Authorship Pattern of Research Publication on Elephantiasis: A Scientometric Analysis

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Abstract

The study analyzes Author Productivity of elephantiasis Research indexed in the Web of Science database. "Elephantiasis", "Lymphatic Filariasis" as a search term in the all field tag acquired16671 records and the period of coverage from 2003-2017 but two records from 2018 hence those records are eliminated. It is experiential that 105855 contributing authors, RGR and Dt represents the inverse relationship between them. it is exposed that the most productive author is Devereux RB with 124 records with the highest H-index of 35, G-index71 and with M-index 1.75 during the study period. It is clearly identifies collaboration of authorship pattern and their impact in the field.

Keywords

Elephantiasis; Lymphatic Filariasis; Pachyderma; Endemic Non-Filarial; Bigfoot Disease; hypertrophy; Scientometrics, Growth Productivity.

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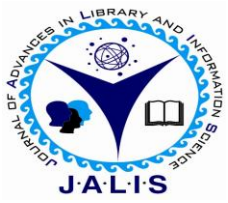

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1. Introduction

Elephantiasis in other terms it is called as Lymphatic Filariasis, it is an uncared tropical disease which occurs and transmitted to humans through mosquitoes. This infection obtained in infancy and cause injure to the lymphatic system which leads to the anomalous swelling of body parts, causing ache, severe disability and social stigma. According to the report of WHO, 859 million people in 50 countries universally endangered by lymphatic filariasis and it requires preventive chemotherapy treatment with safe medicine combinations which should be repeated annually. In 2018, 51 million people were infected and it has been declined to 74% after the initiation of WHO's Global Program to Eliminate Lymphatic Filariasis in 2000. At present, 648 million people no longer necessitate precautionary chemotherapy due to triumphant execution of WHO strategies.

As to avoid the spread of Elephantiasis research community worked actively in publishing publications about the disease. Analyzing scientific outputs in this theme can symbolize an overview of publications. For this purpose, this study was aimed to resolve status of publishing research works related to elephantiasis and scrutinizing the all documents published and indexed in Web of Science database and exemplifies the co-occurrence and co-authority of hot papers in this documents. Scientometric tools can be used to evaluate, compare and contrast the scientific behavior, at diverse aspects, contributing authors, publishing journals, document types, sources, institutions, countries, and funding agencies. They can also be aided to determine research association, mapping networks, scholarly structure and to observe the progression of scientific fields.

Scientometrics empirically portrays the frequently varying affiliation between science and technology and research efficiency. Scientometrics is used to measure the characteristics of science and scientific research by utilizing their quantitative and qualitative features and computational approaches. The result of measurement aids the policymakers to structure the agenda in research activities, assign a priority to the research areas, funding agencies, and in decision making. In the 1960's, there was an incredible augmentation in the scientometric literature and from this position. Further, the field of scientometrics progressed and discriminated into numerous specialties. Social Network Analysis (SNA) is a methodology employed in Bibliometrics and Scientometrics to resolve the significance of

keywords, authors, and citations in networks created by these types of nodes. Science mapping aspires to divulge formations and development of scientific literature and fundamental area of expertise using graphical demonstrations. Theories of how expertise progress and to revolutionize begins to emerge in the 1970s (Small & Griffith, 1974).

