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Scientometric Profile on Chikungunya in Medline Database

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ABSTRACT

The present study is based on the Scientometric analysis of 2323 articles on Chikungunya in Medline Database during 2006-2015. This Study will review on year-wise distribution, Authorship pattern of contributions, Author wise distribution, Institution wise distribution, country-wise distribution, reference of the article, Length of Article wise distribution. The findings must reveal various aspects of the characteristics and patterns of contributions of the study.

KEYWORDS: Scientometric, Medline Database, Chikungunya**.**

INTRODUCTION

The aim of Scientometric is to provide quantitative characterization of scientific activity; Scientometric is branch of library and information sciences. Because of the particular importance of publication in scientific communities, it largely overlaps with Bibliometric, which is quantitative analysis of media in any written form. In addition to disciplines of measurement, Scientometric has strong connection with information and library of science as well as science policy. In 1970 we saw the development of Scientometric as on operational activity. Applying Bibliometric method to their own field, Scientometric confirm that their own domain, standing evolved as heterogeneous field in topics and practices.

Chikungunya was first detected in 1952 in Southern Tanzania. The disease is tropical and occurs predominantly in Africa, Asia and the Indian subcontinent. The mosquito vectors have also spread to Europe and the Americas. The incidence of Chikungunya has grown dramatically around the world during the last 50 years. According to a WHO factsheet, in 2015 over 13, 79,788 suspected cases of Chikungunya have been recorded in the Carribean islands, Latin American countries, and the United States of America (WHO, n.d.).

1. REVIEW OF LITERATURE

Few studieshave been undertaken in the past on bibliometric analyses of vector control diseases research output including Chikungunya. Shri Ram (2016)analysed global research output (1783 papers) in Chikungunya(with largest contribution from India),as covered in Scopus multidisciplinary database from 2004 to 2013. The literature growth during the latter half of decade is indicative of high incidence of Chikungunya during the period. Among other vector diseases, bibliometric analysis of research has been conducted on diseases such as malaria(Gupta & Bala, 2011), dengue(Gupta et al., 2014),Japanese encephalitis(Gupta & Gupta, 2016), etc.

Bhardwaj, R. K. (2014) explored Dengue is a disease primarily characterized by headache, eye pain, skin rash, debilitating muscle, and sudden high fever. Presently,no vaccine is available to counter this disease. The best antidote is disturbance strategies to limit the extent of a virus. This paper is an attempt to make a scientometric assessment of research on dengue during 2001-12. The data of this study is obtained from Scopus (http://www.scopus.com) multidisciplinary database and analyzed from different angles. The study reveals that there were 9618 publications within the period under study. During the period 2001-12 annual growth rate was 13.4 percent, comparedto 14.31 percent in the period 2001-2006, and 12.48 percent in 2007-2012. The USA is found to be the leading country on dengue research. The USA has contributed 24.88 percent of world publications. Mahidol University, Thailand, is the majority industriousorganization which has contributed the highest number of publications (353 papers; 6502 citations; h-index value 40). Guzmán, María Guadalupe from Instituto de Medicina Tropical Pedro Kouri, was found to be the most dynamic author in the field of dengue research.

2. HISTORY OF CHIKUNGUNYA

The disease was first was first detected in 1952 in Africa following an outbreak on the Makonde Plateau. This is a border area between Mozambique and Tanzania. The virus was isolated from the serum of a febrile patient from this area. The name chikungunya is derived from the Makonde word meaning *"that which bends up*" in reference to the stooped posture developed as a result of the arthritic symptoms of the disease. In Swahili this means *"the illness of the bended walker".* Makonde is the language spoken by the Makonde, an ethnic group in southeast Tanzania and northern Mozambiqu. (http://www.chikungunyavirusnet.com/history-of-chikungunya.html)

Medline Database

Compiled by the United States National Library of Medicine (NLM), MEDLINE is freely available on the Internet and searchable via PubMed and NLM's National Centre for Biotechnology Information's Entrez system.

