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## Research Article

### AUTHORSHIP PATTERN AND COLLABORATIVE STUDY ON DIABETIC RETINOPATHY RESEARCH DURING THE YEAR 2006 – 2010: A SCIENTOMETRIC STUDY

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#### ABSTRACT

This Study aims that the publication of the papers in Diabetic Retinopathy. This study related to authorship and collaborative as a important fact of scientometrics. They analyzed mainly the Growth of authorship pattern, Citations and Relative Growth Rate of journal. The five years data were collected the Diabetic Retinopathy Disease to find out the area of research authors. The information used for this research year wise distribution of publication, Authors productivity, Source of Journal List, country wise distribution, Exponential growth Rate, Arithmetic Mean. The Degree of collaboration is 4.73.

##### Key Words:

Scientometrics, Authorship pattern, Degree of collaboration, Citation analysis, Doubling Time.

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## INTRODUCTION

Bibliometrics is a quantitative study of various aspect of literature on a topic and used to identify the pattern of publication authorship, Citations and for secondary journals coverage with the objective of getting an insight in to the dynamics of the growth of knowledge in the areas under consideration. During the last two decades, libraries have shown a considerable degree of momentum in collection building and readership programmed activities, involving considerable expenditure of funds. Scientometrics is the study of measuring and analysing science, technology and innovation. Major research issues include the measurement of impact, reference sets of articles to investigate the impact of journals and institutes, understanding of scientific citations, mapping scientific fields and the production of indicators for use in policy and management contexts. In practice there is a significant overlap between scientometrics and other scientific fields such as bibliometrics, information systems, information science and science of science policy.

## REVIEW OF THE LITERATURE

Krishnamurthy *et al* (2009) the made an attempt to analyze the Diabetes literature indexed in the MEDLINE database for the period 1995 – 2005. They found out that the maximum number

of records (13244) was during 2003, followed by 12960 in 2002 and 11061 in 2001. In their findings, Relative Growth Rate was decreasing year wise. During their study, they identified that the USA was the largest contribution of literature on diabetes research.

Vaishali Khaparde and Shubhangi Pawar (2013) the study presents the trends in authorship pattern and author's collaborative research in Information Technology with a sample of 17917 articles collect from LISA during 2000-2009. The average number of authors per article is 1.80. In the study the degree of collaboration during the overall 10 years (2000-2009) is 0.71 but the year wise degree of collaboration is almost same in all the years of mean value 0.49. In the 10 years of period, the multi- authorship articles are higher and predominant on single authorship. The study found that the researches in Information Technology are keep toward team research or group research rather than solo research.

Vishnumaya R S. Nishy P and Mini.S (2016) the study attempts to analyse the growth and development of rare earths research in India based on the publication output as reflected in Web of Science (WoS) during 1987-2013. A total of 1,88,877 papers are seen as global research output on rare earths. India secures 7th position with 9457 papers. Indian rare earths papers are analysed bibliometrically to indicate the authorship,

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collaboration pattern, to identify the major institutions and most relevant journals; apart from identifying the research field or application area of research in rare earths. Recently developed three-dimensional performance indicators are used to rank the productivity of Indian institutions and authors in the field of rare earths research. These studies can help researchers to comprehend the magnitude of rare earths research in India and establish future research directions. The study found that papers having international collaborations are cited more often. Sankar P, and Kavitha E.S, (2016) This paper study aims at analyzing the research output performance of finance on management science subjects. The analysis cover mainly the number of articles, authorship pattern, average number of references per articles length of articles, paper per author and authors per paper, number of cited documents, citation per year, citation per paper and author and identified the year-wise distribution of H index, G index, HG, HI and AWCR. The degree of collaboration in JEMF ranged from 0.30 to 0.86 which collaborative works are remarkably observed.

