Bibliometric Study on Dengue Fever

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Abstract

This paper deals with the bibliometric study on the publication on "dengue fever". The aim of the study is to measure the international research output in dengue fever. Ten years data had been collect concerning dengue fever to find out how many scientists are doing research in their areas of research. In this study it is revealed that multiple authors are doing more research than single author. The degree of collaboration is found to be 0.91.

Keywords

Dengue fever, Bibliometric, Bib excel, pub med, MEDLINE, degree of collaboration, doubling time, research method, UK.

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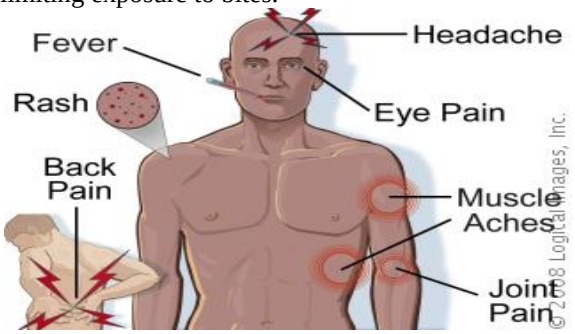
INTRODUCTION

Bibliometrics is a type of research method used in Library and information Science and an emerging area of research in this field. The quantitative and statistics methods are utilized to describe the patterns of publication within a given field of literature. It can also be used to study regional patterns of research, the extent of cooperation between research groups and national research profiles influence of a single author to describe the relationship between two or more authors or to describe the relationship between two or more authors or works. Bibliometrics involves the analyses of a set a publication characterized by bibliographical derivatives such as author(s), place of publication, the associated subject keywords, citation, co-citation analysis etc.

Dengue Fever

Dengue fever also known as break bone fever, is an infectious tropical disease caused by the dengue virus. Symptoms include fever, headache, muscle and joint pains, and a characteristic skin rash that is similar to measles. In a small proportion of cases the disease develops into the life-threatening dengue hemorrhagic fever, resulting in bleeding, low levels of blood platelets and blood plasma leakage, or into dengue shock syndrome, where dangerously low blood pressure occurs.

Dengue is transmitted by several species of mosquito within the genus *Aedes*, principally *A. aegypti*. The virus has four different types; infection with one type usually gives lifelong immunity to that type, but only short-term immunity to the others. Subsequent infection with a different type increases the risk of severe complications. As there is no commercially available vaccine, prevention is sought by reducing the habitat and the number of mosquitoes and limiting exposure to bites.



LIMITATION OF THE STUDY

The study is confined to a period of ten years from 2003 to 2012 covered in the database "pub med" only.

DATA ANALYSIS

The data was investigated with the toolbox named as Bib excel. This was developed by Olle Person, Inforsk, Umea Univ (Sweden). This software is designed to assist a user in analysing bibliographic data, or any data of a textual nature formatted in a similar manner.

OBJECTIVES OF THE STUDY:

The objectives of the present study are to find out the following aspects:

1. To find out authorship pattern of the contributions
2. To find out degree of collaboration
3. Quantum of research productivity in MEDLINE database
4. To find out research productivity by language
5. To find out geographical distribution of contribution

Find out publication type of dengue fever

STATISTICAL TECHNIQUES USED FOR THE STUDY:

Statistical Techniques serve the fundamental purpose of the descriptive and differential analysis. The following techniques were used in the study.