2. Review of Literature

Rajendran, Jeyshankar & Elango (2011) determined the study about scientometric analysis of contributions to journal of scientific and industrial research. It analyzed thecontributions, authorship pattern & author productivity, average citations, average length of articles, average keywords and collaborative papers. Totally from 633 contributions, only 51 are single authored and rest by multi authored with degree of collaboration 0.92 and week collaboration among the authors. Pattern of Co-Authorship exposed that the refining trend of co-authored papers. The study discovered that the author productivity is 0.34 and dominated by the Indian authors. Chitra & Jeyshankar, (2012) analyzed the growth of literature in neuroscience during 1972 – 2011. The data has been retrieved from Scopus database in the field of Neuroscience with 35869 records. The growth in the publication has been concludedby relative growth rate and doubling time. The authorship pattern is measured by diverse collaboration parameters like collaborative index, degree of collaboration, collaborative coefficient and modified collaborative coefficient and the study also assessed the quality of journal by SJR and SNIP K.Santhanakarthikeyan, Grace & Jeyshankar (2014) described the study about research publications to Indian journal of cancer which predicts that by 2020, it is appraised that 70 per cent of all cancer cases will be in emerging countries and roughly one part in five equal ratio will be in India, with a population of over one billion. This study delivers a good example of a scientometric study of an significant problem such as cancer. Sangam et al (2015) endeavored to study the growth pattern, relative growth rate, doubling time of the world, and Indian genetic literature for the period of 1993 -2012. This study found that the logarithmic and linear growth model best fits the world's genetic literature, whereas Indian literature was the best fit with the exponential and logistic model. The calculated mean RGR for the world was 0.19, with Dt 5.13 for India 0.25 and 3.31. Jeyasekar & Saravanan (2015) studied the scientometrics mapping of Indian forensic science research output indexed from the Scopus database for the period of 1975-2012. The 2096 bibliographic records were examined by using Pajek, VoS viewer open-source visualization software. The study deployed DC, CC, MCC, AI, AAFI, ICP, RCI, and CPP indicators to measure the collaborative pattern and its impact on the available literature of Indian forensic science. Vellaichamy & Jeyshankar (2015) undertaken the study of publication productivity of Pondicherry university to evaluate the publication pattern based on the data collected from Scopus database over a period of 27 years from 1987-2013. The study displays that majority of the researchers preferred to publish their works with joint authorship pattern (84.8%) and the degree of collaboration ranges varies from 0.61 to 0.96 and its mean value 0.88. It also scrutinized that Physics and Astronomy which produces more number of papers while the multi-authorship also enjoys a lead role in this subject. S.A. Abbasi is the most prolific author in the present study (132 articles). The researchers are most favored to distribute their work in the journal of Acta Crystallographic a Section E Structure Reports Online (2.17%) followed by current science (1.79%).

Sab et al (2017) conducted a scientometrics study on chemical science research recovered from Web of Science database during 2005-2014 to recognize the most collaborative linkages of India, most prolific organizations, authors, and journals in India. The study demonstrated the exponential growth rate in Indian chemical science research publications.

3. Objectives of the Study

- To scrutinize the year-wise distribution of publications and growth of publications;
- To investigate the authorship pattern, their collaboration on literature output;
- To explore the degree of collaboration among authors and
- To recognize the year-wise distribution of citation analysis.
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4. Scope of the Study

The present scope of the study is limited to publications impact through scientometric analysis by using the Web of Science database only. The time period of the study considered from the year 2003-2017. (Fifteen years of the study period).

5. Methodology and Data Collection

The present study aims to investigate the publications on Elephantiasis between the years of 2003-2017. The data used in this study were mainly acquired from

Web of Science database. The following search string is used for collecting the data (Basic Search as "Elephantiasis", "Lymphatic Filariasis" and the search field as publication titles). A total of 16771publications were published which includes Research articles, Review articles, News Items, Letters, Editorial materials, Research communications, Editorial materials, Bibliographic items, book reviews etc. The records were downloaded in plain text file formats and exported into Bibexcel, Microsoft-Excel and VOS Graphical viewer for analysis of the data. This study is based on following bibliometric specifications that include a performance analysis and a scientific mapping analysis. In performance analysis deals with productivity and citations. The science mapping analysis, highlight the structural and dynamic patterns of scientific research and provide a complete overview of research trends.

6. Data Analysis and Interpretation

Data interpretation refers to the process of utilizing various systematic and analytical methods to analysis data and to conclude the pertinent conclusions. The interpretation of data aids researchers to classify, employ, and précis the information in order to retort critical queries.

Table 1: Temporal Evolution of Scientific Productivity on Elephantiasis

Year	Output	Cumul. Output	% of Output	Cuml. % of Output	Block Year Total	%
2003	917	917	5.47	5.47		
2004	1016	1933	6.06	11.53		
2005	1020	2953	6.08	17.61		
2006	1085	4038	6.47	24.08		
2007	1052	5090	6.27	30.36	5090	30.35
2008	1087	6177	6.48	36.84		
2009	1079	7256	6.43	43.27		
2010	1100	8356	6.56	49.83		
2011	1050	9406	6.26	56.09		
2012	1142	10548	6.81	62.90	5458	32.55
2013	1252	11800	7.47	70.37		
2014	1259	13059	7.51	77.88		
2015	1177	14236	7.02	84.90		
2016	1279	15515	7.63	92.52		
2017	1254	16769	7.48	100.00	6221	37.10
Total	**16769**					