According to Wikipedia MEDLINE (Medical Literature Analysis and Retrieval System Online, or MEDLARS Online) is a bibliographic **database** of life sciences and biomedical information. It includes bibliographic information for articles from academic journals covering medicine, nursing, pharmacy, dentistry, veterinary medicine, and health care. MEDLINE also covers much of the literature in biology and biochemistry, as well as fields such as molecular evolution.(https://en.m.wikipedia.org/wiki/MEDLINE)

Definition Analysis

Scientometric

Nalimov and Mulchenko (1971) coined the Russian equivalent of the term “scientometrics” in 1969, and defined it as the quantitative study of various kinds of intelligence process in the development of science. The term has obtained broad acceptance from the journal Scientometrics, which was built in 1978. Scientometrics is a discipline

that uses mathematical methods to quantify the scientific research personnel and achievements to reveal the process of scientific development, and can provide scientific basis for scientific decision making and management (Qiu et al., 2017). Scientometrics uses citation analysis and other quantitative methods to evaluate scientific research activities and thus guide the policy of science (Egghe, 2005).

Several quantitative characteristics of scientific change have been treated in scientometric investigation with the help of analysis models as well as empirical techniques citation and text the analysis sets of scientometric indicators (Elkana,1978).

Chikungunya

Chikungunya is a mosquito-borne viral disease first described during an outbreak in southern Tanzania in 1952. It is an RNA virus that belongs to the alphavirus genus of the family Togaviridae. The name "chikungunya" derives from a word in the Kimakonde language, meaning "to become contorted", and describes the stooped appearance of sufferers with joint pain (arthralgia) (Para.1).

3. OBJECTIVE OF THE STUDY

1. To study the Journal Wise Distribution of contributions.
2. To study the year-wise distribution articles.
3. To study Authorship pattern of contribution.
4. To study Most productive Author
5. To find out Institution wise distribution of contribution.
6. To find out country-wise distribution of contribution.
7. To study Domain name wise distribution of the contribution.
8. To Study Length of page wise distribution of the article
9. To identify Type of document wise distribution of contribution.
10. To find out the reference in the contribution. (Print as well as Web)
11. To identify Relative Growth Rate (RGR) and Doubling Time (DT) of Articles.
12. To analyze year wise Degree of collaboration.

SCOPE AND LIMITATION

The present study is based on the Medline Database articles on Chikungunya during period of 2006 to 2015.
The present study is based on over all 2323 articles during 2006 - 2015.

Data Collection

The data was collected from Medline database on Chikungunya total 2323 articles, during 2006-2015.A datasheet was prepared in Excel sheet.

Data Analysis

The present chapter deals with the Scientometric analysis of different E- journals as per the following parameters.

3.1 Journal wise distribution of contributions

Table no.1 Journal wise distribution of contributions			
Sr. no	**Journal**	**Frequency**	**Percentage**
1	Plos neglected tropical diseases	228	9.81
2	Virology journal	165	7.1
3	Emerging infectious diseases	114	4.91
4	Plos one	112	4.82
5	Korean journal of parasitology	103	4.43
6	American journal tropical medicine hygiene	100	4.3
7	Journal of tropical medicine	81	3.49
8	Parasites & vectors	73	3.14
9	Journal of parasitology research	71	3.06
10	Indian journal of medical research	64	2.76

It can be observed form table no.1 that out of 126 journals, the journal plos neglected tropical diseases ranked in Ist position with 228 (9.81) articles, Virology journal with165 (7.10) articles in IInd position, Emerging infectious diseases with 114 (4.91) articles each and so on. It may be revealed that the authors more likely publish their work in different journals with their respective subject areas/disciplines.

3.2 Year-wise distribution of contributions

Table No. 2: Year-wise distribution of contributions			
Sr. No	**Year**	**Frequency**	**Percentage**
1	2015	360	15.5
2	2014	897	38.61
3	2013	447	19.24
4	2012	324	13.95
5	2011	98	4.22
6	2010	58	2.5
7	2009	43	1.85
8	2008	40	1.72
9	2007	25	1.08
10	2006	31	1.33
Total		**2323**	**100**

Year wise distribution of contributions is shown in table no. 2 &figure no. 1 out of the total 2323 contributions majority of the contributions i.e. 897 (38.61 %) contributions were contributed in 2014 were as minimum contributions i.e. 25 contributions were contributed in 2007.

