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Research Article

CITATION ANALYSIS ON DENGUE FEVER 1999-2012: A GLOBAL PERSPECTIVE

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ABSTRACT
The present study analyzes dengue fever research publication of 326 records were downloaded and analyzed by using the histcite software application from 1999 to 2012. The data is analyzed to know the authorship pattern, degree of collaboration and geographical distribution of papers, year-wise research output, geographical distribution of research output, and nature of collaboration, characteristics of highly productive institution and the channel of communication used by the scientists.

Key Words: *Dengue Fever, Virus Infection, Scientometric Study*

INTRODUCTION

The basic units of bibliometrics are all facets of written communications, such as, primary and secondary periodicals, articles and abstracts published in them, bibliographies of articles, books, monographs and other media of communication. It has sound theoretical base with contribution from Pritchard, Lotkas, Gross, Bradford, Zipf, Garfield, Vickery and many others. Scientometrics is a relatively new subject or branch of information science. It is interdisciplinary research method which utilizes quantitative analysis and statistics to describe patterns of publication with in a given Field or body of literature. Many scientometric studies have appeared in the literature to focus on the performance of science in the field of dengue fever.

Literature Review

Previous studies demonstrated that there is a related research, Sagar Anil, Kademani BS, Garg RG and Kumar Vijai (2010) analyzed the Scientometric mapping of Tsunami publications. The objective of the study was to perform a scientometric analysis of all Tsunami related publications as per the Scopus™ database during 1997-2008. A spurt in number of publications was observed after the Indonesia's tsunami occurred on 26 December 2004. Bhatia Ketki (2010) examined the Innovations publications productivity of national institute of occupational health. This study attempts to analyze quantatively research publications published by the scientists of National Institute of Occupational Health (ICMR) Ahmedabad, India, during 2000-2006. The indicate that: 1 More publications are observed in journals dealing in occupational health and occupational medicine, which s related to institutional research field: 2 Multiple author articles are more than single author articles because research format in occupational health is multi-disciplinary, to carry out research in multiple disciplines/parameter you require more scientists, and 3. Core subject in Occupational Health is Occupational Medicine and Occupational Medicine department produces more publications. Sándor Soós (2010) analyzed the recent years Hungarian scholarly databases, especially those of the Hungarian Academy of Sciences (HAS), have been playing an increasing role in research evaluation. These evaluations, however, usually pose the question: what is an adequate basis for evaluative comparisons, which are the comparable communities of actors (members of the Public Body), supposed to represent a given scholarly field. The study presents an integrated bibliometric classification method for identifying the fields and the corresponding communities that allow valid comparisons. Hazarika Tilak, Sarma Dipak and Sen BK (2010) analyzed the Scientometric portrait of Nayana Nanda Borthakur. Quantitative documentation of the research papers of Nayana Nanda Borthakur published in peer-reviewed journals during 1963-2005 reveals a total of 106 papers to his credit. As depicted in the

title tomography, the core area of research was related to evaporation, air ions, electro hydrodynamics (EHD), microwave irradiation, beta-ray gauge technique among others.

Scope of the Study

The main purpose of the study is to find out the information about the recent communication trends in the advancement of the field of Multidisciplinary subject a citation analysis "Dengue fever" and for this purpose, the study is based on articles in journals, authors published the books and papers published in conference proceedings published on Malaria subject from 1999 to 2012 Using statistical techniques like histogram charts, bar charts etc, these will be used to interpret the data. More about this is described in

Limitations of the Study

The study undertaken is limited to 13.5 years, i.e. 1999- May 2012.
It is a small scale study, which may need to be indicated by the states.
Here we did Citation analysis of tertiary source of information
In this study we did not include the citation analysis on patents.

Objectives of the Study

The main objective of this study is to study the citation analysis of dengue fever in respect of,
To identify the source-wise and year-wise distribution of dengue fever research output of the study from 1999 to 2012.
To compare and measure the analysis continent-wise and country wise dengue fever research output performance.
To identify the prolific journals and Journal distribution on dengue fever research output.
To assess the institution-wise research concentration on dengue fever research output.
To identify the word occurrences in sample data by Zipf's law.

METHODS

Data was collected from the Science Citation Index (SCI) which is available via the Web of Science (WoS). SCI database is one of the very comprehensive databases covering all aspects of science. The study period (1999-2012) is selected as the database is available in machine from since 1982. The search string "Dengue fever" in the "Basic search**"** field of SCI was used for the year s 1999- May 2012 to download the records on the subjects 'Dengue fever'. A total of 326 records were downloaded and analyzed by using the Histcite software application as per the objectives of the study.