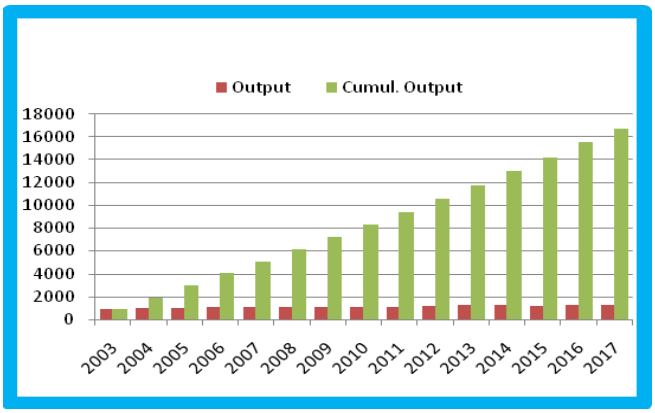

Fig 1: *Temporal Evolution of Scientific Productivity on Elephantiasis*

Table 1 illustrates the temporal evolution of scientific productivity on elephantiasis along with a three-year block period. The year 2016 is considered the most productive year with the highest scientific productivity of 1279 and the least productive year is 2003 with 917 publications. An increasing trend has been identified in the three-year block periods (2003-2017). The third three-year block (2013-2017) has been recognized as the most productive block period with 6221 publications. The productivity from the first decade is 30.35%, it was slightly increased as 32.55 and in the last block it was augmented with 37.10. However, the growth of productivity had a fluctuation trend and inconsistency is observed in the growth of scientific publications on elephantiasis throughout the year.

Table 2: Relative Growth Rate and Doubling Time of Research Output on Elephantiasis

Year	Output	Cuml.Output	AGR	W1	W2	RGR	Block Year RGR	Dt	Mean Block Year Dt
2003	917	917		0	6.82	6.82		0.10	
2004	1016	1933	0.11	6.82	7.57	0.75		0.93	
2005	1020	2953	0.00	7.57	7.99	0.42		1.64	

2006	1085	4038	0.02	7.99	8.30	0.31		2.21	
2007	1052	5090	-0.01	8.30	8.54	0.23	8.54	2.99	1.57
2008	1087	6177	0.01	8.54	8.73	0.19		3.58	
2009	1079	7256	0.00	8.73	8.89	0.16		4.30	
2010	1100	8356	0.00	8.89	9.03	0.14		4.91	
2011	1050	9406	-0.01	9.03	9.15	0.12		5.85	
2012	1142	10548	0.01	9.15	9.26	0.11	0.73	6.05	4.94
2013	1252	11800	0.01	9.26	9.38	0.11		6.18	
2014	1259	13059	0.00	9.38	9.48	0.10		6.84	
2015	1177	14236	-0.01	9.48	9.56	0.09		8.03	
2016	1279	15515	0.01	9.56	9.65	0.09		8.06	
2017	1254	16769	0.00	9.65	9.73	0.08	0.46	8.92	7.60
Total	**16769**				**Mean RGR - 0.65**		**Mean Dt– 4.70**		

RGR- Relative Growth Rate**; Dt-** Doubling Time

The study period from 2003-2017 has demonstrated a mean relative growth rate of 0.65 and a doubling time of 4.70. The RGR and Doubling time estimated for three-year block periods are illustrated in table 2. The lowest RGR is observed in the year 2017 as 0.08 with the highest doubling time of 8.92 in the same year. Though out the year a constant decrease in the RGR was detected from the year 2003 to2017, the Dt evinced an increasing pattern. A diminishing rate of relative growth is identified for research output on elephantiasis along with an increasing rate of doubling time. Figure 2 depicts the inverse relationship between relative growth rate and doubling time.Even though researches on elephantiasis need to be increased to prevent from tropical disease and reduce the burden of the nations.

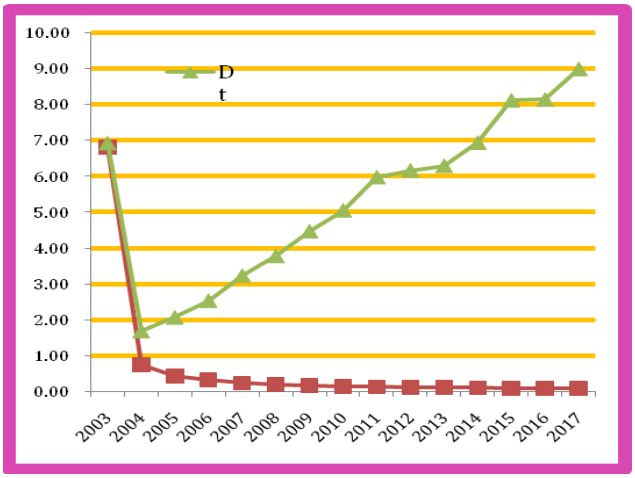

Fig 2: Relative Growth Rate and Doubling Time of Research Output on Elephantiasis

