



## Research Collaboration Pattern in Forensic Medicine

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### ABSTRACT

The paper explains the publications pattern of the Forensic Medicine research concentrates during 1989-2016. The study witnesses RGR was fluctuates trend between 0.02 and 1.02 in 2005, 2006 and 1991 respectively. Twenty three years out of the whole study observed that RGR less than 1. CI was measured between 0.04 and 5.56 in the year 2014 and 2009 respectively. It is witnessed that whole growth of CI was a fluctuated trend during the study period. MCC was witnessed that an increased and suddenly a decreasing trend found to be during the period of study.

**Keywords:** Forensic Medicine, Web of Science, Collaborative Index, Relative Growth Rate (RGR) and Doubling time, Collaborative Co-efficient, Modified Collaborative Co-efficient

### Introduction

The origin of Forensic Medicine remains lost in a distant past, whenever the principles of medical sciences met those of law and justice.<sup>1-</sup> Perhaps it began with the Code of Hammurabi (1792–1750 BCE), which imposed sanctions for errors in medical and surgical practices. The same type of punishment also existed in Persia. Forensic dissections of bodies began in the 13th century at the University of Bologna in Italy by a surgeon and teacher of anatomy, Saliceto<sup>3</sup>. Surprisingly, these forensic dissections appeared before the hospital autopsies that started by the end of the 19<sup>th</sup> century with Rokitsansky, Virchow, and the advent of the pathogenesis of diseases and cellular pathology. However, some authors<sup>4</sup> consider the French surgeon AmbrosioParé, who in 1575 began a real scientific period in France, the father of legal medicine. This paternity is divided with Zacchia, the Pope's physician, who taught in Italy and wrote in 1601 what can be considered the first medico legal textbook. This was of decisive influence on the development of forensic sciences, as were the European codes of the 16th century, the Bamberg Code in 1507 and especially the Caroline Code in 1532, which obliged the courts to call specialized doctors to clarify forensic questions.

### Review of Literature

Jones (2003) reviewed the impact factors of forensic science and toxicology journals and opined that the impact factors of these journals are low because the visibility and size of the circulation of these journals are low. During 2005, Jones identified with the help of Web of Science (WoS) the most highly cited papers published in the Journal of Forensic Sciences between 1956 and 2005. The most highly cited paper was by Kasai, Nakamura and White concerning DNA Profiling. Jones (2007) analysed the forensic science journals, their development and distribution and their current status as reflected in the journal impact factor. He concluded that the relatively low impact factors of forensic science journals are due to the small size of the field, fewer active researchers and less pressure to publish. Baskaran (2013) analysed that information science focuses on understanding issues from the perspective of stakeholders and then applying information and other technologies as needed. In other words, it deals with system problems first, rather than dealing with individual technologies within the system. In this regard, information science can be regarded as an answer to technological decisions, believing that technology "develops according to its own laws, it realizes its own potential, and it is only limited by available material resources. Baskaran (2013) analysed that a total number of 6610 records which were retrieved from the Web of Science was used to assess the academic productivity and distribution of research diversity of cryptography field from four major countries -China, USA, Taiwan and Japan which contributed more papers in cryptography and allied field of researches. Baskaran (2013) discussed that Doubling time (Dt) was found to be increased and decreased trend in this study. Degree of collaboration and its means value is found to be 0.963. The three institutions are more leading productivity, which are Alagappa University with CECRI, National Cheng King University and Anna University. Baskaran and Binu (2019) analysed that Most of the 416 respondents (98.8%) are looking for education and research information. The research results can determine the various parameters of academic access to electronic resources. The research will help promote the acquisition of electronic information to stimulate users' research and academic thinking. Baskaran (2018) studied the role of computers in providing education. Baskaran (2016) discussed The highest publication published in the Bioinformatics Journal, and Harvard University scientists contributed the most publications in this research. Both RGR and DT showed this fluctuating trend throughout the study period. Baskaran (2015) studied the three Major Paradigm Shifts 21<sup>st</sup> Century Library Setting, Revolutionary Changes, Library Roles, Millennial Generation, Cyber Infrastructure Characteristics, Major Challenges of 21st Century Librarian, Tasks,

