

Original Research Paper

# Activity Index and Author Exponential Growth on Forensic Medicine

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## Article history

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**Abstract:** The study examines the activity index and exponential growth of authors analysed during 1989-2016. The result of the study found that publications growth between 11 (0.26%) in 1989 and 447 (10.76%) in 2016. RGR shows a fluctuates trend between 0.02 and 1.02 in 2005, 2006 and 1991 respectively. Complete twenty three years the research could be observed that RGR less than 1. DC between 0.64 and 0.94. Further, overall DC measured 23.08 throughout study period. It witnessed CI values measured between 0.04 and 5.56 in the year 2014 and 2009 respectively. The CC values measured between 9.87 in 2016 and 6.15 in 1995 and 1995, the whole CC observed as 230.26 over period of study.

**Keywords:** Forensic Medicine, Relative Growth Rate (RGR), Doubling time (Dt), Degree of Collaboration (DC), Collaborative Co-efficient (CC), Collaborative Index (CI)

## Introduction

Forensic Medicine today is a large medical field that includes many sub areas. However, generally, when one speaks or thinks about it, one associates it immediately with death, autopsies and related problems (Kaye, 1992). Yet, this is only part of legal medicine, as new approaches and sub specialties are realized because of the advances in medical sciences and socio-political changes around the world. Forensic anthropology and clinical Forensic Medicine are perhaps the best examples of these "New Sciences."

The origin of Forensic Medicine remains lost in a distant past, whenever the principles of medical sciences met those of law and justice (Kovacevic, 1998). 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 (Saukko and Knight, 2004). 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 consider the French surgeon AmbrosioParé, who in 1575 began a real scientific period in rance, 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 medicolegal textbook.

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 Literature

Sevinc (2004; 2005) It was demonstrated that scientometrics, which includes use of mathematical techniques to investigate publishing and communication patterns in the distribution of information, has been an established approach in occupational and industrial health for about 20 years (Smith, 2007). Scientometrics is defined as the measurement and analysis of science, often using bibliometrics, the measurement scientific publications. Modern scientometrics are based on (de Solla Price, 1977) and Garfield (2007). Despite growing interest and research output in this field, the scientific data that has been published to date on ETS has

not been dissected in detail by means of scientometrics. By contrast, the existing scientometric studies have had a more general focus (de Granda-Orive *et al.*, 2007; 2009; Vitzthum *et al.*, 2010). A combination of scientometric methods and novel visualizing procedures were used, including density-equalizing mapping and radar charting techniques. 6,580 ETS-related studies published between 1900 and 2008 were identified in the ISI database. Using different scientometric approaches, a continuous increase of both quantitative and qualitative parameters was found. Jeyasekar and Saravanan (2013) carried out a bibliometric study of the Journal of Forensic Sciences and found that there is an increase in publications on digital and multimedia aspects of forensic science and the literature related to application of DNA technology in forensic science is also increasing. The mean degree of authorship collaboration is 0.91. The latter also founded the Institute for Scientific Information with the database Web of Science. Baskaran (2015), examined the confront the publications output trend among USA scientists, Wang Y has secured top level as measured 0.226%. USA scientists have contributed totally 15832 (30.815%) items and include 87.947% are appeared as journal articles. Harvard University scientists are much attention in produced large number of research papers and they hold top level among research collaboration in enzyme research. Kolle and Shankarappa (2016), examined the coverage of Indian medical literature in MEDLINE was not comprehensive and this affects visibility of Indian medical research output. So Indian Council of Medical Research (ICMR) launched IndMed and MedInd. There are no studies investigating the coverage, the services and the gaps in coverage of IndMed. Subramanyam and Krishnamurthy (2017), discussed the growth of research work in the field of social sciences and humanities in Odisha during the period 1996 to 2015. The analysis has been done taking into account the publication output of Odisha as reflected in Scopus database. Sivakami and Baskaran (2016), examined the Swine Flu is that, unlike seasonal flu, which is typically most dangerous to the very young, elderly and those with a weakened immune system. By keeping this in mind the researcher intends to study the research productivity of Swine Flu. This study attempts to analyze the performance of researcher working in the field of swine flu at global level and country wise distribution during the study period of 23 years from 1991 to 2013. Baskaran (2016), explored the relative growth rate and doubling time of Bioinformatics Publication during 1999-2013. The mean relative growth was measures and doubling time observed from the analysis. Total number 20577 of records on bioinformatics publication during the study. The

