Author Productivity on Paediatric Medicine Research Output: A Scientometric Approach

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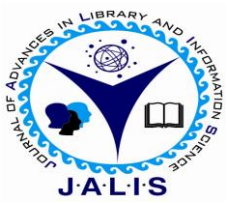
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Abstract

The study analyzes Author Productivity of Paediatric Medicine Research indexed in the Web of Science database. "Paediatric Medicine" as a search term in the all field tag obtained 11500 records and the period of coverage from 1989 to 2021. It is observed that 133353 contributing authors, 1388 total number of sources, Authors per Document is 4.52, Co-Authors per Document is 11.6, Collaboration Index is 4.64. ***it*** *is discovered that the most productive author is Bakhshi S with 331 records dealing with Paediatric Medicines research, TLCS 162, TGCS 1721, TLCR 149 of all papers published in this research. It is clearly identifies Singh, Surjit, bansal and Deepak were contributed more articles in Paediatric Medicines research publications with predominant position.*
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Keywords
Scientometrics, Paediatric, Medicine, Lotka Law

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1. Introduction

Scientometric analysis has been widely applied to evaluate the growth of various disciplines and the research performance of the scientists. Further it could be noted that scientometric data could be used in the evaluation of research performance of individual scientists, research groups and countries and in the identification of emerging research areas. It aims to integrate the cognitive or intellectual structure of research with a view to appraise the relations among the authors, institutions, journal articles and as a means of assisting the peer review procedure. This paper explores Author Productivity on Paediatric Medicine Research Output: A Scientometric Approach. Scientometrics tools and laws are used for this research work wherever applicable. The present research reveals most prolific authors, values of h, g and m indexes for authors impact, Co-Authorship Network for authors also been discussed.

2. Review of Literature

Agarwal, A. et al. (2021) studied that Assisted reproductive technologies (ART) are considered as one of the primary management options to address severe male factor infertility. The purpose of this study was to identify the research trends in the field of male infertility and ART over the past 20 years (2000-2019) by analysing scientometric data (the number of publications per year, authors, author affiliations, journals. Lu, C. et al. (2020) analyzed Seven hundred and sixty-seven articles (including 717 primary articles and 60 review articles) and their cited references were included and analyzed. The majority of publications (*N* = 565, 73.7%) were published in mainland China, with Nanjing University of Chinese Medicine contributing the most publications (*N* = 42, 5.5%). The first core journal was *Journal of Ethnopharmacology* (*N* = 58, 7.6%; impact factor = 3.414). Basu, T., Mallik, A., & Mandal, N. (2017) revealed Phytocompounds and herbal extracts have been utilized in *Ayurveda*, *Siddha* and *Unani* medicine since thousands of years for treatment of various ailments. Success behind herbal medicine strongly suggests the interaction between bio-active phytocompounds with crucial biochemical pathways in a human body without causing adverse effects. Mahbuba, D., Rousseau, R., & Srivastava, D. (2010) the study found that a scientometric comparison between two health and population research organizations, namely the International Centre for Diarrhoeal Disease Research in Bangladesh (ICDDR,B) and the National Institute

of Cholera and Enteric Diseases (NICED) in India, during the period 1979-2008. We study these two institutes because they conduct similar research and because of their collaboration ties. Data are collected from the Web of Science (WoS) as well as from official records of these two organizations.

3. Objectives of the Study

- To identify & map the prolific authors of research papers in paediatric medicine research output
- To Know the Co-Authorship Visualization for County-Network
- To measure the Co-Authorship Index on paediatric medicine research
- To test the Lotka's Law of author productivity in paediatric medicine research publications
- To know author's dominance factor of h, g, m indexes on paediatric medicine research

4. Methodology

Data was downloaded from Web of Science for 'Paediatric Medicine with all the terms in MeSH (Medical Subject Heading) with limits as 'humans', '33 years during1989 to 2021'. . A total of 11500 records were obtained from Web of Science database for this study. This study covers the measured most prolific authors, values of h, g and m indexes for authors impact, Co-Authorship Network for authors also been discussed. An aggregate of 11500 records was downloaded and analyzed by using the R-Programming (Biblioshiny), VoS Viewer, HistCite and MS-Excel as per the objects of the study.