Library Should be the Customers' Expectations and so on. Baskaran (2015) analyzed the USA scientists have contributed totally 15832 (30.815%) items and include 87.947% percent are appeared as journal articles. Scientists at Harvard University have attracted much attention in writing a large number of research papers and occupy a leading position in research cooperation in the field of enzyme research. Baskaran (2012) discussed that the doubling time (Dt) exhibited a fluctuating trend during the study period. The results use the least squares method to exclude highly productive authors and the maximum likelihood method to examine the exponential growth of authors. In the course, it was found that Lotka's law is applicable to graph theory research. Baskaran and Ramesh (2019) analyzed that the study analyzed that the electronic information access pattern between faculty and staff plays an important role in the completion of various tasks of the interviewees in the engineering school. According to the study, the study aimed to analyze that 76% of the respondents were men, of which 26% were women. Baskaran and Ramesh Babu (2019) examined the publishing productivity of forensic medicine output from 1989 to 2016. Growth of publications in research, RGR and Dt of research output, cooperation between authors. Baskaran (2018) analyzed the highest SD was 21.71405 and 21.71405 the problems were found Do not have smart Phone and Lack of security on personal information. The highest CV was 864.5 found on Lack of security on personal information. Baskaran and Karuilancharan (2015) analyzed the C.V. at 0.05 significant level for 29 degrees of freedom is 42.56 and the calculated value of Chi-Square ( $X^2$ ) obtained in this case is 5309.368. Afterwards, the performance of researchers started diminishing. It was supported by SPI that ranges between 9 and 10 only. Baskaran (2014) discussed the quantitative analysis of the productivity and characteristics of citations of Library and Information Science (LIS) publications during 2003-2012. A total of 1,942 articles and 12,502 citations were published in LIS journals indexed by SSCI. 21.36% of citations were received in 2012. Baskaran, C. (2013) analyzed that 70 (59.1%) of the faculty and staff participating in the study learned through 28 (56%) guidance from teachers/managers. There is evidence that the largest proportion of faculty and staff 21 (42%) use their department to access information, while 28 (40%) of researchers access their department themselves. Baskaran (2019) analyzed the 210 (55.26) respondents are extremely satisfied on OPAC/Web OPAC. 205 (53.90) respondents are extremely satisfied on E-Databases, 192 (50.52) respondents are extremely satisfied on Automated circulation services. Baskaran (2018) explored the map the number of publications, growth rate and doubling time, scattering of publication over journals, and its impact on publication output, authorship patterns and Global citation score of bioremediation research publication in India using the HistCite, VOSviewer software. Indian Institute of Technology, Baba Atomic Research Center and CSIR are the main producers of research results in the field of bioremediation. Sivakami and Baskaran (2016) analyzed a total of 64,030 data sets of in this study from the MEDLINE database. All types of resources experienced the largest decline in 2010 and 2011, with an average of 2,784 releases per year. A time series analysis was performed on the most productive countries (the United States) and India to compare the results of the next few years. Baskaran (2014) discusses the quality of the collection from the perspective of books, magazines and resources. Yahoo is the most popular web surfing search engine. The book rental service is the staff's favorite. Saravanan and Baskaran (2019) studied the bibliographic coupling, language distribution, keyword distribution, geographic distribution of documents, and the history of local and global citations of established institutions. Baskaran (2019) analyzed. Most of the respondents of 90 (33%), 76 (27.8) and 51 (18.7%) said they "strongly agree", "agree" or "have no comments" and prefer "easy access" "Analyze large amounts of data". Baskaran (2018) examined most of the publications of 44.15% of the two authors in the analysis of BM. Guptah has published 18 articles on DJLIT, and he is the number one author. It is closely followed by Chenupathi K. Ramiah, the 11th University of Delhi, ranked second in his publications, which is the highest ranked institution. Binu and Baskaran (2017) analyzed the user's satisfaction assessment of resources and services. It turns out that most people surveyed use resources for different purposes to a large or very large extent. Users are very satisfied with the various electronic resources and services provided by the library.