RESULTS AND DISCUSSION

The most productive Journal is Indian Journal of Medical Research of defense analysis with 33 papers dealing with dengue fever and 10.1%, TCLS 100, TGCS 239, TLCR 107 of all papers published in this research field. The journal of the seminal publication on dengue fever given table 2, Fem. Immunology and Medical Microbiology and Indian Journal of Pediatrics, appear on rank 2 (1.7%), TCLS 72, TGCS 277, TLCR 53 and 3 (1.5%), TCLS 1, TGCS 9, TLCR 11 respectively.

The high frequency keywords will enable us to understand the various aspects of dengue fever under study. The high frequency keywords were: Dengue 78.8% (TCLS 513, TGCS 1820), Fever 33.7% (TCLS 242, TGCS 753), India 21.8 %(TCLS 125, TGCS 563), Virus 19.0 %(TCLS 113, TGCS 540) and Infection 14.1 %(TCLS 58, TGCS 247). Analysis of the keywords appeared either on the title or assigned by the indexer or the author himself will help in knowing in which direction the knowledge grows.

During 1999 - 2012 a total of 326 publications were published in dengue fever by global. The average Number of Publications produced per year was 7.13%. The highest number of publications 59 was produced in 2011 Table 4 was given year wise growth and collaboration rate in dengue fever. It can be clearly visualized from the table 4 that growth of the literature was very low during 2003. It Indicate that research in dengue fever received a major impetus this period.

Table 1: Author's wise document distribution (First -20 Documents)

S. No	Author	Records	Percent	TLCS	TLCS/t	TLCSx	TGCS	TGCS/t	TLCR	TLCSb	TLCSe
01	Chaturvedi UC	24	7.4	146	15.99	33	472	52.34	143	41	03
02	Rao PVL	17	5.2	017	03.80	08	150	28.40	047	10	
03	Dash PK	14	4.3	051	06.82	22	174	26.50	036	12	05
04	Khanna N	11	3.4	038	05.28	12	182	30.07	027	19	
05	Nagar R	11	3.4	091	10.27	16	243	27.25	088	35	02
06	Swaminathan S	11	3.4	038	05.28	12	182	30.07	027	19	
07	Broor S	10	3.1	061	05.54	52	169	19.24	012	08	21
08	Jana AM	10	3.1	060	06.83	22	151	18.54	026	18	09
09	Kumar R	10	3.1	008	01.60	05	023	04.83	017		
10	Parida MM	10	3.1	045	05.48	19	141	19.22	021	08	06
11	Dar L	8	2.5	044	04.33	36	121	15.82	011	08	15
12	Parida M	8	2.5	007	01.28	03	049	10.55	024	04	
13	Saxena P	8	2.5	042	04.34	16	155	21.38	021	07	07
14	Shrivastava R	8	2.5	034	04.81	06	127	17.33	042	24	04
15	Tyagi BK	8	2.5	011	01.60	08	032	04.64	024	04	01
16	Agarwal R	7	2.1	088	06.62	13	275	20.91	015	15	02
17	Elbishbishi EA	7	2.1	088	06.62	13	275	20.91	015	15	02
18	Kumar S	7	2.1	003	01.00	01	011	03.13	005		
19	Pattnaik P	7	2.1	008	01.31	03	058	09.97	019	06	00
20	Sachdeva A	7	2.1	004	01.10	00	006	01.80	004	00	00

The above reveals that the exponential growth rate of publication on dengue fever during 13.5 years (1999 to may 2012). An exponential growth in number of publication was observed during 1999 to 2012. The highest growth rate is 3.33 percents found during 2004 with 10 publications followed by 1.83 percents at 2006 with 33 publications, 1.80 percents at 2005 with 18 publications. The total exponential growth rate value is 15.95 percents, it is found the average exponential growth rate is 1.13 percents for sample periods.

Dengue fever Scientists communicated their research results through a variety of communication channels. Table – 5 provides the distribution of publications in various channels of communication. It was observed that 73.3 percent of the literature was published in Article followed by 9.5 percent in Letter, 7.4 percent in Review, 6.4 percent in Editorial Material, 3.1 percent in Meeting Abstract and 0.3 percent in Proceedings Paper.