Doubling Time & Growth Rate
Degree of Collaboration

Table 1 : Authorship Pattern in Dengue Fever

S.No	Authorship	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total	Percentage
1	Single	38	34	51	37	50	42	75	62	71	70	530	7.74
2	Two	35	48	55	60	66	39	88	94	126	166	777	11.35
3	Three	44	33	59	80	74	57	99	90	119	99	754	11.02
4	Four	42	41	72	81	83	68	111	110	129	188	925	13.52
5	Five	39	48	55	62	67	78	79	97	102	94	721	10.55
6	Six	36	27	42	60	66	129	81	93	105	98	737	10.78
7	Seven	21	14	40	40	47	56	74	73	88	81	534	7.8
8	More than seven	76	107	92	135	137	236	195	257	290	337	1862	27.24
	Total	331	352	466	555	590	705	802	876	1030	1133	6840	100

Tabl1 shows that of 6840 articles contributed a single author has contributed 7.74% of the total articles. 11.35% of the contributions were two authors, 11.52% of the contributions were by three authors 13.52% of contributions were contributed by four authors, and 27.24 % of contributions were contributed by more than seven authors. A significant note of the study is that majority of articles are contributed by more than seven authors.

Table 2 :Degree of Collaboration in Dengue fever

S.no	Year	Single	Two	Three	Four	Five	Six	Seven	More than seven	Total	More than one	Degree of Collabo-rations
1	2003	38	35	44	42	39	36	21	76	331	293	0.88
2	2004	34	48	33	41	48	27	14	107	352	318	0.9
3	2005	51	55	59	72	55	42	40	92	466	415	0.89
4	2006	37	60	80	81	62	60	40	135	555	518	0.93
5	2007	50	66	74	83	67	66	47	137	590	540	0.91
6	2008	42	39	57	68	78	129	56	236	705	663	0.94

7	2009	75	88	99	111	79	81	74	195	802	727	0.9
8	2010	62	94	90	110	97	93	73	257	876	814	0.92
9	2011	71	126	119	129	102	105	88	290	1030	959	0.93
10	2012	70	166	99	188	94	98	81	337	1133	1063	0.93
		530	777	754	925	721	737	534	1862	6840	6310	0.91

Degree of collaboration

The degree of collaboration of authors by year wise shown in table 2. The extent of degree of collaboration in dengue fever research has been measured with the help of the formula devised by K. Subramaniam. His formula has been adopted to examine the extent of research collaboration in the study.

The formula
C=NM/NM+NS
Where,
C = Degree of collaboration in discipline
Nm = Number of multiple authored papers
Ns = Number of single authored Papers
Accordingly, the degree of collaboration has been calculated for the year 2003 is as
293/293+38
293/ 331= 0.88

The year wise degree of collaboration falls between 0.88 and 0.94. The degree of collaboration for any subject ranges from 0.01 to 0.99 and it is always below 1 which has been proved by karidisppa, Maheswarappa and shirol in psychology and Bandyopadhyaya in different disciplines such as Mathematics, Physics, philosophy, political Science and Mechanical Engineering and library science.

Thus the degree of collaboration in dengue fever is 0.91 which clearly indicates its dominance upon individual contribution

Table 3: Quantum of literature published on Dengue fever from 2003 to 2012

S.no	Year	Record of DF	%	Cumulative
1	2003	331	4.85	
2	2004	352	5.15	10
3	2005	466	6.82	16.82
4	2006	555	8.12	24.94
5	2007	590	8.63	33.57
6	2008	705	10.30	43.87
7	2009	802	11.72	55.59
8	2010	876	12.80	68.39
9	2011	1030	15.05	83.44
10	2012	1133	16.56	100
		6840	100	

Quantum of literature published on paediatric Blood Cancer

The year wise distribution of literature on 'dengue fever' according to source date base pub med is shown in the above tables 3. It is found that the maximum number of records 1133 was published during 2012, followed by 1030 in 2011 and 2010