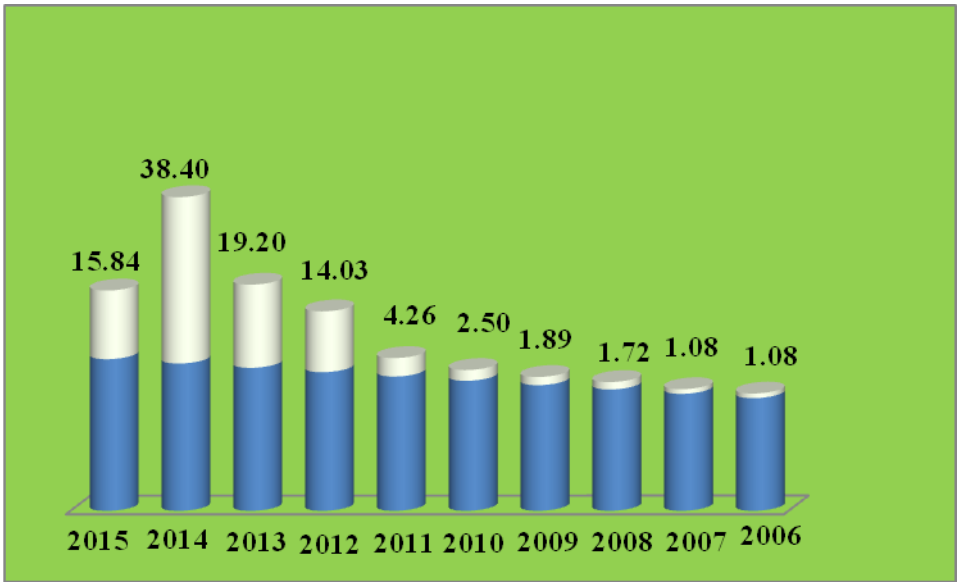

Figure no.1 Year-wise distribution of contributions

3.3 Authorship pattern of contributions

Table no.3: Authorship pattern of contributions

Sr. no	Author	Frequency	Percentage
1	Single author	277	11.92
2	Two author	242	10.42
3	Three author	272	11.71
4	Four author	286	12.31
5	Five author	259	11.15
6	More than five author	987	42.49
	Total	**2323**	**100.00**

The distribution of authorship pattern is given in the table no. 3 & figure no. 2 which shows that the maximum contributions are contributed by more than five author i.e 987 (42.49)

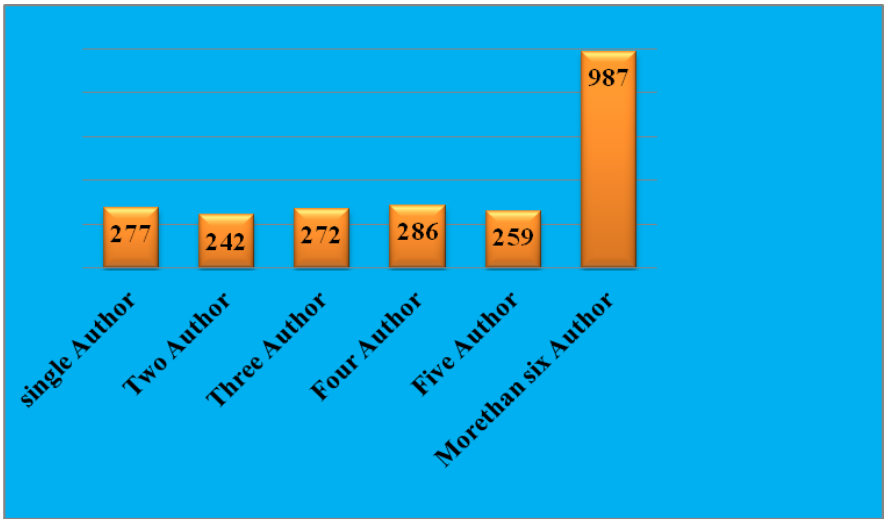

Figure no.2: Authorship pattern of contributions

3.4 Co-authorship pattern of contribution (Year-wise)

Table no.4 Co - Authorship pattern of contribution

Year	Author nature	Frequency	Total	Percentage	Cumulative
2006	Single author	10	26	38	36
	Co - authors	16		62	100
2007	Single author	6	25	24	24
	Co - authors	19		76	100
2008	Single author	10	39	26	26
	Co - authors	29		74	100
2009	Single author	15	44	34	34
	Co - authors	29		66	100
2010	Single author	11	58	19	19
	Co - authors	47		81	100
2011	Single author	17	99	17	17
	Co - authors	82		83	100
2012	Single author	42	326	13	13
	Co - authors	284		87	100
2013	Single author	52	446	12	12
	Co - authors	394		88	100
2014	Single author	64	892	7	7
	Co - authors	828		93	100
2015	Single author	50	368	14	14
	Co - authors	318		86	100
Total			**2323**		

It is observed from the table no.3 that the value of co- authorship pattern for single authored papers during 2006-2015 was highest with 64 publications (7%) in 2014 and the same year co - authorship pattern for multi authored papers highest with 828 publications (93%), which indicates that the collaborative research is increasing over the study of "Scientometrics".