5. Result and Discussions

Table 1: Detailed Information of Sample data on Paediatric Medicines Research output

MAIN INFORMATION ABOUT DATA			
S. No	Description		Results
1	Time span		1989-2021
2	Sources (Journals, Books, etc)		1388
3	Documents		11500
4	Average years from publication		8.56
5	DOCUMENT CONTENTS	Keywords Plus (ID)	14244
6		Author's Keywords (DE)	16659
7		Authors	51946
8		Author Appearances	133353
9		Authors of single-authored documents	243
10		Authors of multi-authored documents	51703
11	AUTHORS COLLABORATION	Single-authored documents	366
12		Documents per Author	0.221
13		Authors per Document	4.52
14		Co-Authors per Documents	11.6
15		Collaboration Index	4.64

The table 1 indicates the sample details of Paediatric Medicines research publications obtained from the Web of Science database. The time span for the present study is from 1989 to 2021. In the resent study 11500 records were collected from the database, 133353 contributing authors, 1388 total number of sources, Authors per Document is 4.52, Co-Authors per Document is 11.6, Collaboration Index is 4.64.

Table 2: Most Prolific Authors (Top 25)

S. No	Author	Articles	Articles Fractionalized	TLCS	TLCS/t	TLCSx	TGCS	TGCS/t	TLCR
1	Bakhshi S	331	68.68	162	23.05	59	1721	218.53	149
2	Kumar R	293	58.63	172	18.84	83	7860	1051.72	134

3	Kumar A	292	56.62	159	17.52	88	13095	2327.62	123
4	Gupta A	288	49.9	215	28.91	86	3210	357.96	174
5	Singh S	273	50.04	147	26.34	33	3184	644.45	194
6	Sharma S	216	43.33	86	12.11	36	5547	983.85	143
7	Agarwala S	190	33.57	112	12.09	44	1085	94.83	71
8	Lodha R	186	31.78	283	57.8	73	16158	3718.99	258
9	Bagga A	183	39.15	211	24.94	63	2686	263.92	160
10	Bansal D	181	34.4	78	11.87	21	763	116.75	113
11	Trehan A	178	32.85	57	8.84	18	646	102.67	93
12	Singh M	175	32.67	93	12.85	29	1427	187.14	103
13	Kumar S	174	35.63	84	12.22	26	9265	1682.94	85
14	Kabra SK	169	33.26	137	15.25	62	2266	287.51	133
15	Gupta R	168	21.34	590	128.55	75	57457	12172.2	348
16	Sharma A	153	28.5	61	8	17	1145	186.66	62
17	Gupta DK	149	27.06	88	6.48	38	1189	98.42	78
18	Marwaha RK	145	33.25	82	7.4	40	1138	99.15	39
19	Singh A	145	26.04	157	30.79	33	12081	2388.5	91
20	Sinha A	144	29.28	144	27.77	48	2400	360.58	154
21	Gupta S	137	26.89	49	6.47	22	2012	512.87	94
22	Bhatnagar V	135	28.65	66	3.86	41	853	48.96	31
23	Kumar P	133	22.88	156	37.15	28	12354	2870.65	125
24	Sen S	128	24.21	42	3.02	20	1000	85.54	37
25	Srivastava A	123	21.51	103	11.71	48	1966	307.61	89

The table 2 describes that the most productive author is Bakhshi S with 331 records dealing with Paediatric Medicines research, TLCS 162, TGCS 1721, TLCR 149 of all papers published in this research. Kumar R 293, TLCS 172, TGCS 7860, TLCR 134 has appeared in the second rank, Kumar A. has produced 792 articles, TLCS 159, TGCS 13095, TLCR 123 has been place in the third rank, Gupta A. has contributed 288 papers in the field of Paediatric Medicines research, TLCS 215, TGCS 3210, TLCR 174 has shown as the fourth rank and Singh S. Has published 273 communications, TLCS 147, TGCS 3184, TLCR 194, appear as fourth place, , the remaining twenty authors are contributing 216 and below in Paediatric Medicines research out of top 25 contributors.