Table 3 describes the productivity frequencies of the top 20 prolific countries and their world share in four years block period along with their growth curves. The countries were ranked according to their productivity in the study field. The total research outputs have been published by 148 countries in the world. The global productivity share of the top 20 countries fluctuates from 79.12 to 2.74. The exponential growth of research output is identified among the productivity of countries in the research field. USA dominated in the field of elephantiasis with the highest world share of research output of 79.12 % followed by China (20.64%) occupied 2nd position and Japan has shared 21.53% of research output placed in the third. Even though publication of China is highest than Japan, the world share productivity of Japan is higher than China. In the commencement years Japan focused on the publications of research and diminished in the later years but China had an incessant upsurge in their productivity.The least productivity of top 20 countries was secured by Greece with 2.74% but throughout the year it has persistent growth productivityand had a fluctuation in global share.

Table 3: Longitudinal Productivity and World Share of Publications of 20 Most Prolific Countries

Rank	Country	Productivity				Growth Curve	World Share %				World Share Growth Curve
		2003-2007	2008-2012	2013-2017	2003-2017	2003-2017	2003-2007	2008-2012	2013-2017	2003-2017	2003-2017
1	USA	1838	1917	1767	5522		29.61	27.48	22.03	79.12	
2	China	172	406	966	1544		2.77	5.82	12.04	20.64	
3	Japan	540	497	458	1495		8.70	7.13	5.71	21.53	
4	UK	394	438	529	1361		6.35	6.28	6.60	19.22	
5	Germany	378	388	377	1143		6.09	5.56	4.70	16.35	
6	Italy	282	291	279	852		4.54	4.17	3.48	12.19	
7	India	178	258	329	765		2.87	3.70	4.10	10.67	
8	Canada	217	247	231	695		3.50	3.54	2.88	9.92	
9	Brazil	114	195	208	517		1.84	2.80	2.59	7.23	
10	Australia	152	181	168	501		2.45	2.59	2.09	7.14	
11	France	145	171	173	489		2.34	2.45	2.16	6.94	
12	Netherlands	126	132	161	419		2.03	1.89	2.01	5.93	
13	South Korea	87	136	189	412		1.40	1.95	2.36	5.71	
14	Spain	126	125	126	377		2.03	1.79	1.57	5.39	
15	Sweden	143	109	79	331		2.30	1.56	0.99	4.85	
16	Turkey	87	102	141	330		1.40	1.46	1.76	4.62	
17	Denmark	132	97	94	323		2.13	1.39	1.17	4.69	
18	Switzerland	77	81	126	284		1.24	1.16	1.57	3.97	
19	Norway	111	85	55	251		1.79	1.22	0.69	3.69	
20	Greece	54	69	71	194		0.87	0.99	0.89	2.74	
World Productivity		**6208**	**6975**	**8020**	**17805**						

The relative indicators AI and RSI are calculated for the 20 most prolific countries in the field of elephantiasis during the three-year block periods are presented in table 4. Out of 20 countries, the efforts on elephantiasis research of countries varied in different blocks as USA has research effort in the particular field is greater than the world's average in the blocks 2003-2007 and 2008-2012 but reduced as 87.29 in the final blocks. Countries like China, UK, South Korea and India had a pertinent increase in every block. On the contrary, the countries whose research efforts were higher than the world average, particularly USA, Japan, Germany, Italy, have a stable decrease in the research efforts over the block periods. Over all Norway secured the highest value of activity Index with 147.09 in the commencement block of 2003-2007 which is tracked by Greece which has the least publication in most prolific countries and in the final block South Korea received the highest AI with 125.14 which represents that some countries focused on research only in the beginning blocks and countries like China, UK, India, South Korea and Turkey concerted on the research throughout the year. The values of RSI for the 20 most countries are 0.99 which is so close to 1 indicates that the top 20 countries were active and their performance was greater than the average in the research field.

Table 4: Activity and Relative Specialization Index of Most 20 Prolific Countries.

Rank	Country	2003-2007	2008-2012	2013-2017	Total	Mean	RSI
1	USA	110.71	104.32	87.29	302.33	100.78	0.99
2	**China**	**37.05**	**79.02**	**170.67**	286.74	95.58	0.99
3	Japan	120.14	99.90	83.57	303.61	101.20	0.99