There were 293 institutions involved in research activity in the field of dengue fever. Table 7 provides publication productivity of top 20 institutions. All India Institute Medical Science topped the list with 28 publications followed by Defense Research and Development with 24 publications.
There were 454 institutions and subdivisions involved in research activity in the field of dengue fever. Table 7(a) provides publication productivity of top 20 institutions. Defense Research and Development Establish, Division of Virology topped the list with 21 (TLCS 52, TGCS 225) publications followed by All India Institute Medical Science, Department of Microbiology with 11(TLCS 71, TGCS 192) publications.

Table 2: Journal wise document distribution (First -20 Documents)

S. No	Journal	Records	Percent	TLCS	TLCS/t	TGCS	TGCS/t	TLCR
01	Indian Journal of Medical Research	33	10.1	100	12.76	239	31.94	107
02	Fems Immunology and Medical Microbiology	12	03.7	072	08.04	277	32.20	053
03	Indian Journal of Pediatrics	10	03.1	001	00.33	009	02.43	011
04	Transactions of the Royal Society of Tropical Medicine and Hygiene	09	02.8	029	05.08	092	14.36	027
05	American Journal of Tropical Medicine and Hygiene	08	02.5	012	01.92	078	13.97	017
06	Asian Pacific Journal of Tropical Medicine	08	02.5	000	00.00	000	00.00	005
07	Journal of Tropical Pediatrics	08	02.5	024	02.44	098	09.28	009
08	Indian Pediatrics	07	02.1	007	01.34	052	07.63	007
09	Parasitology Research	07	02.1	005	02.33	013	05.00	005
10	Tropical Medicine and International Health	07	02.1	013	01.83	078	11.75	007
11	Virology Journal	07	02.1	000	00.00	120	22.31	020
12	Indian Journal of Medical Microbiology	06	01.8	004	01.10	036	07.85	003
13	Pediatric Critical Care Medicine	06	01.8	001	00.50	015	05.17	006
14	Epidemiology And Infection	05	01.5	008	01.04	028	04.35	010
15	Journal of Vector Borne Diseases	05	01.5	004	01.00	021	05.33	004
16	Neurology India	05	01.5	013	04.33	020	06.33	008
17	Tropical Doctor	05	01.5	007	01.02	023	02.90	005
18	Current Science	04	01.2	021	01.50	051	04.74	008
19	Diagnostic Microbiology and Infectious Disease	04	01.2	007	00.86	038	05.65	005
20	Journal of the Neurological Sciences	04	01.2	013	02.69	046	08.16	008

There were as many as 37 countries carrying out research in the field of dengue fever. Table 8 provides a list of collaboration countries whose research output is more than 50 publications. India is top producing country with 319 publications (97.9%) followed by USA with 10 publications (3.1%), Kuwait with 7 Publications (2.1%).

The most cited reference is Gubler Dj, 1998, Clin Microbiol Rev, V11, P480 with 48 papers dealing with dengue fever and each 14.7 % of all papers published in this research field. The cited reference of the seminal publication on dengue fever given Table 9, appear on rank 2 and 3 Lanciotti Rs, 1992, J Clin Microbiol, V30, P545 , World Health Organization, 1997, Deng Haem Fev Diagn and Chaturvedi Uc, 2000, Fems Immunol Med Mic, V28, P183. It can be clearly visualized from the below table.

Table 3: Word wise distribution of Documents (First -20 Documents)

S. No.	Word	Records	Percent	TLCS	TGCS
01	Dengue	257	78.8	513	1820
02	Fever	110	33.7	242	0753
03	India	071	21.8	125	0563
04	Virus	062	19.0	113	0540
05	Infection	046	14.1	058	0247
06	Hemorrhagic	031	09.5	087	0285
07	Outbreak	023	07.1	077	0224
08	Aedes	022	06.7	006	0036
09	Chikungunya	022	06.7	032	0290
10	Clinical	020	06.1	014	0078
11	Acute	019	05.8	013	0035
12	Hemorrhagic	019	05.8	096	0226
13	Patients	019	05.8	034	0148
14	Aegypti	017	05.2	005	0045
15	Children	016	04.9	030	0097
16	Care	015	04.6	015	0034
17	Detection	014	04.3	020	0088
18	Type	014	04.3	045	0167
19	Delhi	013	04.0	069	0185
20	Protein	013	04.0	035	0136