Table 3: Authors Impact – H-Index (Top 25)

S. No	Author	h_ index	g_ index	m_ index	TC	NP	PY_ start
1	GUPTA R	53	133	1.606	57457	133	1989
2	BHUTTA ZA	46	77	2.556	32527	77	2004
3	MURRAY CJL	41	59	4.1	42771	59	2012
4	VOS T	40	53	4	43080	53	2012
5	MOKDAD AH	38	55	6.333	31478	55	2016
6	NAGHAVI M	38	51	3.8	41099	51	2012
7	HAY SI	36	57	4	26138	57	2013
8	JONAS JB	35	55	3.5	34071	55	2012
9	FISCHER F	34	50	5.667	30139	50	2016
10	KASAEIAN A	34	48	5.667	32801	48	2016
11	YONEMOTO N	34	50	5.667	29845	50	2016
12	DANDONA L	33	45	1.571	27423	45	2001
13	MOHAMMED S	33	49	4.125	29517	49	2014
14	OGBO FA	33	46	5.5	29566	46	2016
15	QORBANI M	33	44	5.5	29535	44	2016
16	DANDONA R	32	42	5.333	27356	42	2016
17	KUMAR A	32	113	0.97	13095	190	1989
18	KUMAR GA	32	44	2.462	27386	44	2009
19	SARTORIUS B	32	46	5.333	29706	46	2016
20	TRAN BX	32	43	5.333	28948	43	2016
21	KHADER YS	31	43	5.167	26772	43	2016
22	KHAN EA	31	45	5.167	22943	45	2016
23	KHANG YH	31	33	5.167	29446	33	2016
24	KUMAR R	31	84	-	7860	218	-
25	LOPEZ AD	31	34	3.1	37523	34	2012

The above table proves that h-index-wise rank is acknowledged for the authors. It is definite that

GUPTA R appears as the first rank with 53 h-index value in Paediatric Medicine research output, followed by BHUTTA ZA in the second rank with 46 h-index value in Paediatric Medicine research output, MURRAY CJL appeared in third place with 41 h-index value in Paediatric Medicine research publications and VOS T has the fourth rank with 40 h-index value in Paediatric Medicine research output out of top twenty five authors in present research work.

Table 4: Authors Impact – G_Index (Top 25)

S. No	Author	h_ index	g_ index	m_ index	TC	NP	PY_ start
1	GUPTA R	53	133	1.606	57457	133	1989
2	LODHA R	30	126	-	16158	150	-
3	KUMAR A	32	113	0.97	13095	190	1989
4	KUMAR P	23	98	-	12359	98	-
5	KUMAR S	22	95	-	9265	133	-
6	SHARMA R	26	90	0.813	24692	90	1990
7	KUMAR R	31	84	-	7860	218	-
8	SINGH V	22	84	1.222	14384	84	2004
9	BHUTTA ZA	46	77	2.556	32527	77	2004
10	SINGH A	17	75	0.708	12081	75	1998
11	GUPTA V	20	73	-	19792	73	-
12	SHARMA S	20	72	0.606	5547	154	1989
13	BASU S	24	65	-	14218	65	-
14	KUMAR M	19	65	0.731	9036	65	1996
15	MURRAY CJL	41	59	4.1	42771	59	2012
16	HAY SI	36	57	4	26138	57	2013
17	JONAS JB	35	55	3.5	34071	55	2012
18	MOKDAD AH	38	55	6.333	31478	55	2016
19	JAIN A	15	54	0.833	4386	54	2004
20	SHARMA M	17	54	0.607	6820	54	1994
21	SINGH R	16	53	-	4342	53	-
22	VOS T	40	53	4	43080	53	2012
23	NAGHAVI M	38	51	3.8	41099	51	2012
24	FISCHER F	34	50	5.667	30139	50	2016
25	YONEMOTO N	34	50	5.667	29845	50	2016

