

# Mapping of Dyslexia Research Output: The Global Perspective

Joy Sofiya SNE<sup>1</sup>, S. Kavitha<sup>2</sup> and R. Ponnudurai<sup>3</sup>

<sup>1</sup>Ph.D. Scholar, <sup>2</sup>Assistant Professor, <sup>3</sup>Professor,

Department of Library and Information Science, Annamalai University, Tamil Nadu, India

E-Mail: dr.ponnudurai@yahoo.in

(Received 10 June 2018; Revised 30 June 2018; Accepted 18 July 2018; Available online 2 August 2018)

**Abstract** - This study has been carried out to analyze the research field of Dyslexia Research output in terms of publication output as per science Web of science database between 1989 and 2017. A quantitative analysis on the countries and organizations that contribute in the field of Dyslexia Research is presented. The data shows increase in the basic research activity in this research field. During 1989-2017, a total of 9492 papers were published by the scientists in the field of Dyslexia Research. More number 587(6.2%) and 598 (6.2%) of articles were published 2016 and 2017.

**Keywords:** Dyslexia, Research Output, Global Perspective

## I. INTRODUCTION

Scientometry is the study of the evolution of science through some quantitative measures of scientific information such as the number of scientific articles published in a given period of time and their citation impact. (Maheswaran, 2016c) The literature on Scientometrics has been growing over the past two decades. It reveals that it is measurement of the pattern of all forms of written communication and their authors. Scientometric analysis has been increasingly used to calculate the research performance of the scientists and the growth of the various disciplines of science (R. Maheswaran, 2018). The major focus of the study is to apply the Scientometric analysis with a view of analyze the mapping of research output on Dyslexia Research. This study has resulted in a special attention on the performance of research output in Dyslexia Research. It aims to examine the emergence of research areas, research groups and countries with a view to map the cognitive or intellectual structure of research. The study attempts to evaluate the performance of Dyslexia Research output in terms of content and coverage, growth rates and areas of research concentration in Dyslexia Research. (Maheswaran, 2016b)

## II. METHODOLOGY

The Dyslexia literature, encompassing records obtainable from web of science database which is a scientific and indexing service maintained by Thomson Reuters. The present study aims at analyzing the research output of Researchers in the field of Dyslexia literature. (Maheswaran, 2016a) It brings into focus the distribution of research output by following categories such as related growth of output and doubling time, authorship pattern, language of publications, forms of publications, country affiliations, and core journals and so on. Besides statistical tools like trend

analysis, correlation analyses and time series analyses were used to predict the future in digital learning research (Maheswaran, 2017). The data were downloaded from web of science database and tabulated using 'histcite' software and analyzed for the study Histcite is a software package used for Bibliometric analysis and information visualization. The study explores the research concentration in Dyslexia literature and journal priority in publishing Dyslexia literature articles (Raja & Balasubramani, 2011).

## III. OBJECTIVES

The main objective of this study was to use Bibliometric Mapping of Dyslexia Literature: The Global Perspective with special reference to research activities at global level

1. To identify and analyze the rate of growth of research productivity.
2. To examine the Year wise distribution of publications.
3. To identify and analyze the doubling time of Dyslexia research output.
4. To identify the exponential growth rate of the Dyslexia research output.

## IV. ANALYSIS

### A. Year Wise Distribution of Publications

To analyze the year wise publication of research on Dyslexia the data has been presented in Table-1. The table depicts the research output in the global level. From the below table, It could clearly see that during the period 1990 – 2017 a total of 9492 publications were published (Gunasekaran & Balasubramani, 2012). In the present study the research output on Dyslexia publication is taken as a tool to evaluate the performance at various levels.

The highest publication is 592 in 2017 and followed by 587 papers in 2016 and 552 papers in 2014. The least number of publications in the year 1990 with 23 papers of the publications (Gunasekaran & Balasubramani, 2012).

Table I also calculated the average citations per paper. These papers have together received an average of 28.28 citations per paper for the total papers. The highest average citation is 70.83 citation in 1990, 68.53 citation in 1998, 56.03 citation in 2001, 52.12 citation in 1996, 50.72 citation in 2003 and 45.97 citation in 1993 as well as follows.