Table 4: Year wise distribution of documents

S. No.	Publication Year	Records	Percent	TLCS	TGCS
01	1999	09	02.8	90	221
02	2000	09	02.8	53	235
03	2001	04	01.2	22	075
04	2002	05	01.5	32	047
05	2003	03	00.9	01	005
06	2004	10	03.1	51	154
07	2005	18	05.5	53	200
08	2006	33	10.1	98	553
09	2007	27	08.3	37	185
10	2008	43	13.2	53	347
11	2009	36	11.0	14	134
12	2010	48	14.7	29	097
13	2011	59	18.1	11	048
14	2012	22	06.7	02	002

Table 4(a): Exponential growth rate of publications

S. No	Publication Year	Records	Exponential Growth Rate
01	1999	009	-
02	2000	009	01.00
03	2001	004	00.44
04	2002	005	00.80
05	2003	003	00.60
06	2004	010	03.33
07	2005	018	01.80
08	2006	033	01.83
09	2007	027	00.81
10	2008	043	01.59
11	2009	036	00.83
12	2010	048	01.33
13	2011	059	01.22
14	2012	022	00.37
	Total	**326**	**15.95 (1.13)**

Table 5: Source wise distribution documents

S. No	Document Type	Records	Percent	TLCS	TGCS
1	Article	239	73.3	411	1756
2	Letter	031	09.5	021	0050
3	Review	024	07.4	094	0435
4	Editorial Material	021	06.4	020	0060
5	Meeting Abstract	010	03.1	000	0000
6	Proceedings Paper	001	00.3	000	0002

Table 6: Institution wise distribution documents (First -20 Documents)

S. No.	Institution	Records	Percent	TLCS	TGCS
01	All India Institute Medical Science	28	8.6	83	265
02	Defense Research and Development	24	7.4	54	235
03	National Institute Virology	14	4.3	28	210
04	Christian Medical College and Hospital	13	4.0	19	066
05	International Center Genetics Engineering and Biotechnology	11	3.4	38	182
06	Postgraduate Institute Medical Education and Research	11	3.4	01	053
07	Sanjay Gandhi Postgraduate Institute Medical Science	10	3.1	53	174
08	Maulana Azad Medical College	08	2.5	15	084
09	KG Medical College	07	2.1	61	201
10	Kuwait University	07	2.1	88	275
11	Sir Ganga Ram Hospital	07	2.1	04	006
12	Chhatrapati Shahuji Maharaj Medical University	06	1.8	06	016
13	Indian Council Medical Research	06	1.8	07	038
14	University of Delhi	06	1.8	03	014
15	Vector Control Research Center	06	1.8	05	043
16	BJ Wadia Hospital Children	05	1.5	12	036
17	ICMR	05	1.5	09	029
18	University College Medical Science	05	1.5	02	005
19	Center Research Medical Entomology ICMR	04	1.2	00	000
20	Indian Toxicology Research Center	04	1.2	12	053

Table 7: Institution and Subdivision wise distribution documents (First -20 Documents)

S. No	Institution with Subdivision	Records	TLCS	TGCS
01	Defense Research and Development Establish, Division of Virology	21	52	225
02	All India Institute Medical Science, Department of Microbiology	11	71	192
03	All India Institute Medical Science, Department of Medicine	06	08	053
04	All India Institute Medical Science, Department of Pediatrics	06	18	087
05	KG Medical College, Department of Microbiology	06	60	200
06	Kuwait University, Faculty of Medicine	06	61	174
07	BJ Wadia Hospital Children, Department of Pediatrics	05	12	036
08	National Institute of Virology, Pune 411001	05	19	144
09	Sanjay Gandhi Postgraduate Institute Medical Science, Department of Neurology	05	14	041
10	Vector Control Research Center, Department of Molecular Biology and Bioinformatics	05	04	027
11	Christian Medical College and Hospitals, Department of Clinical Virology	04	15	024
12	International Center Genetic Engineering and Biotechnology, Recombinant Gene Prod Group	04	04	032
13	KG Medical University, Department of Microbiology	04	30	099
14	Maulana Azad Medical College, Department of Microbiology	04	06	048
15	Postgraduate Institute of Medical Education and Research, Department Virology	04	01	010
16	University Burdwan, Department of Zoology	04	00	015
17	All India Institute of Medical Science, Department of Biostatistics	03	18	065
18	Chhatrapati Shahuji Maharaj Medical University, Department of Microbiology	03	04	013
19	Chhatrapati Shahuji Maharaj Medical University, Department of Neurology	03	02	003
20	Chhatrapati Shahuji Maharaj Medical University, Department of Pediatrics	03	04	013

Table 8: Country wise documents distribution (first -20 Countries)