Table 4: Dengue fever research Productivity by language

S.no	Language	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	Total	Percentage
1	Chinese	10	7	9	9	6	3	5	9	3	4	65	0.95
2	Danish	1	-	1	-	-	-	-	4	-	-	6	0.08
3	English	1088	958	809	730	655	536	497	415	313	292	6293	92.00
4	French	9	11	8	22	12	11	6	8	3	5	95	1.38
5	German	1	2	3	2	3	6	2	2	2	2	25	0.36
6	Herzegovina	1	-	-	-	-	-	-	-	-	-	1	0.01
7	Polish	1	2	1	1	-	-	1	-	-	-	6	0.08
8	Portuguese	3	11	15	18	9	11	13	11	17	11	119	1.74
9	Spanish	18	32	23	12	16	17	30	14	12	11	185	2.70
10	Turkey	1	-	2	-	-	-	1	-	-	-	4	0.05
11	Dutch	-	1	-	3	2	-	-	-		-	6	0.08
12	Japanese	-	4	2	2	1	4	-	1	-	4	18	0.26
13	Russian	-	2	-	1	-	1	-	2	1	1	8	0.11
14	Hebrew	-	-	2	-	-	-	-	-	-	-	2	0.02
15	Italian	-	-	-	-	1	-	-	-	1	-	2	0.02

16	Norwegian	-	-	1	2	-	-	-	-	-	-	3	0.04
18	Korean	-	-	-	-	-	1	-	-	-	-	1	0.01
19	Finnish	-	-	-	-	-	-	-	-	-	1	1	0.01
	Total	1133	1030	876	802	705	590	555	466	352	331	6840	100

Table 4 reveals that the language wise distribution of dengue fever for 10 years (2003-2012). Major research output had published widely in English Language (92.00%).

Table 5: Country wise distribution

S.No	Place	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total	%
1	Argentina	1	1	-	-	-	1	2	-	3	5	13	0.19
2	Australia	5	8	12	9	9	13	14	13	11	17	111	1.623
3	Brazil	23	26	28	31	31	31	55	25	43	57	350	5.11
4	Canada	4	4	4	4	4	3	10	13	8	1	55	0.80
5	China	8	8	13	3	3	14	13	14	9	15	100	1.46
6	Colombia	2	3	3	4	4	6	6	8	5	3	44	0.64
7	Cuba	2	-	4	4	4	-	-	8	7	7	36	0.52
8	Denmark	1	1	4	2	2	2	-	1	2	2	17	0.24
9	Egypt	1	-	-	-	-	-	1	3	4	6	15	0.21
10	England	43	61	69	116	116	135	151	173	190	222	1276	18.66
12	France	7	5	10	11	11	15	24	15	22	40	159	2.323
13	Germany	10	5	2	13	13	21	15	24	27	63	193	2.823
14	India	5	10	23	22	22	26	25	41	48	30	252	3.69
15	Jamaica	1	-	-	1	1	1	-	1	3	2	10	0.14
16	Japan	5	1	3	16	16	6	7	7	24	4	89	1.30
17	Malaysia	2	-	6	4	4	3	6	8	8	6	47	0.68
18	Mexico	2	2	2	2	2	4	1	1	5	2	23	0.33
19	Netherlands	27	22	44	73	73	82	97	99	108	58	683	9.98
20	Russia	1	-	2	1	1	-	1	-	2	-	8	0.11
21	Sri Lanka	4	-	-	-	-	4	-	-	2	3	13	0.19
22	Sweden	1	2	2	4	4	3	7	11	3	5	42	0.61
23	Switzerland	6	8	4	4	4	11	9	11	-	10	67	0.97
24	Thailand	17	11	27	12	12	18	8	13	17	18	153	2.24
25	United States	151	154	183	195	230	275	316	351	424	528	2807	41.03
26	Venezuela	2	1	2	3	3	3	-	-	-	-	14	0.20
27	Bangladesh	-	1	1	1	1	-	1	1	1	1	8	0.11
28	Chile	-	1	-	2	2	-	-	-	1	1	7	0.10
29	Indonesia	-	4	-	-	-	-	3	-	2	-	9	0.13
30	Israel	-	1	1	-	-	-	-	2	2	-	6	0.08
31	Italy	--	2	-	-	-	5	7	7	5	7	33	0.48
32	Nepal	-	1	-	-	-	-	1	-	3	2	7	0.10
33	New Zealand	-	1	5	-	-	-	-	-	1	2	9	0.13
34	Norway	-	1	-	-	-	1	3	1	-	-	6	0.08
35	Portugal	-	1	-	1	1	-	-	-	1	1	5	0.07