The above table confirms that g-index-wise rank is accredited for the authors. It is explicit that GUPTA R appears as the first rank with 133 g-index value in Paediatric Medicine research output, followed by LODHA R in the second rank with 126 g-index value in Paediatric Medicine research output, KUMAR A CJL appeared in third place with 113 g-index value in Paediatric Medicine research publications and KUMAR P has the fourth rank with 98 g-index value in Paediatric Medicine research output out of top twenty five authors in current research study.

Table 5: Authors Impact – M_Index (Top 25)

S. No	Author	h_ index	g_ index	m_ index	TC	NP	PY _start
1	HAJ-MIRZAIAN A	30	43	7.5	18844	43	2018
2	MOKDAD AH	38	55	6.333	31478	55	2016
3	BEHZADIFAR M	24	35	6	16921	35	2018
4	FISCHER F	34	50	5.667	30139	50	2016
5	KASAEIAN A	34	48	5.667	32801	48	2016
6	YONEMOTO N	34	50	5.667	29845	50	2016
7	OGBO FA	33	46	5.5	29566	46	2016
8	QORBANI M	33	44	5.5	29535	44	2016
9	OLAGUNJU AT	27	35	5.4	19634	35	2017
10	SAFIRI S	27	33	5.4	20626	33	2017
11	DANDONA R	32	42	5.333	27356	42	2016
12	SARTORIUS B	32	46	5.333	29706	46	2016
13	TRAN BX	32	43	5.333	28948	43	2016
14	KHADER YS	31	43	5.167	26772	43	2016
15	KHAN EA	31	45	5.167	22943	45	2016
16	KHANG YH	31	33	5.167	29446	33	2016
17	ANTONIO CAT	30	42	5	27867	42	2016
18	BENSENOR IM	30	37	5	29101	37	2016
19	BIJANI A	20	27	5	12204	27	2018
20	HAMIDI S	30	42	5	28192	42	2016
21	KOYANAGI A	30	43	5	28281	43	2016
22	MERETOJA TJ	30	39	5	28246	39	2016
23	ROSHANDEL G	30	41	5	28548	41	2016
24	DEFO BK	29	37	4.833	27809	37	2016
25	MAJEED A	29	41	4.833	29208	41	2016

The above table validates that m-index-wise rank is accredited for the authors. It is unequivocal that HAJ-MIRZAIAN A appears as the first rank with 7.5 m-index value in Paediatric Medicine research output, followed by MOKDAD AH in the second rank with 6.333 m-index value in Paediatric Medicine research output, BEHZADIFAR M appeared in third place with 6 m-index value in Paediatric Medicine

research publications and FISCHER F has the fourth rank with 5.667 m-index value in Paediatric Medicine research output out of top twenty five authors in current research study.

Table 6: Authors Impact –Total Citation (Top 25)