Maximum of Publications 2234 in 2012 was published compare to rest of the years. Ramesh Babu and Baskaran (2017), analyzed the highest out of Forensic Medicine research Forensic Medicine research in 2013 was 447 (11.05%) of the publications, followed by 420 (10.38%) of the publication brought out in 2015. the doubling time of the publications also a fluctuate trend appears whole study period. It could be found that the highest Dt. is 17.32 in 1993. The Journal of Solar Energy Engineering, Transactions of the ASME has published 2361 articles during the period of 1980-2016 with an yearly average of 63.81. The maximum number of articles 114 (4.83%) were published in the year of 2015. In the Authorship Pattern, the major contribution of articles was from two authors 776 (32.87%) (Radhakrishnan and Baskaran, 2018). 1 “Economic Affairs” and the Relationship of measuring and analyzing the Articles, Authorship, Type of document, Growth Ratio, Relative Growth Rate etc.. This paper critically analyses 2313 scholarly communications published in the Economic Affairs Journal. The analysis cover mainly the number of articles, form of document, the study is obtained from the SCOPUS database in 2313 results for thirty seven years in this results retrieved are analyzed using excel worksheets (Palanivel and Baskaran, 2018).

#### *Objectives of the Study*

1. To know the year-wise distribution of research output from Web of Science (WOS) PubMed database in Forensic Medicine
2. To examine the Relative Growth Rate (RGR) and Doubling time (Dt) of the publications in Forensic Medicine from Web of Science (WOS) database
3. To analyze the Degree of Collaboration and Measuring of Collaboration of the authors
4. To analyze the Exponential Growth for authors and Activity Index on brought out the research Literature in Forensic Medicine

#### *Significance of the Study*

The study analysed the publications brought out by the researchers in the field of Forensic Medicine during 1989-2016. The study leads to identify the people, including the specialists working on Forensic Medicine area, which have to be discussed difficulties in distinguishing among cause, manner and mechanism of death. Cause of death means any injury or disease that generates a pathological alteration in the body that leads to the individual's death. It is possible that a mechanism of death is shared by different causes of death may result from blunt trauma, stabbing, or lung carcinoma. In order to the study has taken by the researcher entitled “ACTIVITY

INDEX AND AUTHOR EXPONENTIAL GROWTH ON FORENSIC MEDICINE.”

*Limitations of the Study*

The data of Web of Science (WOS) database and PubMed databases in Forensic Medicine during 1989-2016. The data retrieved in search terms of “Forensic Medicine” could have been extracted the data during the study. The study rely on the research publications of Forensic Medicine, due to researcher’s convenient and it has been computed the complete bibliographical details in respective of Growth of Literature, Author Productivity, father analysis made on RGR and Doubling time of publications, Activity Index, Exponential Growth of authors etc.

**Methodology**

The study analyzed the impact of the publications in Forensic Medicine research at the global prospective. The study explores the research contribution of the countries growth and their trends have been investigated during 1989-2016. The present study attempts to extract the data of Web of Science (WOS) database. Totally 4152 records were retrieved from Web of Science (WOS) database during the period of study. The publications have been extracted the Web of Science (WOS) data on Forensic Medicine was covered during 1989-2016. Data exported in Excel sheets according to various parameters needed for study. Then all the indicators quality, quantity consistency for countries, institution, authors, journal etc. were exported on excel sheets. Moreover, the study find being taken analysis about RGR and Doubling time of publications, Degree of Collaboration of authors, Collaborative Index, Collaborative Co-efficient, Modified Collaborative Co-efficient, Activity Index and Exponential Growth of authors.

*Data Analysis*

*Year –Wise Distribution of the Publications on Forensic Medicine (WOS)*

It has been analyzed the research growth in the field of Forensic Medicine and these records retrieved from Web of Science (WOS) database during 1989 - 2016. The result found that publications growth between 11 (0.26%) in 1989 and 447 (10.76%) in 201. Table 1 observed that largest output was found 447 publications in the year 2013 and it followed by 420 (10.38%) of the publications were identified in 2015. There were no record published in the year 2003. Further, It could be found that overall publications growth to be appeared as a fluctuated trend in the year 1992, 1997, 2002, 2011 and 2014 (Fig. 1).