4	**UK**	**96.29**	**96.71**	**106.03**	299.03	99.68	0.99
5	Germany	110.00	102.01	89.98	301.98	100.66	0.99
6	Italy	110.09	102.64	89.33	302.06	100.69	0.99
7	**India**	**77.39**	**101.35**	**117.32**	296.06	98.69	0.99
8	Canada	103.85	106.80	90.67	301.32	100.44	0.99
9	Brazil	73.34	113.34	109.75	296.44	98.81	0.99
10	Australia	100.91	108.57	91.47	300.95	100.32	0.99
11	France	98.63	105.09	96.51	300.22	100.07	0.99
12	Netherlands	100.02	94.67	104.82	299.51	99.84	0.99
13	South Korea	**70.24**	**99.20**	**125.14**	294.57	98.19	0.99
14	Spain	111.17	99.64	91.17	301.98	100.66	0.99
15	Sweden	143.70	98.96	65.11	307.76	102.59	0.99
16	Turkey	**87.69**	**92.88**	**116.56**	297.13	99.04	0.99
17	Denmark	135.93	90.24	79.39	305.56	101.85	0.99
18	Switzerland	90.18	85.71	121.03	296.92	98.97	0.99
19	Norway	147.09	101.77	59.77	308.63	102.88	0.99
20	Greece	92.58	106.88	99.84	299.30	99.77	0.99

Table 5 and Fig 3 depict the temporal growth of the authorship pattern found in the research field of elephantiasis. In total 16769 publications were contributed by 105855 authors in the field of elephantiasis. Over the study period, it is observed that the authorship pattern found in the research on elephantiasis is wavering. The solo and dual authorship follow a similar pattern of growth in the research output. Very small, small and seven authorship follow the same pattern. A uniform authorship pattern is identified in the research output contributed by the medium, large. The authorship pattern of three authors to seven authors follows more than 100 authors every year. Large authors like 10-19 authors follow more than 200 authors in the years 2014-2017.

Table 5: Authorship Pattern of Documents on Research Output of Elephantiasis

Year	Total Output	Authorship Pattern: Size of the Research Team										
		Solo	Dual	VS	Small			Medium			Large	VL
		1	2	3	4	5	6	7	8	9	10-19	>20
2003	917	47	71	109	149	125	127	78	81	39	89	2
2004	1016	52	81	113	123	159	134	113	86	46	107	2
2005	1020	43	83	110	143	127	131	119	80	64	118	2
2006	1085	41	75	125	142	154	143	120	107	59	118	1
2007	1052	55	89	108	131	144	152	111	78	71	112	1
2008	1087	41	85	104	147	141	122	114	113	70	149	1
2009	1079	46	76	100	119	148	138	121	111	78	139	3
2010	1100	49	77	109	126	130	153	124	109	74	147	2
2011	1050	29	84	89	111	156	123	103	92	76	180	7
2012	1142	41	81	105	139	149	148	130	95	68	182	4
2013	1252	39	90	109	119	174	149	161	127	85	194	5
2014	1259	43	89	104	137	167	134	135	121	79	243	7
2015	1177	39	62	104	143	136	130	138	117	78	223	7

2016	1279	28	78	112	151	138	151	138	109	105	265	4
2017	1254	26	71	104	145	110	171	125	102	110	273	17
Total	**16769**	**619**	**1192**	**1605**	**2025**	**2158**	**2106**	**1830**	**1528**	**1102**	**2539**	**65**