3.5 Types of institution wise (Year- wise)

Table no. 5 Types of institution wise (year- wise)

Year	University	College	School	Institute	Research Centre	Total	Percentage
2006	8	0	0	15	2	25	1.1
2007	10	3	2	7	3	25	1.1
2008	12	1	1	16	10	40	1.7
2009	14	0	0	15	15	44	1.9
2010	20	3	2	21	12	58	2.5
2011	35	5	2	20	37	99	4.3
2012	105	13	19	96	93	326	14.0

2013	150	10	26	153	107	446	19.2
2014	467	14	20	224	167	892	38.4
2015	131	19	16	123	79	368	15.8
Total	**952**	**68**	**88**	**690**	**525**	**2323**	**100**

Table no. 5 & figure no.3 shows the distribution of institutions wise contribution (year wise). It was seen that the university wise contributions were maximum (952) than institution wise (690) Research centre (525) school (88) and (68) contributions were contributed by the colleges. Table no. 5 shows that the highest number of contributions are of university level.

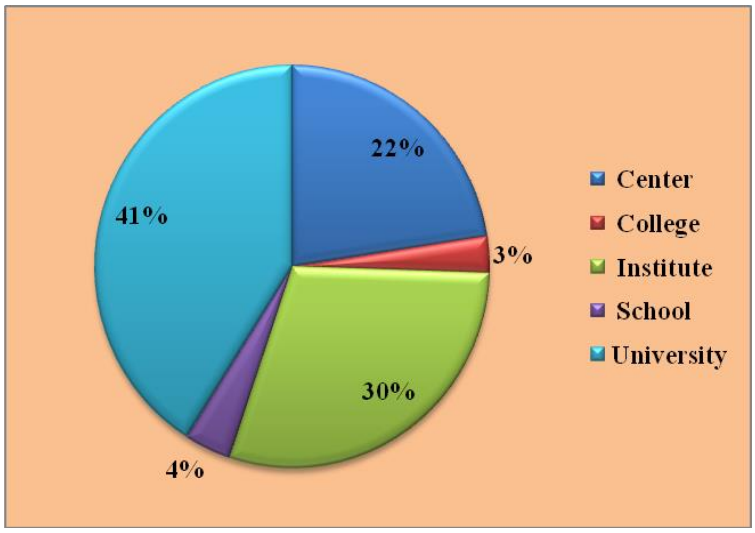

Figure no.3: Types of institution wise (Year- wise)

3.6 Country wise distribution of contributions

Table no 6.Country wise distribution of contributions			
Sr.no	**Country**	**Total**	**Percentage**
1	USA	688	29.62
2	India	334	14.38
3	France	229	9.86
4	Germany	108	4.65
5	Italy	98	4.22
6	UK	92	3.96
7	China	88	3.79
8	Europe	79	3.40
9	Brazil	69	2.97
10	Malaysia	60	2.58
11	Asia	53	2.28
12	Africa	47	2.02
13	Singapore	45	1.94
14	Spain	43	1.85

15	Japan	38	1.64
16	Colombia	33	1.42
17	Sweden	31	1.33
18	Canada	28	1.21
19	Taiwan	24	1.03
20	Portugal	22	0.95
21	Belgium	18	0.77
22	Nepal	14	0.60
23	Indonesia	12	0.52
24	Peru	12	0.52
25	Srilanka	11	0.47
26	Saudi Arabia	11	0.47
27	California	9	0.39
28	Israel	7	0.30
29	Cambodia	6	0.26
30	Turkey	6	0.26
31	Benin	4	0.17
32	Island	3	0.13
33	Ireland	1	0.04
	Total	**2323**	**100**

It can be observed from Table-6 that, there were as many as 33 countries carrying out research and produced 2323 articles. Table no.6 provides ranked List of countries contributing to this field, the number of publications of each country and their share in percentages. USA is the top producing country with 688 (29.62%) publications of the total Output. Also it can be stated that papers not mentioned their country of publication are more than other countries in this study.