Muthumari S and Raja S (2017) this paper presents bibliometric analysis of 783 scholarly communications published in DSJ during period between 2005 and 2014. The study covers different aspects like types of communication, growth pattern, authorship pattern, prolific contributors, collaboration trend, etc. The publication data was analyzed with respect to type of publications where 77.91 % were scholarly articles. The collaboration was found to be the highest in the years 2008 & 2012 at 0.913 based on degree of collaboration and in the year 2008 at 0.605 based on the modified collaborative coefficient. Researchers from 26 different countries across the globe have contributed publications to the journal, India is on top as largest contributing country with 77.73 % during the study period.

#### Objectives of the Study

- To find out the year wise publication of the article
- To examine the exponential growth rate and year wise authorship pattern of Diabetic Retinopathy research,
- To analysis on single vs multi authors of degree of collaboration.
- To find out the Relative growth rate on Diabetic Retinopathy research,
- To find out the source wise distribution of articles in diabetic retinopathy research.
- To calculate on the arithmetic mean.

#### Research Methodology and Limitation of the Study

The methodology followed during in this study, the Web of Science (WoS) data were searched for Diabetic Retinopathy of papers. The data were collected from the WoS database for the periods 2006-2010. I collected a total of 3953 records were downloaded and analyzed by using Histcite. To collect the data was about all the study on the Web of science. The collected data have been analyzed with the Manual, Microsoft Excel Sheet and presented in the form of tables.

#### Data Analyzing and Interpretation

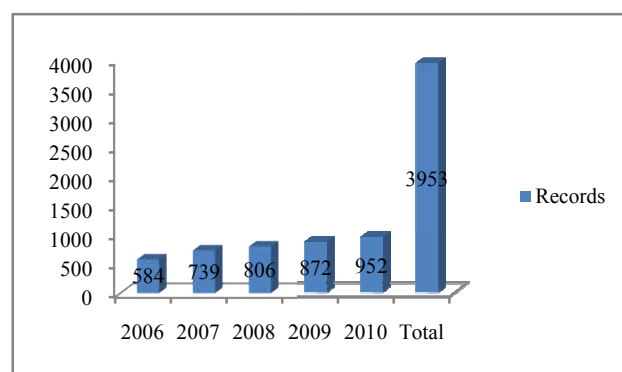
This Chapter analysis, interpretation of data collected from the study period. The data Science Citation Index (SCI), Social Science Citation Index (SSCI) and Arts and Humanities

Citation Index (AHCI) from the Web of Science for the period 2006-2010. The literature has been analyzed to ascertain the forms of publications, Authorship pattern, Authorship distribution, Author productivity, Institution-wise distributions, and distribution of articles in journals.

**Table 1** Year wise distribution of the Publication

S.NO.	Publication Year	Records	Percentage
1	2006	584	14.8
2	2007	739	18.6
3	2008	806	20.4
4	2009	872	22.1
5	2010	952	24.1
	Total	3953	100

Table 1 shows that year wise distribution of publications on Diabetic retinopathy during the period 2006 to 2010 (5 years) a total of publications 3953 were published. The highest number of publications 952 in the year 2010.



**Figure 1** Year Wise Distribution of the publication

**Table 2** Relative Growth Rate

Year	No. of Cont	Cum. no. of cont	W1	W2	R (a) W2-W1 (a)	Mean R (1-2)	Doubling Time Dt (a)	Mean Dt (a) (1-2)
2006	584	584	-	6.37	-	-	-	-
2007	739	1323	6.61	7.19	0.58	0.78	1.19	0.24
2008	806	2129	6.69	7.66	0.97		0.71	
2009	872	3001	6.77	8.01	1.24		0.56	
2010	952	3953	6.82	8.28	1.46	1.35	0.47	0.05
Total	3953					2.13		0.29

Table 2 shows that the Relative Growth Rate of total contribution published had gradually increased. The Growth rate in 0.58 in 2007, which is increased up to 1.46 in 2010. The mean relative growth rate during the period 2006-2008 was 0.78 and it was increased during the year 2009-2010 is 1.35. The overall study period a mean Relative Growth Rate in 2.13. The Doubling time during the period 2006-2008 is 0.24 and for 2009-2010 is 0.05. The overall study period of Doubling Time as 0.29.