VS – Very Small; **VL** – Very Large

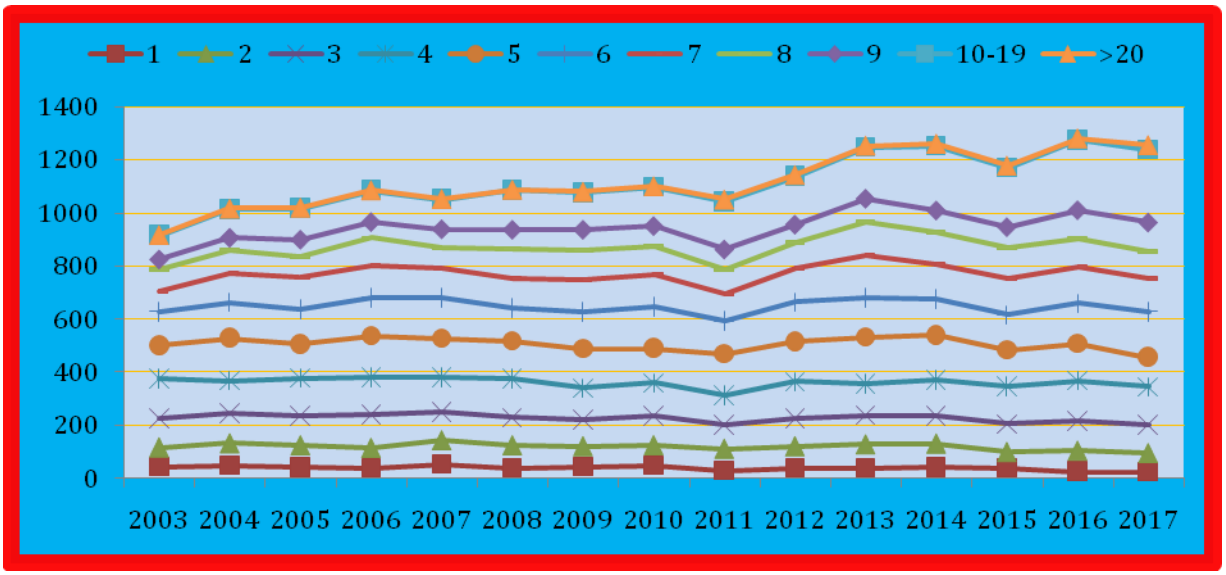

Fig 3: Temporal Growth of Authorship Pattern in Elephantiasis Research output

Table 6: Co-authorship Index for Authorship Pattern of Research Output on Elephantiasis

Year	Single Author	Two Authors	Three Authors	Four to Nine Authors	Ten and More Authors
2003	138.85	108.92	124.19	101.91	63.91
2004	138.65	112.16	116.2	101.5	69.09
2005	114.20	114.47	112.67	101.56	75.76
2006	102.37	97.24	120.37	104.24	70.63
2007	141.63	119.02	107.26	101.88	69.17
2008	102.18	110.01	99.96	101.47	88.86
2009	115.49	99.09	96.83	103.38	84.75
2010	120.68	98.48	103.53	101.55	87.23
2011	74.82	112.54	88.56	98.21	114.69
2012	97.26	99.78	96.06	99.59	104.88
2013	84.39	101.13	90.96	101.55	102.36
2014	92.53	99.45	86.31	95.78	127.87
2015	89.76	74.1	92.32	98.35	125.84
2016	59.31	85.79	91.49	96.6	135.44
2017	56.17	79.65	86.65	94.92	148.92

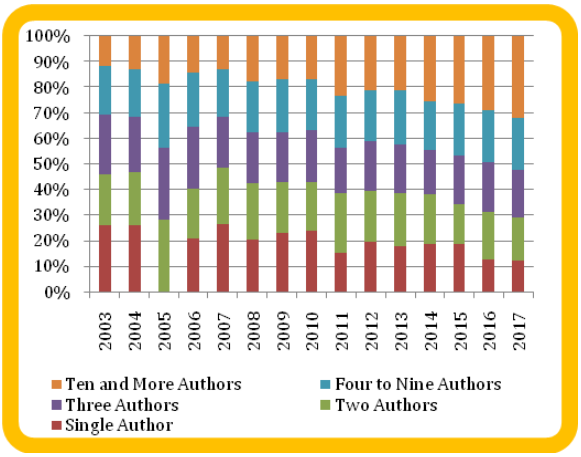

Fig 4: Co-authorship Index for Authorship Pattern of Research Output on Elephantiasis

Table 6 and figure 4evidenced that the collaborative authorship index for the output of elephantiasis for the entire study period varied with higher and lesser than the average. During the year 2003 and 2004, the CAI for the single author was at the maximum 138.85 and 138.65 indicates the authors' preferences towards solo research work however the CAI for single author gradually declined to 56.17 in the year 2017 infers that the solo research work tendency of the

researchers faded away in the study period. Even though a fluctuation observed in the CAI for the joint authorship, the authors' preferences towards joint authorship declined to 79.65 in the year 2017. Except in the years 2006, 2009,2010, 2014-2017 the CAI for joint authorship stood greater than the average. The CAI for 10 and more authors are determined an increasing trend over the study period particularly from the year 2003 onwards the CAI for 10 and more authors are greater than the world average implies that researchers in the field of elephantiasis tend to collaborate in large number may be due to their nature of the study.

Table 7 provides the scientometrics profiles of 20 most prolific authors in the research field of elephantiasis. The authors were ranked according to their publication count. In total 22authors shared the top 20 ranks. Devereux RB, identified as the most prolific author in terms of productivity and secured second position in citation impact even his publications started to appear from the year 2003 followed by DahlofBwith 101 publications from the year 2003 onwards however he occupied 3rd position in total citation and his author-level metrics were moderate. Similarly, WachtellKranked 3rd with 82 publications from 2003 onwards but his author-level metrics was also moderate with 3140 citations and his impact level in sixth position. MolkentinJDreceived the highest citations of 5618 with the lowest publication of 37 records depicts the highest quality of his work.It clearly states that the most prolific author need not be influential. Most of the authors commenced their publication from the year 2003and received more than 1000 citations. Though the publication counts were the same for authors, their impact values have been greatly differed according to their author-level metrics.