Ramesh Babu and Baskaran (2017) analyzed an analysis that explored the growth trend of forensic medicine from 1989 to 2015. It is the highest value observed in forensic research in 2013. In 2013, forensic research accounted for 447 (11.05%) publications, followed by 420 (10.38%). Publications published in 2015. The doubling of publications also shows the fluctuating trend throughout the study period. Baskaran (2020) analyzed the lowest relative growth rate (RGR; 0.04) of in 2008. In 2010, 2012 and 2014 RGR increased to 0.75 in 1990, with an average relative growth rate (RGR) of 0.15. The most publications (293; 63.55%) come from information science in library science. This field ranks first among the 25 research fields listed in the study. Baskaran (2020) describes the use of altmetrics in a cross-platform public API to collect data using open scripts and algorithms. Altmetrics did not initially cover the number of citations. It calculates the impact of scientists based on various online studies, such as: B. Social media, online news media, and online reference managers. Baskaran, C. (2020) analyzed 11,941 data sets in social networks and media retrieved from the Web of Science database during the research period. Most of the 2,576 (21.57%) publications published in 2018 were recorded, followed by the 2,281 (19.10%) data set published in 2017. Palanivel and Baskaran (2018) studied 2313 scientific articles published in the Journal of Economic Affairs. The analysis mainly includes the number of articles and the form of documents. This research is to obtain 2313 results from 37 years from the SCOPUS database, and these research results are analyzed using Excel worksheets. Pramanathan and Baskaran (2015) discussed that 199 (49.13%) and 131 (43.52%) of the respondents were female respondents from Bharathidasan University and Periyar University. Most of the 310 (76.54%) and 198 (65.78%) respondents had less than 3 years of research experience at Hindu University and Periyar University. Murugaiah and Baskaran (2013) collaborated with American researchers to analyze a large number of publications in the field of human DNA. The research measures performance based on multiple parameters, the country's annual growth rate, author model, cooperation index, cooperation coefficient, major cooperating countries, and authors who contribute.

Baskaran (2020) discussed the most 290 (12.20%) publications contributed by researchers from the Central Institute of Electrochemistry. SK Pandian, proposed by Google Scholar Metrics (GSM), is a top researcher, despite its annual citations of 4491 and hIndex of 36 from 2008 to 2018. Ramesh and Baskaran (2019) stated that respondents are "satisfied" with the availability of teaching materials. These data show that a large number of respondents 265 (51.0%) prefer gateway portals rather than "widescale", 139 (26.7%) Respondents who liked the "very large area" found that 105 (20.2%) of the respondents said they were "not satisfied" and 11 (2.1%) chose "no opinion". Prasad and Baskaran (2019) reviewed the research analysis. Male respondents were 263 (69.21%), followed by female respondents 117 (30.79%). 285 (75%) is followed by M. Phil. NET qualified respondents 51 (13.42%) and PG and NET qualified respondents 44 (11.57%). Most of the 259 (98.50%) respondents had received training in accessing electronic resources from university libraries, and only 4 (1.50%) male respondents had not received training in university libraries. Prasad and Baskaran (2019) analyzed 380 (100%) respondents who understand the electronic resources available in university libraries. Most of the 259 respondents (98.50%)

received training in accessing electronic resources from university libraries, and only 4 (1.50%) male respondents had not received training in university libraries. It also shows that among 117 (30.80%) female respondents. Baskaran (2018) discussed the majority of 63 (27.6%) designations to "know" and use WhatsApp, 53 (23.2%) YouTube, 47 (20.6%) Google+, 46 (20.2%) Facebook, 23 (10.1%) Tumblr / Messenger, 21 (9.2%) Twitter, 18 (7.9%) other and 17 (7.5%) Instagram. Suitable for the function of its parent organization. Pramanathan and Baskaran (2014) analyzed 230 (58.4%) research scientists covered by the study. They believed that the Internet provided the information necessary to complete their research satisfactorily or on a large scale. The majority of respondents access electronic resources via e-mail 252 (63.95%).