**Table 3** Exponential Growth Rate

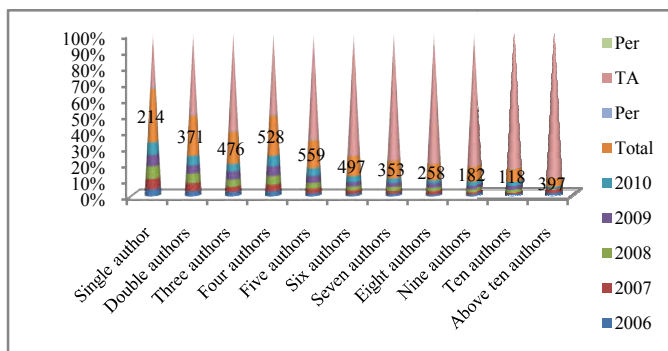
S.No.	Year	Publications	Exponential Growth Rate
1.	2006	584	-
2.	2007	739	1.27
3.	2008	806	1.09
4.	2009	872	1.08
5.	2010	952	1.09
	Total	3953	4.53

Table 3 shows that Exponential Growth Rate of publications in during the period of 2006 to 2010. The highest growth rate 1.09 was found during 2010 with 952 Publications. The year it is also found that the Exponential Growth Rate was found to be 4.53 and average growth rate has positive value showing the increasing trend in the Diabetic retinopathy research.

**Table 4** Authorship pattern

Authors	2006	2007	2008	2009	2010	Total	Per	TA	Per
Single author	29	41	50	45	49	214	5.41	214	0.96
Double authors	48	75	86	76	86	371	9.39	742	3.32
Three authors	68	74	107	118	109	476	12.04	1428	6.39
Four authors	70	85	112	128	133	528	13.36	1056	4.73
Five authors	65	93	112	140	149	559	14.14	2112	9.46
Six authors	65	85	95	109	143	497	12.57	2982	13.37
Seven authors	55	53	80	80	85	353	8.93	2471	11.07
Eight authors	32	53	55	68	50	258	6.53	2064	9.25
Nine authors	27	24	39	43	49	182	4.60	1638	7.34
Ten authors	12	12	27	35	32	118	2.99	1180	5.29
Above ten authors	113	144	43	30	67	397	10.04	6434	28.82
Total	584	739	806	872	952	3953	100	22321	100

Table 4 examine that the year wise authorship pattern of the Diabetic Retinopathy research. Among this authorship pattern, the three authors collaboration output has been leading level, followed by two authored collaborations 371. Four authored collaboration output collaboration 528. Highest level of Total Authored papers is four authors the value of 6434 (28.82).



**Figure 2** Authorship pattern

**Table 5** Single vs. Multiple Authors

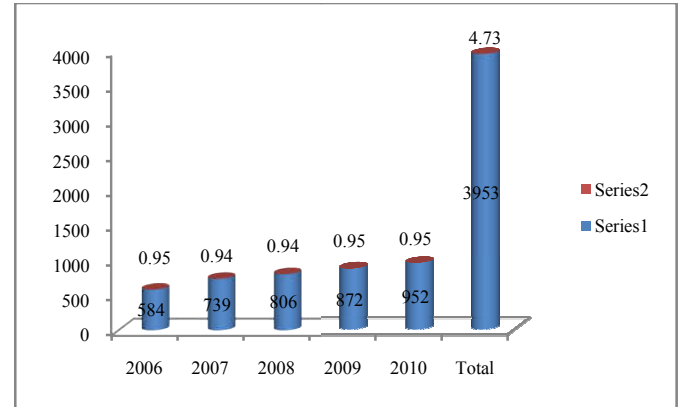
S.No.	Authorship pattern	Publications	Percentage
1.	Single Author	214	5.41
2.	Multiple Author	3739	94.59
	Total	3953	100

Table 5 shows that the distribution of Single Vs. Multi authors of Diabetic retinopathy research output. These study two phase viz., first phase Single author and next phase Multi-authors. It is clear from the following that the Single author 5.41% and Multi authors (collaborative contributions) 94.59%.