S. No	Author	h_ index	g_ index	m_ index	TC	NP	PY_ start
1	GUPTA R	53	133	1.606	57457	133	1989
2	VOS T	40	53	4	43080	53	2012
3	MURRAY CJL	41	59	4.1	42771	59	2012
4	NAGHAVI M	38	51	3.8	41099	51	2012
5	MILLER TR	31	45	3.1	40825	45	2012
6	MENSAH GA	27	33	2.7	39678	33	2012
7	VENKETA SUBRAMANIAN N	29	34	2.9	39661	34	2012
8	HAVMOELLER R	24	26	2.4	38365	26	2012
9	DEGENHARDT L	26	29	2.6	38285	29	2012
10	SALOMON JA	26	27	2.6	37575	27	2012
11	LOPEZ AD	31	34	3.1	37523	34	2012
12	REMUZZI G	26	32	2.6	36913	32	2012
13	DHARMARATNE SD	29	43	2.9	36864	43	2012
14	BIKBOV B	24	31	2.4	36579	31	2012
15	PERICO N	24	31	2.4	36449	31	2012
16	LOZANO R	24	25	2.4	36060	25	2012
17	JACOBSEN KH	25	27	2.5	35771	27	2012
18	SCHWEBEL DC	26	35	2.6	35717	35	2012
19	JONAS JB	35	55	3.5	34071	55	2012
20	SHIBUYA K	21	24	2.1	33348	24	2012
21	MALEKZADEH R	31	42	3.1	33301	42	2012
22	BELL ML	23	29	2.3	33215	29	2012
23	POURMALEK F	25	35	2.5	32916	35	2012
24	KASAEIAN A	34	48	5.667	32801	48	2016
25	YIP P	27	34	2.7	32666	34	2012

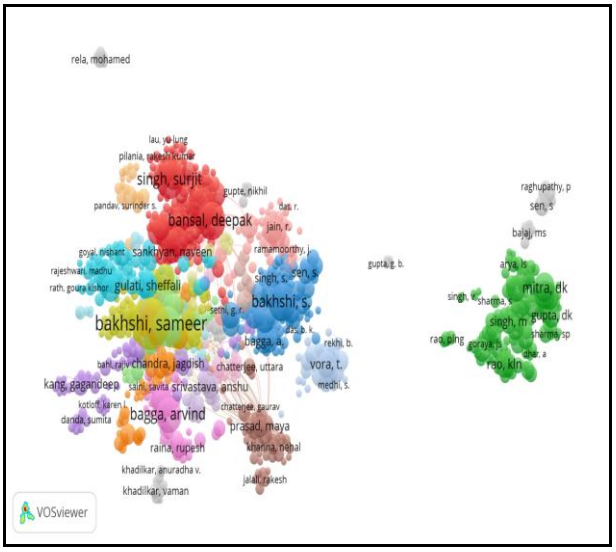
Table 6 explores that total citation-wise rank is endorsed for the authors. It is undeniable that HAJ-GUPTA R appears as the first rank with 57457 total citation value in Paediatric Medicine research output, followed by VOS T in the second rank with 43080 total citation value in Paediatric Medicine research output, MURRAY CJL appeared in third place with 42771 total citation value in Paediatric Medicine research publications and NAGHAVI M has the fourth rank with 41099 total citation value in Paediatric Medicine research output out of top twenty five authors in this analysis.

Table 7: Lotka's Law

S. No	Documents written	N. of Authors	Proportion of Authors
1	1	34046	0.655
2	2	7923	0.153
3	3	3178	0.061
4	4	1677	0.032
5	5	1001	0.019
6	6	745	0.014
7	7	542	0.01
8	8	433	0.008
9	9	293	0.006
10	10	246	0.005
11	11	209	0.004
12	12	173	0.003
13	13	138	0.003
14	14	111	0.002
15	15	117	0.002
16	16	77	0.001
17	17	83	0.002
18	18	78	0.002
19	19	68	0.001
20	20	61	0.001
21	21	63	0.001
22	22	55	0.001
23	23	58	0.001
24	24	44	0.001
25	25	32	0.001
26	26	42	0.001
27	27	35	0.001
28	28	27	0.001
29	29	25	0
30	30	15	0
31	31	28	0.001
32	32	16	0
33	33	28	0.001
34	34	21	0
35	35	23	0
36	36	8	0
37	37	11	0
38	38	13	0
39	39	12	0
40	40	11	0
41	41	14	0
42	42	5	0
43	43	12	0
44	44	11	0
45	45	7	0
46	46	4	0
47	47	6	0
48	48	5	0
49	49	3	0
50	50	4	0