Pitchaipandi and Baskaran (2020) analyzed the "research cooperation" of 6.4% of respondents who "strongly agree". 30.9% of Web 2.0 is used for research communication and cooperation, and 19.6% of Web 2.0 tool opportunities and learning support the social interaction of respondents in the learning process. Baskaran (2021) analyzed most of the 134 (1.96%) publications contributed by the University of California system researchers. Zhang Y is the first author and contributed 16 (0.23%) publications in the Web 2.0 field, followed by Kolt GS, Li Q, Vandellante C, and Zhang J. These publications also appeared 13 (0.19%) publications. Baskaran and Pitchaipandi (2021) analyzed that respondents like group sites (Yahoo, Google and WhatsApp) very much. The research analyzed that most respondents prefer social media research tools to share research information from respondents from eight universities in Tamil Nadu. Pitchaipandi and Baskaran (2021) surveyed 51.3% of respondents who visit WhatsApp 1/h every day. 78.9% of respondents added the respondent's WhatsApp friend group. Used in WhatsApp as an educational aid and management tool for the University of Tiruvallure. Baskaran (2020) analyzed that there are 25 institutions on the list, among which the University of Washington ranks first among 25 institutions, and 48 (0.98%) of them are ranked first for publications. Radhakrishnan and Baskaran, C. (2020) discuss the existence of a moderate correlation between citations and alternative indicators. Only one work received the same citations and alternative indicators. The citation and surrogate index scores of the other paper are roughly the same. 4 out of 10 papers received more citations. Among the 4 frequently cited articles, three articles have very low scores on alternative indicators, and only one article has very high scores on alternative indicators. Baskaran and Binu (2020) discussed that the majority of respondents 109 (25.9%) are graduate students, and 75 (17.8%) have PG and NET qualifications. The average value of "borrowed books" is 3.86, ranking first. Most of the 416 respondents (98.8%) are looking for education and research information. The research results can determine the various parameters of academic access to electronic resources. Baskaran and Ramesh (2020) analyzed that 255 (48.3%) of the respondents rated the e-book information as "excellent", while 205 (39.4%) rated it as "very good". 280 people (53.8%) "agree" that the e-magazine saves users' time, and 219 people (42.1%) "completely agree". Few 21 (4.0%) respondents "disagree". Radhakrishnan and Baskaran (2019) analyzed the square root of authors, accounting for 7.94% of the total posts, and 255.52 in the price square root method. The results of the Pareto 80/20 rule show that 20% of authors contribute only 46.60% of the total posts. Baskaran and Babu, P. R. (2019) discussed the activity index and exponential growth of the analyzed authors from 1989 to 2016. The results of the study showed that the number of published papers increased between 11 (0.26%) in 1989.

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## Objectives of the study

1. To analyse the Relative Growth Rate (RGR) and Doubling time (Dt) of the Publications of Forensic Medicine during 1989-2016
2. To examine the Author productivity apply on Lotka's Law of the publications
3. To measure the Collaborative Co-efficient, Collaborative Index and Modified Collaborative Co-efficient

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## Methodology

The research contribution of the scientists of Forensic Medicine witnessing the publications accomplishment of the global coverage of data retrieved through Web of Science during 1989 - 2016. The present study attempts to extract the data of Web of Science (WOS) and PubMed databases. The researcher has been thoroughly manage with the database (Web of Science) in the respective field during study period. Data was exported in Excel sheets according to various parameters needed for study. From all the related articles, Citation and h-index etc. have been computed for this study. Further, the study to be concentrate to carry the indicators quality, quantity consistency for Relative Growth Rate (RGR), Doubling time (Dt), Degree of Collaboration, Collaborative Index, Modified Collaborative Index (MCC), Author Productivity and so on.