Table 7: Scientometrics Profile of the 20 Most Prolific Authors in the field of Elephantiasis

Rank	Author	h-index	g-index	m-index	TC	NP	PY
1	Devereux RB	35	71	1.75	5412	124	2003
2	Dahlof B	31	66	1.55	4521	101	2003
3	Wachtell K	27	55	1.35	3140	82	2003
4	Okin PM	26	55	1.30	3143	65	2003
5	Kjeldsen SE	25	52	1.25	2800	64	2003
6	Zhang Y	34	53	1.88	3159	83	2005
7	Nutman TB	39	56	1.95	3633	95	2003
8	Gerdts E	19	39	0.95	1574	46	2003
9	Sadoshima J	29	40	1.45	2709	40	2003
10	Nieminen MS	20	51	1.00	3058	51	2003
11	Olsen MH	17	37	0.85	1411	43	2003
12	Ibsen H	20	39	1.00	1587	47	2003
13	Weil GJ	24	42	1.20	1818	49	2003
14	Molkentin JD	33	37	1.65	5618	37	2003
15	Bockarie MJ	24	37	1.20	1625	57	2003
16	Li HL	29	48	1.61	2375	52	2005
17	Hoerauf A	30	53	1.50	3141	53	2003
18	Julius S	16	33	0.80	2111	33	2003
	Lammie PJ	27	36	1.35	1432	48	2003
	Liu J	18	37	0.90	2127	37	2003
19	Stefanadis C	6	8	0.31	185	8	2004
20	Li J	16	23	0.94	607	35	2006

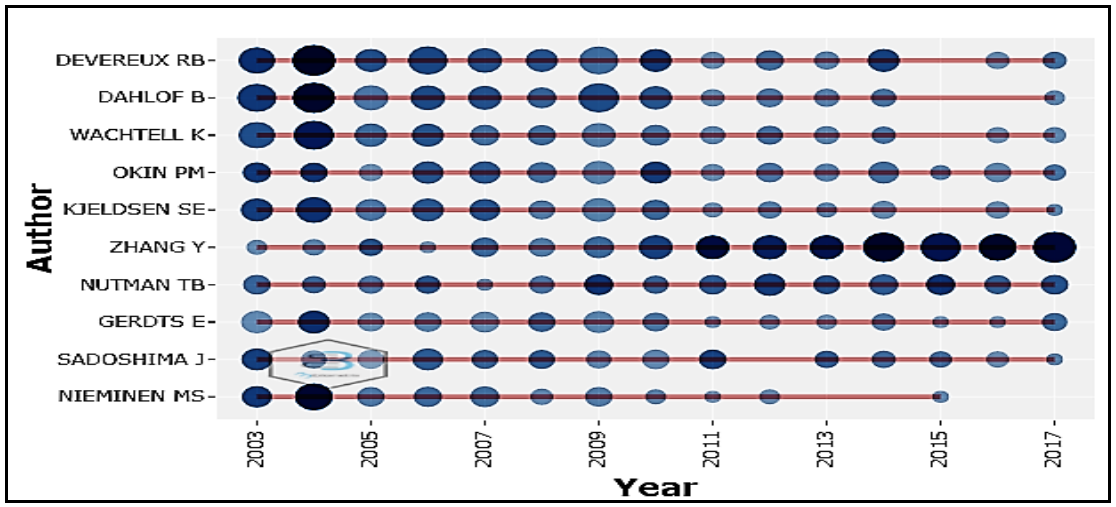

Fig 4: The Productivity and Impact of the 10 Most Prolific Authors in the field of Elephantiasis over the Research Period

It is observed from table 8 that DC for the research output on elephantiasis for the study period is 0.96 which is very close to the value of 1 indicates that dominance of multiauthored documents. Over the study period of 2003-2017 evidenced highest DC (0.95-0.98) and it had an oscillation and reached a maximum of 0.98 in the year 2016 and 2017 it shows the predominance of multiauthored research output. Similarly, CI for the research output on elephantiasis for the study period is 0.18-0.14 and the authors per document had a decreasing trendin the overall period. Whereas CI of Multi authored articles were continuously increased between 5.50-7.17

It is observed that CC and MCC are identical over the entire study period which range in the vicinity of 1 hence it determines the dominance collaboration of multi authors publications. The RSA illustrates about rate of single author contribution in the field which shows the decreasing trend. Most probably in all the years total number of authors has been augmented and reached its peak in 2017 with 9021 authors. Total citation in the year 2003(28518) leads the uppermost position due the time of publication recent year publications yet to be cited, but the year 2007 secured the citation of 26589and established with fourth place shows the eminence of the work done in that particular year. ACCP follows the decreasing trend and in some years it has been slightly increased and demonstrates that articles published earlier secured more citations, hence their average citation are also elevated.

