.111	6.187	6.31
16	2016	1804	20615	9.842	9.933	0.091		7.615	

TLCS * -Total Local Citation Score, TGCS ** -Total Global Citation Score

The table II clearly shows the Relative Growth Rate and Doubling Time of Pediatric research output in global during the period of 2001-2016. The results states that the relative growth index decreasing year by year, at the same time doubling time is increasing.

C. Ranking of Authors

TABLE III RANKING OF AUTHORS IN PEDIATRIC RESEARCH OUTPUT IN GLOBAL.

Sl. No.	Author	Records	%	TLCS	TGCS
1	McCrimble BW	53	0.3	151	2139
2	Varni JW	52	0.3	436	4918
3	Freed GL	51	0.2	174	876
4	Daniels SR	42	0.2	256	3861
5	Esposito S	39	0.2	37	604
6	O'Connor KG	38	0.2	287	1324
7	Colan SD	37	0.2	112	1097
8	Shah SS	37	0.2	129	1181
9	Byington CL	36	0.2	102	1307
10	Gauvreau K	36	0.2	84	1347
11	Berul CI	35	0.2	140	1071
12	Ross LF	35	0.2	64	430
13	Brady MT	34	0.2	81	977
14	Long SS	34	0.2	43	475
15	Berg RA	32	0.2	182	1214
16	Bradley JS	32	0.2	98	1257
17	Edwards KM	32	0.2	77	1063
18	Orenstein WA	32	0.2	85	1022
19	Principi N	32	0.2	35	512
20	Schutze GE	32	0.2	78	882
21	Christakis DA	31	0.2	127	1406
22	Tibboel D	31	0.2	17	368
23	Carlo WA	30	0.1	81	2117
24	Hall M	30	0.1	98	790
25	Rhykmy	30	0.1	83	328

TLCS * -Total Local Citation Score, TGCS ** -Total Global Citation Score

The table III ranking of authors in pediatric research output clearly says that McCrimble BW has published the maximum number of publications with 53 records, having a total global citation score of 2139 and local citation score of 151, followed by Varni JW with 52 records having a total global citation score of 4918 and the local citation score of 436 thirdly Freed GL with 51 records having a total global

citation score of 876 and the local citation score of 174 during the period 2001-2016.

D. Contribution of Journals

TABLE IV CONTRIBUTION OF JOURNALS IN PEDIATRIC RESEARCH OUTPUT IN GLOBAL

Sl. No.	Journal	Records	TLCS	TGCS
1	Pediatrics	4083	9411	146732
2	Journal Of Pediatrics	385	284	1484
3	Circulation	324	1176	20588
4	Pediatric Critical Care Medicine	300	367	3178
5	Journal Of Urology	254	397	4735
6	Clinical Pediatrics	214	187	1632
7	Pediatric Infectious Disease Journal	194	237	3651
8	Archives De Pediatrie	183	25	321
9	Pediatric Blood & Cancer	171	107	1763
10	Monatsschrift Kinderheilkunde	169	22	131
11	Pediatric Anesthesia	169	112	1470
12	Pediatric Transplantation	159	92	1511
13	Journal Of Pediatric Gastroenterology And Nutrition	157	183	3044
14	Current Opinion In Pediatrics	151	122	1510
15	Academic Pediatrics	149	135	1054
16	Academic Medicine	131	243	2474
17	Pediatric Nephrology	131	62	1367
18	Pediatric Cardiology	129	54	879
19	Critical Care Medicine	126	212	2323
20	Journal Of Pediatric Surgery	119	75	1388
21	Pediatric Emergency Care	118	114	874
22	Archivos Argentinos De Pediatría	112	24	137
23	Journal Of Developmental And Behavioral Pediatrics	111	114	1337
24	Journal Of Pediatric Hematology Oncology	107	49	1164
25	Pediatric Clinics Of North America	103	114	1385

TLCS * -Total Local Citation Score, TGCS ** -Total Global Citation Score

The above table IV describes the list of top 25 journals contribution to the pediatric research output in global. The result states that the journal pediatrics holds the first place having 4083 records with 146732 Global Citation Score and the Local Citation Score is 9411, followed the Journal of Pediatrics with 385 records, the Global Citation Score is 1484 and the Local Citation Score is 284.