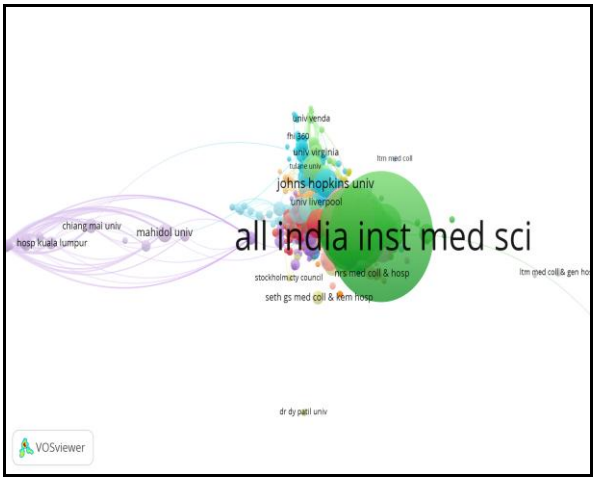
The above table 4.7 reported that a total of 51,946 authors have produced in the area of Paediatric Medicines. 34, 046 authors contributed as single-authored articles of the Paediatric Medicines research and the Proportion of Authors is 0.655. It is highlighted that 7923 authors contributed as double-authored articles of the Paediatric Medicines research and the Proportion of Authors is 0.153, 3178 authors contributed as three-authored articles of the Paediatric Medicines research and the Proportion of Authors is 0.061. It is clearly noted that 1677 authors contributed as four-authored articles of the Paediatric Medicines research and the Proportion of Authors is 0.032. It is confirmed that 1001 authors contributed as five-authored articles of the Paediatric Medicines research and the Proportion of Authors is 0.019. It is seen clearly from the table among the proportion of all contributions made a single contribution reins high than multi-authored communications

Co-Authorship Network - Author wise



The above map explains that Co-Authorship Network for authors. It is clearly identifies Singh, Surjit, bansal and Deepak were contributed more articles in Paediatric Medicines research communications with predominant position followed by Mitra DK, Singh M, Gupta DH and Sharma SP have jointly produced many records with second rank bakshi , Singh and Sen have collaborated with third place, Bakshi and Sameer were collaborated with fourth rank, Gulati and Sheffali were jointly produced many articles with fifth place in field of Paediatric Madicines during the period of study(1989-2021).

Co-Authorship Network – Institution wise



The above map explodes that Co-Authorship Network for the institutions. It is evidently **indicates** that All India Institute of Medical Sciened have produced most predominant articles in the area of Paediatric Madicines with first rank followed by Chiand Mai Univ, Mahidol Univ and Hosp Kuala Lumpur were jointly contributed with second place, Uni Virginia, Univ Venda, Johna Hopkins Univ have published many articles with thirs position in Paediatric Medicines

6. Conclusion

The study is exposed that 11500 research papers were produced by the authors during the study period from 1989 to 2021 in the field of paediatric medicine. It is confirmed that 133353 contributing authors, 1388 total number of sources, 20 types of documents, Authors per Document is 4.52, Co-Authors per Document is 11.6, Collaboration Index is 4.64**.** It is explicit that GUPTA R appears as the first rank with 133 g-index value in Paediatric Medicine research output. The study shows that GUPTA R appears as the first rank with 53 h-index value in Paediatric Medicine research. It is explicit that GUPTA R appears as the first rank with 133 g-index value in Paediatric Medicine research domain. It is undeniable that HAJ- GUPTA R appears as the first rank with 57457 total citation value in Paediatric Medicine out of top twenty five authors. The present study analyzes that a total of 51,946 authors have produced in the area of Paediatric Medicines. 34, 046 authors

contributed as single-authored articles of the Paediatric Medicines research and the Proportion of Authors is 0.655. It is evidently indicates that All India Institute of Medical Scienced have produced most predominant articles in the area of Paediatric Madicines with first rank

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