**Table 6** Single Vs Multi Authors and Degree of Collaboration

Year	Single Author		Multi Authors		Total	Degree of Collaboration
	No. of output	Percentage	No. of output	Percentage		
2006	29	13.55	555	14.79	584	0.95
2007	41	19.16	698	18.60	739	0.94
2008	50	23.36	756	20.14	806	0.94
2009	45	21.03	827	22.04	872	0.95
2010	49	22.90	903	24.06	952	0.95
Total	214	100	3753	100	3953	4.73

Table 6 shows that the degree of collaboration in research output during the period 2006-2010. The degree of collaboration is 4.73. The highest level of contribution produced in the single authored publication is 50 (23.36%) in the year of 2008. The highest level of contribution produced in the multiple authored publications 903 (24.06%) in the year of 2010.



**Figure 3** Single Vs Multi Authors and Degree of Collaboration

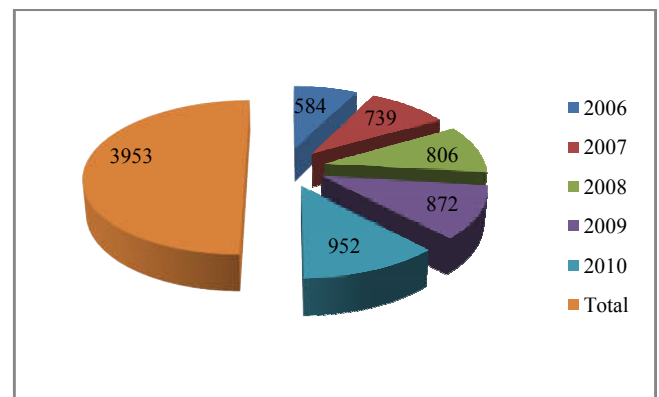
**Table 7** Source wise distribution of Diabetic Retinopathy Publications

S.NO.	Document Type	Records	Percentage
1	Article	2883	72.9
2	Meeting Abstract	325	8.2
3	Review	304	7.7
4	Article; Proceedings Paper	234	5.9
5	Letter	101	2.6
6	Editorial Material	77	1.8
7	Review; Book Chapter	8	0.2
8	Correction	7	0.2
9	Article; Retracted Publication	6	0.2
10	News Item	6	0.2
11	Reprint	2	0.1
	Total	3953	100

Table 7 shows that the literature of any discipline is published in different document types such as Articles, Review, Meeting abstract, Editorial material, Letter, Article; Book review, Article, Book Chapter, correction. The articles from journals captured top positions and jointed the fraternity of review.

**Table 8** Arithmetic Mean (Total No. of. Articles)

Year	2006	2007	2008	2009	2010	Total	AM
Total No. of. Articles	584	739	806	872	952	3953	790.6



**Figure 4** Arithmetic Mean (Total No. of. Articles)

That articles from journals highest number of 2883 (72.9%) publications. These Followed by Meeting abstract 325 (8.2%) publications. The next followed by Review 304(7.7%). followed by remaining document types scored the lowest number of records Correction 2 (0.1%).

## FINDING AND CONCLUSION

- This study find out the year wise distribution of publications on Diabetic Retinopathy research during the period 2006 to 2010 (5 years) a total no of publications 3953 were published. The highest number of publications 952 in the year 2010.
- This study analyzed the Relative Growth Rate in 2.13., Doubling Time as 0.29.
- These study is analyzed Exponential Growth Rate was found to be 4.53.
- The study finalized on the highest level of Total Authored papers is more than ten authors the value of 397 (10.4%).
- This study find out the Single author 5.41% and Multi authors (collaborative contributions) 94.59%. The degree of collaboration is 4.73.
- This study finalized the largest contribution to the Arithmetic mean value 790.6% is to all the year.

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