E. Country-wise Contribution

TABLE V COUNTRY-WISE CONTRIBUTION TO THE PEDIATRIC RESEARCH OUTPUT IN GLOBAL

Sl. No	Country	Records	%	TLCS	TGCS
1	USA	11754	57	15069	221767
2	Canada	1636	7.9	1788	35079
3	Unknown	1156	5.6	2261	28149
4	UK	827	4	619	20247
5	Germany	703	3.4	449	11368
6	France	698	3.4	294	8260
7	Italy	674	3.3	517	11710
8	Australia	527	2.6	530	13219
9	Netherlands	503	2.4	341	11076
10	Spain	418	2	140	8633
11	Brazil	346	1.7	89	2825
12	Turkey	338	1.6	69	1981
13	Japan	302	1.5	119	3558
14	Peoples R China	285	1.4	81	2927
15	Israel	235	1.1	204	3769
16	Switzerland	217	1.1	153	4568
17	Belgium	185	0.9	112	3928
18	Iran	184	0.9	20	573
19	Sweden	176	0.9	124	4998
20	Argentina	161	0.8	88	1385

TLCS * -Total Local Citation Score, TGCS **-Total Global Citation Score

Table V shows the country wise distribution of top 20 countries in the Pediatric research output in global. It presents the clear view that the country USA got the first position by contributing 11754 publications with 221767 Global Citation Score and 15069 Local Citation Scores, followed by Canada 1636 publications along with 35079 Global Citation Score and 1788 Local Citation Score.

V. FINDINGS

The study about Pediatric research output in global has validation that the maximum publication provided in the year 2012 with 2068 records and the Total Global Citation Score is 30798, the Total Local Citation Score is 1467, second highest score of publications produced in the year 2015 with 1995 records and the Total Global Citation Score is 6317, the Total Local Citation Score is 248. In the study of RGR, it exposes that the relative growth rate is decreasing whereas the doubling time is increasing year by

year. In the study of author distribution the study has given McCrindle BW has published the maximum number of publications with 53 records, having a total global citation score of 2139 and local citation score of 151, followed by Varni JW with 52 records having a total global citation score of 4918 and the local citation score of 436. When scrutinize the journal publications the result states that the journal pediatrics holds the first place having 4083 records with 146732 Global Citation Score and the Local Citation Score is 9411, followed the Journal of Pediatrics with 385 records, the Global Citation Score is 1484 and the Local Citation Score is 284. The final study on country wise contribution gives the country USA got the first position by contributing 11754 publications with 221767 Global Citation Score and 15069 Local Citation Scores, followed by Canada 1636 publications along with 35079 Global Citation Score and 1788 Local Citation Score.

VI. CONCLUSION

Based on the findings, the researcher concludes the study with the help of scrutinizing the Relative Growth Rate (RGR), Author Distribution, Journal Contribution and the Country wise Contribution. With the support of these results revealed, the relative growth index shows that the growth decreasing every year but the doubling time increases. According to the author ranking McCrindle BW holds the first place in providing the research output on pediatric articles. In the journal wise contribution, maximum contribution in done by the Pediatric journal and finally the country wise contribution, USA conserved the top rank by providing maximum records on pediatric.

REFERENCES

- [1] "Age limits of pediatrics", *Pediatrics*, Vol. 81, No. 5, pp. 736. May 1988.
- [2] JC Ryckman, FC, Bucuvalas, J Nathan, *Semin Pediatr Surg.* Vol.17, No. 2, pp. 123-30, May 2008.
- [3] KB Schwarz, R Gonzalez-Peralta, *The Peds-C – Gastroenterology*, Vol. 140, pp. 450-458, 2011.
- [4] MM Jonas, W. C Balistreri, "*Hepatology*", Vol. 56, No. 2, pp. 523-31, Aug. 2012.
- [5] WF Balistreri, "Master's Perspective, Growth and Development of a New Subspecialty: Pediatric Hepatology", *Hepatology*, Vol. 58, pp. 458-476, 2013
- [6] SA Xanthakos, DJ Podberesky, S,Serai L Miles, EC King, WF Balistreri, R Kohli, *The Journal of Pediatrics*, Vol. 164, No.1, pp.186-8, Jan 2014.
- [7] D.Kalita, "The scientometrics of Nature", *Journal of Scientometric Research*, Vol. 5, No.2, pp. 123-134, 2016.