3.7 Domain of E-mail id of the contributors

Table no.7 Domain of E-mail id of the contributors

Sr.no	E- mail domain	Frequency	Percentage
1	Commercial	479	20.6
2	Educational	260	11.2
3	Organizational	186	8
4	Governmental	67	2.9
5	Yahoo	145	6.2
6	G mail	479	20.6
7	Rediffmail	29	1.2
8	Others	360	15.5
9	Not mentioned	318	13.7
	Total	**2323**	**100**

Table no.7& figure no.4 shows the commercial websites which were maximum 479 (20.6%) of the articles have mentioned their email address in the paper. Followed by educational domain of email 260 (11.2%) then organizational domain of email 186 (8.0%) respectively.

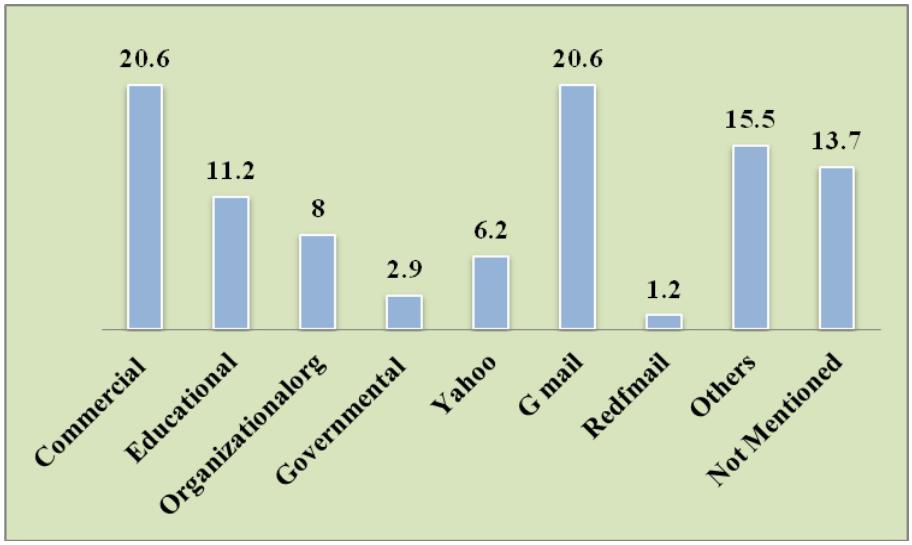

Figure no.4 Domain of e-mail id of the contributors

3.8 Number of Page wise Distribution of the Article

Table no. 8. Number of Page wise Distribution of the Article

Sr.no	Length of pages	Frequency	Percentage
1	2To7	752	32.36
2	8To13	1033	44.45
3	14To19	338	14.54
4	20To25	110	4.73
5	26To30	90	3.87
	Total	**2323**	**100**

It can be observed from Table-8, that the highest number of 1033 articles contains 8 To 13 pages, followed by 752 articles contain 2 To7 pages.

3.9 Types of publication (Year- wise)

Table no. 9 Types of publication (Year- wise)

Sr. No	Document type	Frequency	Percentage
1	Article	1972	84.85
2	Reviews	105	4.52
3	Editorial	16	0.69
4	Letter	85	3.66
5	Research	145	6.24
	Total	**2323**	**100**

Table no. 9 & figure no.5 shows the types of publication year wise. In total 2323 contributions majority 1972 (84.85%) of the citations is the Articles and minimum types of publications 16 (0.69%) are Editorial citations.

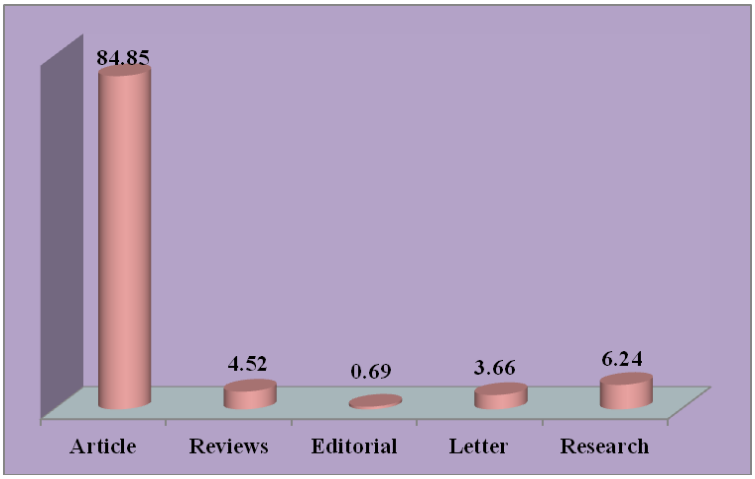

Figure no.5 Types of publication (Year- wise)