TABLE I YEARLY WISE DISTRIBUTION OF THE PUBLICATIONS

S. No.	Publication Year	Reccs	%	TLCS	TGCS	ACPP
1	1990	23	0.2	985	1629	70.83
2	1991	123	1.3	2198	4541	36.92
3	1992	161	1.7	2649	6908	42.91
4	1993	154	1.6	3570	7079	45.97
5	1994	155	1.6	2727	6623	42.73
6	1995	212	2.2	3448	8428	39.75
7	1996	228	2.4	4793	11884	52.12
8	1997	206	2.2	3831	8605	41.77
9	1998	215	2.3	4565	14733	68.53
10	1999	278	2.9	5280	12101	43.53
11	2000	322	3.4	5968	14098	43.78
12	2001	304	3.2	6434	17116	56.30
13	2002	294	3.1	3995	12387	42.13
14	2003	306	3.2	6641	15521	50.72
15	2004	333	3.5	6787	14537	43.65
16	2005	384	4.0	5976	15239	39.68
17	2006	431	4.5	5889	14756	34.24
18	2007	369	3.9	4537	12448	33.73
19	2008	431	4.5	4697	12342	28.64
20	2009	398	4.2	3795	10600	26.63
21	2010	451	4.8	3863	10440	23.15
22	2011	467	4.9	3555	10049	21.52
23	2012	463	4.9	2765	7814	16.88
24	2013	505	5.3	2345	6953	13.77
25	2014	552	5.8	1355	6098	11.05
26	2015	548	5.8	845	3053	5.57
27	2016	587	6.2	404	1808	3.08
28	2017	592	6.2	82	620	1.05
	Totals	9492	100			28.28

\*TLCS – Total Local Citation Score  
 \*\* TGCS – Total Global Citation Score

**B. Growth pattern of Dyslexia Literature**

Table shows that the growth pattern of Dyslexia literature is calculated using the standard methods and formulae described in the methodology of this study. The year wise literature growth shows decreasing and increasing trend alternatively as in the case of Dyslexia literature till it increased steadily to 434.78 in 1990-1991.

**C. Doubling Time in Number of Publication**

Table III clearly shows that doubling time in number of publication was observed during the period 1990- 2017, a total of 9492 publications, were published at global level. The highest number of publications in the year 2017 with 592 records and the following year 2016 with 587 records

and doubling time in number of publication was observed Mean R(a) is 2.12 in 26.86 years. It denotes that the Doubling time is 26.86 in the research output of Dyslexia for the study period.

TABLE II SHOWING GROWTH PATTERN OF DYSLEXIA LITERATURE

S. No.	Years	Records	% of Records	Growth Trend %	Cumulative growth
1	1990	23	0.2		23
2	1991	123	1.3	434.78	126
3	1992	161	1.7	30.89	307
4	1993	154	1.6	-4.35	461
5	1994	155	1.6	0.65	616
6	1995	212	2.2	36.77	828
7	1996	228	2.4	7.55	1056
8	1997	206	2.2	-9.65	1262
9	1998	215	2.3	4.37	1477
10	1999	278	2.9	29.30	1755
11	2000	322	3.4	15.83	2077
12	2001	304	3.2	-5.59	2381
13	2002	294	3.1	-3.29	2675
14	2003	306	3.2	4.08	2981
15	2004	333	3.5	8.82	3314
16	2005	384	4.0	15.32	3698
17	2006	431	4.5	12.24	4129
18	2007	369	3.9	-4.39	4498
19	2008	431	4.5	16.80	4929
20	2009	398	4.2	-7.66	5327
21	2010	451	4.8	13.32	5778
22	2011	467	4.9	3.55	6245
23	2012	463	4.9	-0.86	6708
24	2013	505	5.3	9.07	7213
25	2014	552	5.8	9.31	7765
26	2015	548	5.8	-0.72	8313
27	2016	587	6.2	7.12	8900
28	2017	592	6.2	0.85	9492
	Total	9492	100		

The Table IV reveals the Exponential Growth rate of over all publications on Dyslexia during twenty eight years. An exponential growth rate in number of publication was observed during 1990 to 2017. The highest growth rate (5.35 %) was found during 1991 with 123 publications followed by (1.37 %) with 212 publications during 1995, during 1999 (1.29%) with 278 publications, at 2008 (1.17 %) with 431 publications and as well as follows.