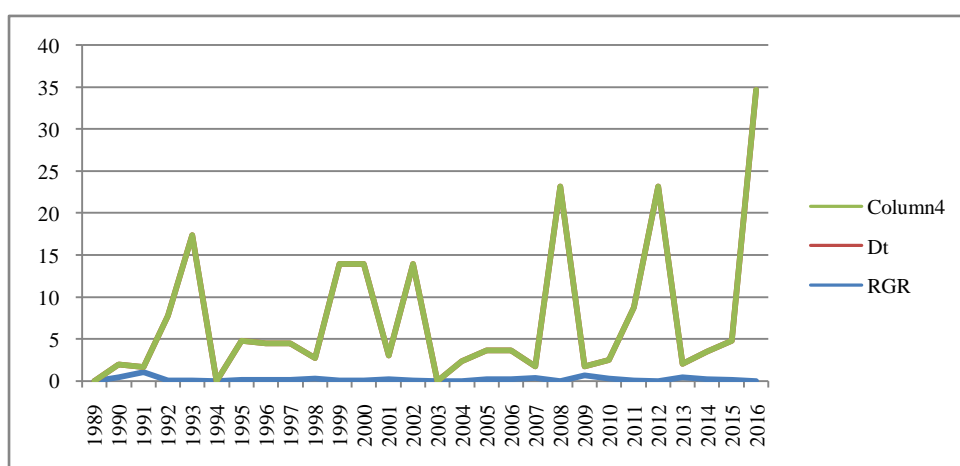
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## Results and Discussion

Relative Growth Rate (RGR) and Doubling time (Dt) of the publications in Forensic Medicine have been retrieved from Web of Science database during 1989 - 2016. It is analyzed Table 1, RGR was a fluctuate trend between 0.02 and 1.02 in 2005, 2006 and 1991 respectively. Twenty three years out of the whole study observed that RGR less than 1. Similarly, fig.1 indicates the Doubling Time of the publications also seems that a fluctuated trend throughout the study period and there was observed the highest Dt was 34.65 in 2016. However, it could be analyzed from the discussion range of RGR was measured between 0.02 and 1.02 in the year 2016 and 1991 respectively, whereas the range of Dt was found between 1.1 and 34.65 in the year 2009 and 2016 respectively during the study period.

**Table 1-Relative Growth Rate (RGR) and Doubling time (Dt) of the Publications**

Year	No. of output	%	W1	W2	$R(A) = \frac{W2 - W1}{T2 - T1}$	$Dt = 0.693/R(A)$
1989	11	0.26	0	2.39	0	0
1990	17	0.40	2.39	2.83	0.44	1.57
1991	47	1.13	2.83	3.85	1.02	0.69
1992	43	1.02	3.85	3.76	0.09	7.7
1993	45	1.08	3.76	3.80	0.04	17.32
1994	45	1.08	3.80	3.80	0	0
1995	52	1.25	3.80	3.95	0.15	4.62
1996	61	1.45	3.95	4.11	0.16	4.33
1997	52	1.25	4.11	3.95	0.16	4.33
1998	69	1.66	3.95	4.23	0.28	2.47
1999	66	1.58	4.23	4.18	0.05	13.86
2000	69	1.66	4.18	4.23	0.05	13.86
2001	89	2.14	4.23	4.48	0.25	2.77
2002	84	2.02	4.48	4.43	0.05	13.86
2003	0	0	0	0	0	0
2004	82	1.97	4.43	4.40	0.03	2.31
2005	100	2.40	4.40	4.60	0.2	3.46
2006	101	2.42	4.60	4.61	0.2	3.46
2007	143	3.44	4.61	4.96	0.35	1.38
2008	148	3.56	4.96	4.99	0.03	23.1
2009	277	6.67	4.99	5.62	0.63	1.1
2010	308	7.41	5.62	5.73	0.31	2.23
2011	287	6.91	5.73	5.65	0.08	8.66
2012	294	7.08	5.65	5.68	0.03	23.1
2013	447	10.76	5.68	6.10	0.42	1.65
2014	365	8.79	6.10	5.89	0.21	3.3
2015	420	10.11	5.89	6.04	0.15	4.63
2016	430	10.35	6.04	6.06	0.02	34.65
Total	4152	100	118.24	124.32	5.4	200.41