3.10 Number of references wise distribution of the articles (Year-wise)

Table no. 10 Number of references wise distribution of the article (Year-wise)			
Year	**Print**	**Web**	**Total References**
2015	7495	1401	8896
2014	39613	2134	41747
2013	10239	1119	11358
2012	10411	517	10928
2011	4993	143	5136
2010	2175	113	2288
2009	1036	56	1092
2008	1184	65	1249
2007	652	46	698
2006	270	16	286
Total	**78068**	**5610**	**83678**

It can be observed from the table no 10 also majority articles are from print references. The total 78068 were print references. And 5610 were web references during the period of ten year. During the period of ten year the majority print references in the year of 2014 were 39613. And then during the period of ten year the minimum references are from print references total 270 web references in the duration of 2006 to 2015.during the period of ten year majority web references in the year of 2014 is 2134 web references are given there.

3.11 Relative growth rate & doubling timing of articles

Table no. 11 relative growth rate & doubling timing of articles								
Year	**Article**	**Cumulative no. Of articles**	**W1**	**W2**	**Rgr**	**Min(rp)**	**Dt(p)**	**Min dt (p)**
2006	25	25	3.21	3.21	0	**0.762**	0	**0.61**

2007	25	50	3.21	3.91	0.7		0.99	
2008	40	90	3.68	4.49	0.81		0.86	
2009	44	134	3.78	4.89	1.11		0.62	
2010	58	192	4.06	5.25	1.19		0.58	
2011	99	291	4.59	5.67	1.08		0.64	
2012	326	617	5.78	6.42	0.64		1.08	
2013	446	1063	6.1	6.96	0.86	**1.042**	0.81	**0.75**
2014	892	1955	6.79	7.57	0.78		0.89	
2015	368	2323	5.9	7.75	1.85		0.37	

From the table no.11 and it noticed that the mean relative growth for the five years 2006 to 2010 is (0.762), 2011 to 2015 (1.042) while the doubling time for different years [dt(rp)] gradually increased from. The mean doubling time for the ten years (i.e. 2006 to 2015) is only (0.61) 2006 to 2010, (0.75) 2011 to 2015. Thus as the rate of growth of publication was decreased, the corresponding doubling time was increased.

Degree of collaboration formula given by k. Subramanyam is useful for determining the collaboration in quantitative terms. The study followed the same formula which is mathematically put as;

Where,

C = degree of collaboration

Nm = number of multi authored papers

Ns = number of single authored papersin the present study

Nm = 987

$C = \frac{nm}{Nm+ns}$

Those, c = 1.280

Thus the degree of collaboration of **"Scientometric Profile on Chikungunya in Medline"** is 1.280 which clearly indicates its dominance upon individual contribution.

3.12 Year wise degree of collaboration

Table no.12 Year wise degree of collaboration

Year	Total no.of article	Total no of author	No. Of single authored article	% of article	No. Of multi authored articles	% of article	Degree of collaboration
2006	25	25	9	3.2	8	0.8	0.01
2007	25	25	6	2.2	4	0.4	0.01
2008	40	40	11	4	12	1.2	0.02
2009	44	44	15	5.4	9	0.9	0.02
2010	58	58	11	4	26	2.6	0.03
2011	99	99	17	6.1	33	3.3	0.04
2012	326	326	42	15.2	134	13.6	0.14
2013	446	446	52	18.8	191	19.4	0.19

2014	892	892	64	23.1	403	40.8	0.37
2015	368	368	50	18.1	167	16.9	0.17
Total	**2323**	**2323**	**277**	**100**	**987**	**100**	**0.78**