Table 5 Country wise distribution (continued)

36	Singapore	-	1	4	5	5	5	3	3	9	5	40	0.58
37	Slovakia	-	1	-	-	-	1	-	-	-	-	2	0.02
38	Spain	-	4	5	2	2	5	1	4	2	3	28	0.40
39	Belgium	-	-	1	-	-	-	3	-	-	-	4	0.05
40	Ireland	-	-	2	-	-	-	1	2	3	-	8	0.11
41	Costa Rica	-	-	-	1	1	-	1	-	1	1	5	0.07
42	Korea (South)	-	-	-	1	1	-	-	-	-	-	2	0.02
43	Pakistan	-	-	-	3	3	9	6	3	3	-	27	0.39
44	Papua New Guinea	-	-	-	1	1	-	1	-	-	-	3	0.04
45	Poland	-	-	-	2	2	-	1	2	2	1	10	0.14
46	Saudi Arabia	-	-	-	1	1	-	-	1	2	1	6	0.08
47	Scotland	-	-	-	1	1	-	-	-	2	-	4	0.05
48	Ghana	-	-	-	-	-	-	-	-	1	-	1	0.01
49	Puerto Rico	-	-	-	-	-	-	2	1	1	-	4	0.05
50	Turkey	-	-	-	-	-	-	-	2	1	-	3	0.04
51	Iran	-	-	-	-	-	-	-	1	1	3	5	0.07
52	Greece	-	-	-	-	-	-	-	-	2	-	2	0.02
53	Korea (South)	-	-	-	-	-	-	-	2	1	-	3	0.04
54	Oman	-	-	-	-	-	2	-	-	3	-	5	0.07
55	Peru	-	-	-	-	-	-	-	3	5	-	8	0.11
57	Kenya	-	-	-	-	-	-	-	1	-	1	2	0.02
	Total	331	352	466	555	590	705	802	876	1030	1133	6840	100

Table 5 reveals that country wise distribution of dengue fever for ten years (2003-2012. Major research output had published widely in united state 2807 (41.03%) and followed by England 1276 (18.66%).

TOOLS APPLIED

The research has applied the relative growth rate and doubling time model developed by MAHAPATRA. The health care articles published the relative growth rate trend is increasing in the number of publications per unit of time. The mean relative growth rate R[1-2] over a specified period of interval can be calculated from the following equation .

$$R[1-2]=\frac{W2-WI}{T2-T1}$$

Where R[1-2] mean relative growth rate over the specified period of interval.

W1=log W1 [Natural log of initial number of publication].

W2=log w2 [Natural log of initial number of publication].

T2-T1=the unit difference between the initial number and final time.

The relative growth of publications can be calculated separately.

Therefore,

R[a]= relative growth rate per unit of publication per unit of time [year]

R[P] = relative growth rate per unit of page per unit of time [year]

DOUBLING TIME

It is calculated that there is a direct equivalence existing between the relative growth rates and doubling time .If the number of publications pages of subject double during a period, then the difference between the logarithms of the number 2. If one uses natural logarithms, this difference has a value of 0.693. Thus, the corresponding doubling time for publications can be calculated by the formula.

Doubling time [DT] = 0.693/R

Therefore

Doubling time for publications DT[a] =0.693/R[a]

RESULTS

Year	Output	Cumulative No. of publication	W1	W2	Relative growth rate	Doubling time
2003	331	331	-	5.802	-	-
2004	352	683	5.802	6.526	0.72	0.957
2005	466	1149	6.526	7.046	0.52	1.332
2006	555	1704	7.046	7.440	0.39	1.758
2007	590	2294	7.440	7.738	0.29	2.325
2008	705	2999	7.738	8.006	0.26	2.585
2009	802	3801	8.006	8.243	0.23	2.924
2010	876	4677	8.243	8.450	0.20	3.347
2011	1030	5707	8.450	8.649	0.19	3.482
2012	1133	6840	8.649	8.830	0.18	3.828
	6840					