S. No	Country	Records	Percent	TLCS	TGCS
01	India	319	97.9	538	2230
02	USA	010	03.1	012	0093
03	Kuwait	007	02.1	088	0275
04	Unknown	007	02.1	008	0073
05	UK	006	01.8	006	0031
06	Sri Lanka	004	01.2	016	0039
07	Canada	003	00.9	002	0017

08	Belgium	002	00.6	000	0000
09	Brazil	002	00.6	000	0026
10	France	002	00.6	000	0020
11	Saudi Arabia	002	00.6	000	0006
12	Thailand	002	00.6	001	0013
13	Argentina	001	00.3	000	0020
14	Australia	001	00.3	000	0004
15	Bolivia	001	00.3	000	0006
16	Cambodia	001	00.3	000	0001
17	Colombia	001	00.3	000	0006
18	Cuba	001	00.3	000	0006
19	Ecuador	001	00.3	000	0006
20	El Salvador	001	00.3	000	0006

Table 9: Cited reference wise documents distribution (first -20 Countries)

S. No.	Author / Year / Journal	Records	Percent
1	Gubler Dj, 1998, Clin Microbiol Rev, V11, P480	48	14.7
2	Lanciotti Rs, 1992, J Clin Microbiol, V30, P545	32	09.8
3	World Health Organization, 1997, Deng Haem Fev Diagn	32	09.8
4	Chaturvedi Uc, 2000, Fems Immunol Med Mic, V28, P183, Doi 10.1016/S0928-8244(00)00163-2	27	08.3
5	Dar L, 1999, Emerg Infect Dis, V5, P589	25	07.7
6	World Health Organization, 1997, Deng Hem Fev Diagn T	23	07.1
7	Rigau-Perez Jg, 1998, Lancet, V352, P971, Doi 10.1016/S0140-6736(97)12483-7	22	06.7
8	Chaturvedi Uc, 1999, Curr Sci India, V76, P63	21	06.4
9	Agarwal R., 1999, Southeast Asian Journal Of Tropical Medicine And Public Health, V30, P735	20	06.1
10	Monath Tp, 1994, P Natl Acad Sci Usa, V91, P2395, Doi 10.1073/Pnas.91.7.2395	20	06.1
11	Dash Pk, 2006, Virol J, V3, Doi 10.1186/1743-422x-3-55	19	05.8
12	Solomon T, 2000, Lancet, V355, P1053, Doi 10.1016/S0140-6736(00)02036-5	18	05.5
13	Chaturvedi Uc, 1991, J Gen Virol, V72, P859, Doi 10.1099/0022-1317-72-4-859	17	05.2
14	Guzman Mg, 2002, Lancet Infect Dis, V2, P33, Doi 10.1016/S1473-3099(01)00171-2	17	05.2
15	Kabra Sk, 1999, T Roy Soc Trop Med H, V93, P294, Doi 10.1016/S0035-9203(99)90027-5	17	05.2
16	Aggarwal A, 1998, Indian Pediatr, V35, P727	15	04.6

17	Chaturvedi U C, 2004, Indian J Med Microbiol, V22, P5	15	04.6
18	Gibbons Rv, 2002, Brit Med J, V324, P1563, Doi 10.1136/Bmj.324.7353.1563	15	04.6
19	Halstead Sb, 2007, Lancet, V370, P1644, Doi 10.1016/S0140-6736(07)61687-0	15	04.6
20	Gomber S, 2001, Indian Pediatr, V38, P477	14	04.3

Suggestions

The researcher upholds the following impact measures to improve the dengue fever research base on the findings of the present study. Based on the findings, scientists should focus on the neglected areas by being encouraged to carry out more research activities in those areas of Malaria research. From the conclusion of the present study, the productivity of the author could be recognized. Therefore, the individual scientist may be inspired to distribute more number of contributions instead of single contributions.

CONCLUSION

In this study the literature on dengue fever, a promising new material, has been analyzed by scientometric methods. The average Number of Publications produced per year was 7.13 %. The highest number of publications 59 was produced in 2011. The most productive author is Chaturvedi UC with 24 papers dealing with dengue fever. Most productive research in country is India other 37 countries. The most productive Journal is Indian Journal of Medical Research of defense with 33 papers dealing with dengue fever. Types of documents, the format of Journal article is the highest. Finally, the Scientometrics have more contributed and communicated in English language. Most productive research Institution there are All India Institute Medical Science is topped with 28 publications. The review was conducted through this study is very helpful for the identifying the potential feature.

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