Table 8: Chronological Distribution of Collaboration Indexes to the Research Output on Elephantiasis

Year	Total Output	DC	CI	CI for Multi Authored Articles	CC	MCC	RSA	TA	Total Citation	ACPP
2003	917	0.95	0.18	5.50	0.93	0.93	0.05	5093	28518	31.10
2004	1016	0.95	0.18	5.65	0.92	0.92	0.05	5791	28028	27.59
2005	1020	0.96	0.17	5.83	0.93	0.93	0.04	5993	24393	23.91
2006	1085	0.96	0.17	5.83	0.93	0.93	0.04	6366	28164	25.96
2007	1052	0.95	0.17	5.72	0.92	0.92	0.05	6077	26589	25.27
2008	1087	0.96	0.16	6.08	0.93	0.93	0.04	6652	23677	21.78
2009	1079	0.96	0.16	6.14	0.93	0.93	0.04	6671	26092	24.18
2010	1100	0.96	0.16	6.16	0.93	0.93	0.04	6826	24637	22.40
2011	1050	0.97	0.15	6.54	0.94	0.94	0.03	6894	21035	20.03
2012	1142	0.96	0.16	6.26	0.93	0.93	0.04	7190	22563	19.76

2013	1252	0.97	0.15	6.47	0.93	0.93	0.03	8134	21116	16.87
2014	1259	0.97	0.15	6.66	0.93	0.93	0.03	8422	20609	16.37
2015	1177	0.97	0.15	6.71	0.93	0.93	0.03	7937	16657	14.15
2016	1279	0.98	0.15	6.85	0.93	0.93	0.02	8788	15603	12.20
2017	1254	0.98	0.14	7.17	0.94	0.94	0.02	9021	13174	10.51
Total	**16769**							**105855**	**340855**	

7. Discussion and Conclusion

The study aims to analyse the qualitative and quantitative of bibliometric tools on the elephantiasis research output during the study period of 2003-2017. The data generated from Web of Science are retrieved for the further investigation of data. The growth of productivity had a variation trend and unpredictability is observed in the growth of scientific publications on elephantiasis throughout the year. A receding rate of relative growth is recognized for research output on elephantiasis along with an increasing rate of doubling time which depicts the contrary relationship between relative growth rates and doubling time.Even though researches on elephantiasis need to be amplified to avert from tropical disease and lessen the troublefaced by the nations.The exponential growth of research output is acknowledged among the efficiency of countries in the research field. 148 countries published the total output of the research in the field in that top 20 countries share varies from 79.12-2.74. The country USA conquered in the field of elephantiasis with the uppermost global share of research output of 79.12 % followed by China (20.64%) and Japan has shared 21.53% of research output positioned in the third.The countries like China, UK, South Korea and India had a significant and relevant enhancement in every block. On the converse, the countries whose research efforts were elevated than the global average, particularly USA, Japan, Germany, Italy, have aunwaveringdecline in the research efforts over the block periods.RSI of prolific countries determines the active performance of countries in the research field with value of 0.99 which is nearer to 1.A standardized authorship pattern is acknowledged in the research output contributed by the medium, large number of authors. The authorship pattern of multiple authors follows more than 100 authors every year. The size of hefty number of authors has been followed by the years2014-2017. The same consequences has been associated with the study of Rajendran, Jeyshankar, &Elango, (2011)Jeyshankar, &Vellaichamy, (2016).In the year 2003 and 2004, the CAI for the single author was at the maximum 138.85 and 138.65 point out the authors' preferences towards singleauthored research work though the CAI for single author steadily turn down to 56.17 in the year 2017 infers that the solo research work tendency of the researchers faded away in the study period and more authors are superior than the world average implies that researchers in the field of elephantiasis tend to work together in large number may be due to their nature of the study is correlated with the work of Glänzel (2002).The author Devereux RB secured the first position in prolific authors and most of the authors initiate their publication from the year 2003and acknowledged more than 1000 citations. Though the publication counts were the same for authors, their impact values have been significantly differed according to their author-level metrics.It is experiential that CC and MCC are indistinguishable over the whole study period and determines the dominance collaboration is associate with Ajiferuke, Burrel, &Taque (1988). The RSA illustrates about rate of single author contribution in the field which shows the decreasing trend. Garner (1967) determines a study on citation analysis which is related to this research with citation and ACCP predicts the impact of .research field which is almost above 20,000 in most of the years from maximum number of collaborative authors.

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