**Fig. 1- Relative Growth Rate (RGR) and Doubling time (Dt) of the Publications**

## Collaborative Index

It can be found that  $f_j$  is the number of papers having  $j$  authors in collection  $K$ ;  $N$  is the total number of papers in  $K$ .  $N = \sum_j f_j$ ; and  $A$  is the total number of authors in collection  $K$ . One of the early measures of DC is CI is given by,

$$CI = \frac{\sum A_j = j f_j}{N}$$

The analysis reveals that total number of single and multiple authored publications were contributed the research output of 373 and 3349 respectively. It is noted from Table 2, the values of CI was measured between 0.04 and 5.56 in the year 2014 and 2009 respectively. It is witnessed that whole growth of CI was a fluctuated trend during the study period (Fig.8).

**Table 2- Collaborative Index (CI)**

Year	Single Authored	Multi Authored	Total No. of authored	CI
1989	1	10	11	0.08
1990	2	15	17	1.06
1991	6	41	47	0.01
1992	5	38	43	1.05
1993	6	39	45	1.05
1994	11	34	45	0.02
1995	12	40	62	0.02
1996	9	52	61	1.38
1997	10	42	52	1.90
1998	9	60	69	0.01
1999	6	60	66	0.08
2000	20	49	69	0.03
2001	16	73	89	1.75
2002	20	64	84	2.50
2003	0	0	0	0
2004	19	63	82	2.41
2005	18	82	100	1.15
2006	23	78	101	2.36
2007	18	125	143	1.15
2008	11	137	148	0.06
2009	18	259	277	5.56
2010	15	283	298	4.24
2011	16	271	287	0.04
2012	20	274	294	0.05
2013	35	412	447	0.06
2014	21	344	365	0.04
2015	26	394	420	0.05
2016	29	401	430	1.09
<b>Total</b>	<b>402</b>	<b>3750</b>	<b>4152</b>	<b>29.2</b>

## Collaborative Co-efficient (CC)

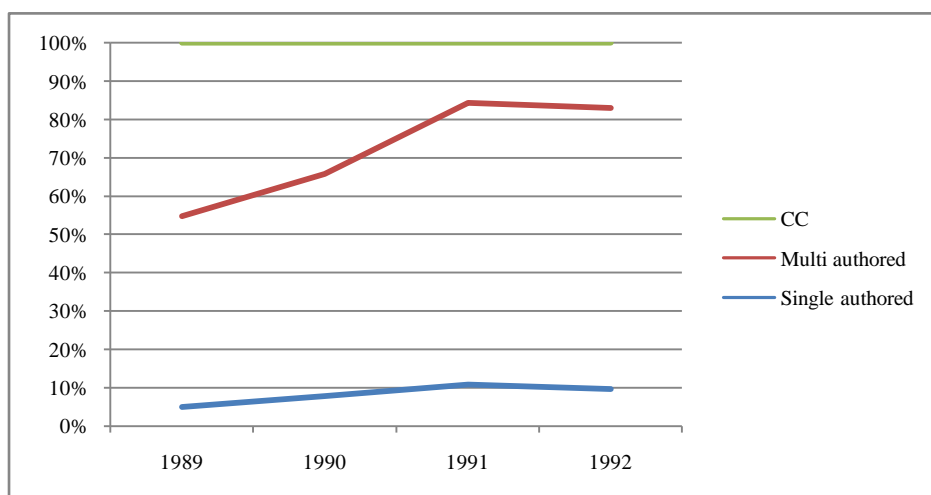
DC is easy to calculate and easily interpretable as a degree (for it lies between zero and one), gives zero weight to single-authored papers, and always ranks higher a discipline for period) with a higher percentage of multiple authored papers. However, DC does not differentiate among levels of multiple authorships. CC was designed to remove the above shortcomings pertaining to CI and DC. It is given by,