TABLE III SHOWING DOUBLING TIME IN NUMBER OF PUBLICATION WAS OBSERVED DURING 1989 TO 2015

S. No.	Years	Records	Log W1	Log W2	R(a)	Mean R(a) 1-2	DT	Mean Dt R(a) 1-2
1	1990	23		3.14	0.00		0.00	
2	1991	123	3.14	4.81	1.68		0.41	
3	1992	161	4.81	5.08	0.27		2.57	
4	1993	154	5.08	5.04	0.04		15.59	
5	1994	155	5.04	5.04	0.01		107.07	
6	1995	212	5.04	5.36	0.31		2.21	
7	1996	228	5.36	5.43	0.07		9.52	
8	1997	206	5.43	5.33	0.10		6.83	
9	1998	215	5.33	5.37	0.04		16.21	
10	1999	278	5.37	5.63	0.26		2.70	
11	2000	322	5.63	5.77	0.15		4.72	
12	2001	304	5.77	5.72	0.06		12.05	
13	2002	294	5.72	5.68	0.03		20.72	
14	2003	306	5.68	5.72	0.04	3.06	17.32	29.06
15	2004	333	5.72	5.81	0.08		8.20	
16	2005	384	5.81	5.95	0.14		4.86	
17	2006	431	5.95	6.07	0.12		6.00	
18	2007	369	6.07	5.91	0.16		4.46	
19	2008	431	5.91	6.07	0.16		4.46	
20	2009	398	6.07	5.99	0.08		8.70	
21	2010	451	5.99	6.11	0.13		5.54	
22	2011	467	6.11	6.15	0.03		19.88	
23	2012	463	6.15	6.14	0.01		80.56	
24	2013	505	6.14	6.22	0.09		7.98	
25	2014	552	6.22	6.31	0.09		7.79	
26	2015	548	6.31	6.31	0.01		95.29	
27	2016	587	6.31	6.38	0.07		10.08	
28	2017	592	6.38	6.38	0.01	1.18	81.70	24.65
		Total	9492		Mean R(a) 2.12		26.86	

#### D. Exponential Growth Rate

TABLE IV SHOWING EXPONENTIAL GROWTH RATE IN NUMBER OF PUBLICATION WAS OBSERVED DURING 1989 TO 2015

S. No.	Years	Records	Exponential Growth Rate	Mean	S.D	V	C. V.
1	1990	23	0.00	2004	7.26	52.76	0.36
2	1991	123	5.35				
3	1992	161	1.31				
4	1993	154	0.96				
5	1994	155	1.01				
6	1995	212	1.37				
7	1996	228	1.08				
8	1997	206	0.90				
9	1998	215	1.04				
10	1999	278	1.29				

11	2000	322	1.16				
12	2001	304	0.94				
13	2002	294	0.97				
14	2003	306	1.04				
15	2004	333	1.09				
16	2005	384	1.15				
17	2006	431	1.12				
18	2007	369	0.86				
19	2008	431	1.17				
20	2009	398	0.92				
21	2010	451	1.13				
22	2011	467	1.04				
23	2012	463	0.99				
24	2013	505	1.09				
25	2014	552	1.09				
26	2015	548	0.99				
27	2016	587	1.07				
28	2017	592	1.01				
	Total	9492	33.14 (1.19)				

Table shows that the 5.35 percentage at 1991, 1.37 percentage at 1995, 1.31 percentage at 1992, 1.17 percentage at 2008, 1.16 percentage at 2000, and 1.15 percentage at 2005. The average exponential growth rate is 1.19 during the sample periods. The table also calculated the value of 2004 with Mean, Standard Deviation value is 7.26, Variance is 52.76 and Co-efficient of variance is 0.36.

**V. CONCLUSION**

The present study was conducted to find out the bibliometric study of the journal titled research highlights. It is found that there are 9492 total number of articles during the twenty seven years’ time span publication is significantly increased.(Ranganathan, Balasubramani, Science, & Nadu, 2014) The collaborative work has been recognized compare to individual contribution; particularly two authors team has produced highest number of articles in Dyslexia research.

**REFERENCES**

[1] Gunasekaran, M., & Balasubramani, R. (2012). Scientometric analysis of artificial intelligence research output: An Indian Perspective. *European Journal of Scientific Research*, 70(2).

[2] Maheswaran, R. (2016a). Analyzing the Research Productivity of University of Petradeniya, Sri Lanka. In *Re-Engineering of Library Resources and Services: Challenges and Opportunities: Proceedings of ICRLRS 2016*, 286. Chidambaram: Department of Library and Information Science, Annamalai University.

[3] Maheswaran, R. (2016b). Funding Research output at the University of Peradeniya: A Scientometric Analysis. In *Unleashing Minds to create a sustainable future: Proceedings of the International conference on the Humanities and Social Sciences*, 354–357.

[4] Maheswaran, R. (2016c). Status of Institutional repositories in SAARC countries: An Analytical Study. In *Information for sustainable development: Challenged and opportunities. First Internation conference on Library and Information Managemen*, 64.

[5] Maheswaran R. (2017). Visualizing the Citation Patterns Of Quantum Cryptography Research Publications: A Study Using Citenet Explorer. *International Journal of Retrieval Management*, 5(10), 7-9.

[6] R. Maheswaran. (2018). Yoga Research Output : A Scientometric study. *Indian Journal of Information Science and Services*, 12, 31–39.

[7] Raja, S., & Balasubramani, R. (2011). Plasmodium falciparum research publication in India: A scientometric analysis. *European Journal of Scientific Research*, 56(3).

[8] Ranganathan, C., Balasubramani, R., Science, I., & Nadu, T. (2014). Scientometric Profile of Research Activities on Green Energy: An Indian Perspective, 2(1), 23–30.