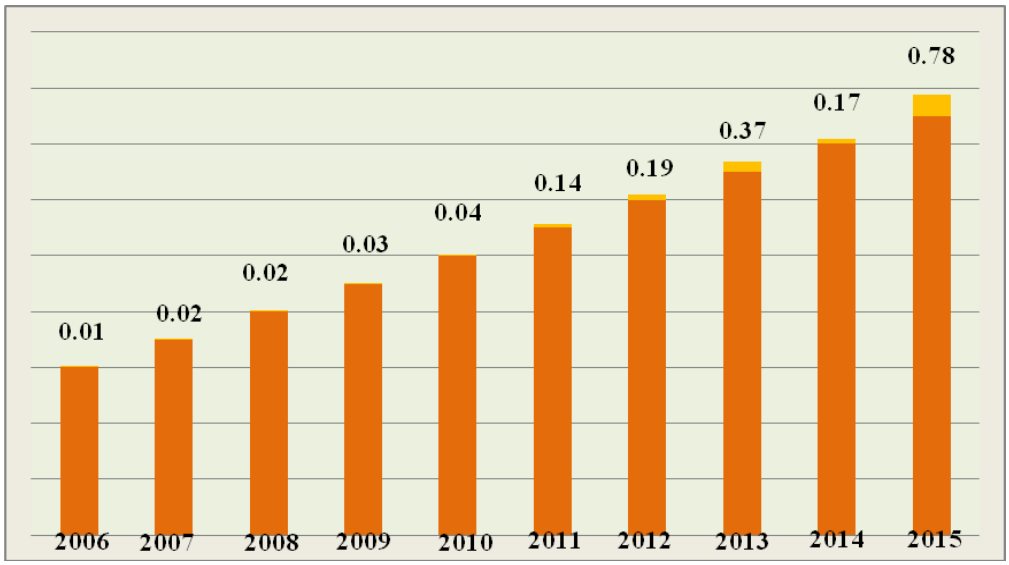

Figure no.6 Year wise degree of collaboration

Table no. 12 & figure no.6 shows that in the 10 years period, the single author articles are higher and predominant than multi author. The multi authored articles are highest in the year 2014. It is seen that the single authorship trend in increasing.

FINDINGS AND CONCLUSION

The findings are based on the analysis of collected data appended in 2323 articles and 83678 references in Chikungunya in Medline database.

- It can be observed form table no.1 that out of 126 journals, the journal plos neglected tropical diseases ranked in Ist position with 228 (9.81) articles, Virology journal with165 (7.10) articles in IInd position, Emerging infectious diseases with 114 (4.91) articles each and so on. It may be revealed that the authors more likely publish their work in different journals with their respective subject areas/disciplines.
- The highest numbers 897 (38.61 %) of papers were published in 2014 contributing.
- Only University highest number 688 of (29.62) times.
- 33 countries carrying out research and produced 2323 articles. *United States of America* is the top producing country with 688 (29.62%) publications of the total output.
- The commercial websites which were maximum 479 (20.6%) of the articles have mentioned their email address in the paper. Followed by educational domain of email 260 (11.2%) then organizational domain of email 186 (8.0%) respectively.
- The highest number of 1033(44.45) articles contains 8 to 13 pages.
- The majority print references in the year of 2014 were 39613 and majority of web references in the year of 2014 were 2134.
- From the table no.11 and it noticed that the mean relative growth for the five years 2006 to 2010 is (0.762), 2011 to 2015 (1.042) while the doubling time for different years [dt(p)] gradually increased from (0.99) in 2007 to (0.58) 2010, (1.08) in 2012 to (0.89) in 2014. The mean doubling time for the ten years (i.e. 2006

to 2015) is only (0.61) 2006 to 2010, (0.75) 2011 to 2015. Thus as the rate of growth of publication was decreased, the corresponding doubling time was increased.

- Table no. 12 & figure no.7 shows that in the 10 years period, the single author articles are higher and predominant than multi author. The multi authored articles are highest in the year 2014. It is seen that the single authorship trend in increasing.

CONCLUSION

The upsurge of epidemics of Chikungunya has necessitated for effective remedial measures for its prevention and control. Chikungunya mortality rate is very low but it is a debilitating disease and incapacitating the patient for several months in some cases. The government need to strengthen the principles of integrated vector management, augment diagnostic facilities and suitable Medicareto the affected. Research plays a vital role to improve the existing support system for the surveillance, prevention and control of the disease. India needs touplift its research output on Chikungunya and also increase its research impact through national and international collaboration. The government should provide adequate infrastructure, special laboratories and financial assistance for promoting the researchin this area.

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