$$CC = \frac{1 - \sum_j j f_j}{N}$$

It is analyzed that the Collaborative Co-efficient of the authors for publications sharing in Forensic Medicine. Table 3 examines that CI growth trend was witnessed an increased and a decreased trend during the period of study. The CC values measured between 9.87 in 2016 and 6.15 in 1995 and 1995, the whole CC is observed as 230.26 during the period of study ( Fig.2).

**Table 3- Collaborative Co-efficient (CC)**

Year	Single Authored	Multi Authored	Total No. of authored	CC
1989	1	10	11	9.09
1990	2	15	17	8.82
1991	6	41	47	8.72
1992	5	38	43	8.83
1993	6	39	45	8.61
1994	11	34	45	7.52
1995	12	40	62	6.45
1996	9	52	61	6.45
1997	10	42	52	8.02
1998	9	60	69	8.61
1999	6	60	66	9.01
2000	20	49	69	7.12
2001	16	73	89	8.26
2002	20	64	84	7.60
2003	0	0	0	0
2004	19	63	82	7.65
2005	18	82	100	8.29
2006	23	78	101	7.78
2007	18	125	143	8.72
2008	11	137	148	9.21
2009	18	259	277	9.33
2010	15	283	298	9.42
2011	16	271	287	9.47
2012	20	274	294	9.33
2013	35	412	447	9.26
2014	21	344	365	9.45
2015	26	394	420	9.37
2016	29	401	430	9.87
<b>Total</b>	<b>402</b>	<b>3750</b>	<b>4152</b>	<b>230.26</b>



**Fig-2 Collaborative Co-efficient (CC)**

### Modified Collaborative Co-efficient (MCC)

The derivation of the new measure is almost the same as that of CC, as given by Ajiferuke et al. The above equation is not defined for the trivial case when  $A = 1$ , which was not a problem since collaboration is meaningless unless at least two authors are available. CC approaches MCC only when  $A$  but is otherwise strictly less than MCC by the factor  $1/A$ .

$$MCC = \frac{A \{1 - \sum_{j=1}^A (1/j) f_j\}}{A-1 \quad N}$$

The Modified Collaborative Co-efficient of authors have contributed publications in Forensic Medicine. Table 4 examined the MCC was witnessed that an increased and suddenly a decreasing trend found to be during the period of study. The values of MCC were noticed that 0.02 in 1989 and 1.94 in 2016 and the whole MCC measured as 11.16 during period of study (Fig.10).

**Table 4- Modified Collaborative Co-efficient (MCC)**

Year	Single Authored	Multi Authored	Total No. of authored	MCC
1989	1	10	11	0.02
1990	2	15	17	0.04
1991	6	41	47	0.12
1992	5	38	43	0.11
1993	6	39	45	0.12
1994	11	34	45	0.12
1995	12	40	62	0.16
1996	9	52	61	0.16
1997	10	42	52	0.13
1998	9	60	69	0.13
1999	6	60	66	0.17
2000	20	49	69	0.18
2001	16	73	89	0.23
2002	20	64	84	0.22
2003	0	0	0	0
2004	19	63	82	0.22
2005	18	82	100	0.26
2006	23	78	101	0.27
2007	18	125	143	0.38
2008	11	137	148	0.39
2009	18	259	277	0.74
2010	15	283	298	0.80
2011	16	271	287	0.77
2012	20	274	294	0.78
2013	35	412	447	1.20
2014	21	344	365	0.98
2015	26	394	420	1.12
2016	29	401	430	1.94
<b>Total</b>	<b>402</b>	<b>3750</b>	<b>4152</b>	<b>11.16</b>