Table 6: Publication Type

S.no	Publication Type	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	Total	%
1	Case Reports	59	61	61	47	54	47	44	31	26	21	451	6.59
2	Clinical Trial, Phase I	3	3	1	5	5	3	6	4	6	7	43	0.62
3	Comment	28	25	12	18	15	13	11	17	10	6	155	2.26
4	Comparative Study	27	35	32	34	53	38	59	42	30	23	373	5.46
5	Congresses	4	3	3	4	-	3	4	2	4	-	27	0.39
6	Editorial	6	13	6	5	10	6	2	4	6	-	58	0.84
7	English Abstract	37	55	51	51	31	37	44	29	23	27	385	5.63
8	Evaluation Studies	18	29	22	13	24	18	14	19	8	12	177	2.59
9	Historical Article	9	3	1	4	6	-	2	1	2	2	30	0.43
10	In Vitro	5	4	5	3	1	4	2	-	1	1	26	0.38
11	Journal Article	718	642	570	538	428	368	324	283	211	218	4300	62.87
12	Journal ArticleDEP	201	123	80	63	59	30	31	23	11	1	622	9.09
13	Letter	11	21	16	6	8	3	4	6	7	1	83	1.21
14	LetterDEP	4	9	5	2	3	13	3	2	-	4	45	0.65
15	News	3	4	7	6	8	5	5	3	5	7	52	0.76
16	Biography	-	-	1	-	-	-	-	-	2	1	4	0.05
17	Interview	-	-	-	2	-	2	-	-	-	-	4	0.05
18	Retraction of Publication	-	-	3	-	-	-	-	-	-	-	3	0.04
	Total	1133	1030	876	802	705	590	555	466	352	331	6840	100

Table 6 reveals that the publication type distribution of dengue fever for 10 years (2003-2012). Major research output had published widely in journal article 62.87%.

CONCLUSION

The present study is related to bibliometrics analysis of article published in dengue fever from 2003-2012. The study has analysed various aspects such as authorship pattern, degree of collaboration among the authors and geographical distribution of papers. Maximum number of articles is 1862 (27.24%) have been contributed by more than seven authors. This shows that single author research work were low among the contribution made to the dengue fever. This has been further testified with the degree of collaboration. The degree of collaboration in dengue fever is 0.91, which clearly contribution.
The dengue fever research productivity by language is dominated by English language 6293(92%). the country wise distribution major research output had published widely in united state 2807(41.03%). The publication type wise distribution major research output had published widely in journal article 4300 (62.87%).

REFERENCES

1. Thirumagal, A: *Trends in Turmeric or Curcuma Longa Research: A Bibliometric study. Journal of Indian Library association*, 47(3-4): 2011, pp. 13-21.
2. Rattan, G K and Gupta, K: *Bibliometric Analysis of Malaysian Journal of Library and Information Science: 2007-2011. International Journal of Information Dissemination and Technology*, 2(4): 2012, pp. 307-312.
3. Elango, B and Rajendran, P: *Authorship Trends and Collaboration Pattern in the Marine Sciences Literature: A Scientometric Study. International Journal of Information Dissemination & Technology*, 2(3): 2012, pp. 166-169.
4. Thanuskodi, S: *Bibliometric Analysis of Indian Journal of Agricultural Research.* International Journal of Information Dissemination & Technology, 2(3): 2012, pp. 170-175.
5. Kavitha,T: *Indian journal of Nutrition and Dietetics: Bibliomaniacs Study. Journal of Advances in Library and Information Science.* 2(1): 2013 pp 12-14.
6. Mahapatra, M. (1985). On the Validity of the theory of Exponential Growth of Scientific Literature, Proceedings of the 15th IASLIC Conference, Bangalore, pp. 61-70.
7. Subramanyam K. (1993). Bibliometric Study of Research Collaboration: A Review, *Journal of Information Science*, 6(1), 33-38.