### Author productivity apply on Lotka's Law

Lotka's law is a method to analyses used to test regularity of the publications activity of the authors in any scientific area. It explores the frequency of the publications by authors in given field. It focuses that the number authors produced  $n$  contributions is about  $1/n^2$  of those produced one and the proportion of all contributions that make a single contribution is 36%. Table 5 examines the Lotka's law inverse square law of scientific productivity using maximum likelihood method was adopted. In the context there has been calculated the distribution of author productivity fits the estimated distribution to identify the values of  $n$  and  $k$  to test whether allocation of Lotka's law fit to the Forensic Medicine research. It proves the analysis was made that value found  $100/an/a1$  is 827.15,  $P$  is 2111.48,  $A1/n^2/100$  is 160.5 and  $(F-)^2/P$  is 1071.67 is indicated in fig-11. According to Lotka's law apply the productivity of authors can be determined in the specific field of research. As calculation given in table, according to fitting of Lotka's law

formulae the 60% of authors have contributed single article whereas highest number of authors' productivity shows very less articles. The number of authors in an each participation "n" articles proportion to  $1/n^2$ . 100 authors contribute 1 article in a given period. More than 25 authors contribute 3 each articles. As indicated from above the analysis of the author productivity apply by Lotka's law found the value of  $(F-P)^2/P$  is 1071.61.

**Table 5- Author Productivity apply on Lotka's Law**

No. of contribution (n)	Observed (F)	100/an/a1	Expected (P)	% of the author $A1/n^2 /100$	$(F-P)^2 /P$
1	1345	100	1345	100	0
2	1142	84.90	336.26	25	.02
3	984	73.15	149.44	11.11	11.16
4	902	67.06	84.06	6.25	19.46
5	887	65.94	5.38	4.00	30.97
6	834	62.0	37.36	2.78	42.63
7	764	56.80	27.44	2.04	53.68
8	712	52.93	21.01	1.56	65.77
9	684	50.85	16.60	1.23	80.40
10	602	44.98	13.45	1.00	87.51
11	542	40.29	11.11	0.82	95.56
12	424	31.52	9.34	0.69	88.79
13	312	23.19	7.95	0.59	76.49
14	204	15.16	6.93	0.51	87.74
15	197	14.64	5.97	0.44	63.99
16	168	12.49	5.25	0.39	62
17	112	8.32	4.65	0.34	46.17
18	97	7.21	4.15	0.31	44.74
19	86	6.39	3.94	0.28	41.65
20	52	3.86	3.36	0.25	28.95
21	32	2.37	3.04	0.23	19.05
22	18	1.33	2.77	0.20	10.99
23	12	0.89	2.54	0.18	7.44
24	9	0.66	2.33	0.17	5.72
25 above	3	0.22	2.15	0.16	0.79
<b>Total</b>		<b>827.15</b>	<b>2111.48</b>	<b>160.53</b>	<b>1071.67</b>

## Conclusion

The scientific literatures on the Global data have been covered by Web of Science database in the field of Forensic Medicine during 1989-2016. The result of the study being attempted to bring out various parameters of Scientometrics Indicator applied up on the analyses made. The study has been incorporated on the analyses for the Forensic Medicine Literature are RGR was measured between 0.02 and 1.02 in the year 2016 and 1991 respectively, whereas the range of Dt was found between 1.1 and 34.65 in the year 2009 and 2016 respectively during the study period. CI growth trend was witnessed an increased and a decreased trend during the period of study. The CC values measured between 9.87 in 2016 and 6.15 in 1995 and 1995, the whole CC is observed as 230.26 during the period of study. More than 25 authors contribute 3 each articles. As indicated from above the analysis of the author productivity apply by Lotka's law found the value of  $(F-P)^2/P$  is 1071.61.

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