**Table 1:** Year-wise distribution of the publications on forensic medicine (WOS)

Year	No. of output	%	Cumulative %
1989	11	0.26	0.26
1990	17	0.40	0.66
1991	47	1.13	2.82
1992	43	1.02	3.90
1993	45	1.08	4.98
1994	45	1.08	6.23
1995	52	1.25	7.69
1996	61	1.45	8.94
1997	52	1.25	10.61
1998	69	1.66	12.18
1999	66	1.58	13.84
2000	69	1.66	15.98
2001	89	2.14	18.00
2002	84	2.02	18.00
2003	0	0.00	0.00
2004	82	1.97	19.97
2005	100	2.40	22.37
2006	101	2.42	24.79
2007	143	3.44	28.23
2008	148	3.56	31.79
2009	277	6.67	38.46
2010	308	7.41	45.87
2011	287	6.91	52.78
2012	294	7.08	59.86
2013	447	10.76	70.62
2014	365	8.79	79.41
2015	420	10.11	89.65
2016	430	10.35	100.00
Total	4152	100.00	

*Relative Growth Rate (RGR) and Doubling time (Dt) of the Publications (WOS)*

Relative Growth Rate (RGR) and Doubling time (Dt) of the publications in Forensic Medicine records retrieved from Web of Science. It has analyzed Table 2 the RGR shows a fluctuates trend between 0.02 and 1.02 in 2005, 2006 and 1991 respectively. Complete twenty three years the research could be observed that RGR less than 1. Similarly, Fig. 2 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 the year 2016.

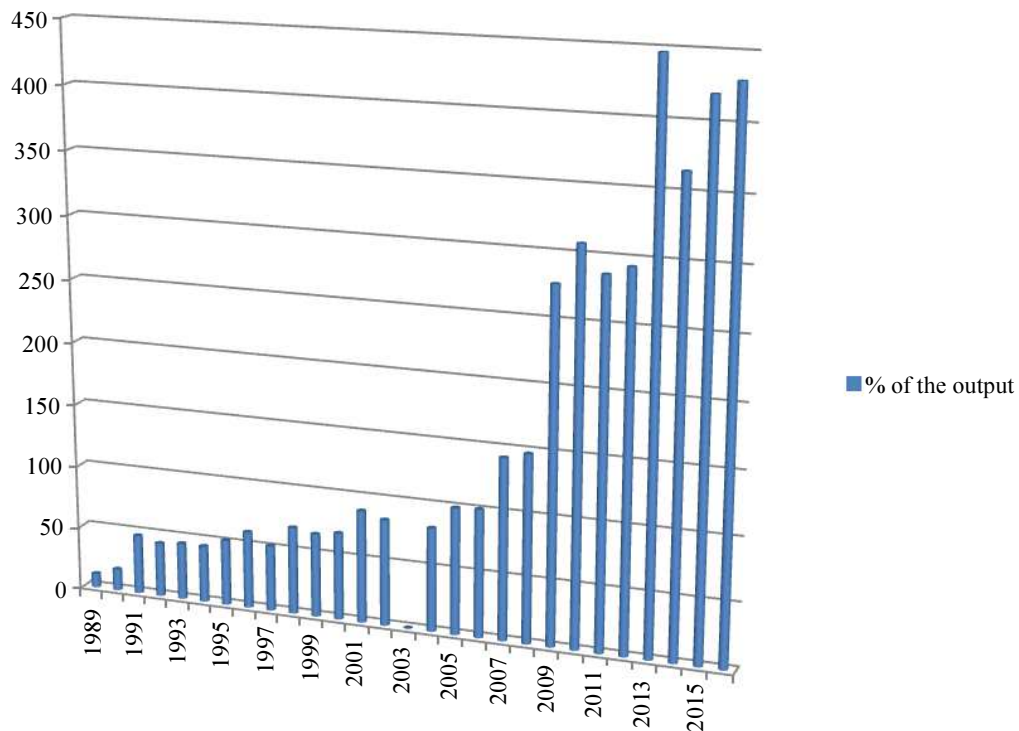
However, it could be analyzed from the discussion; RGR range was measured between 0.02 and 1.02 in the year 2016 and 1991 respectively, on the other hand, Dt range was found between 1.1 and 34.65 in the year 2009 and 2016 respectively indicated in Fig. 2.

*Degree of Collaboration of Authors*

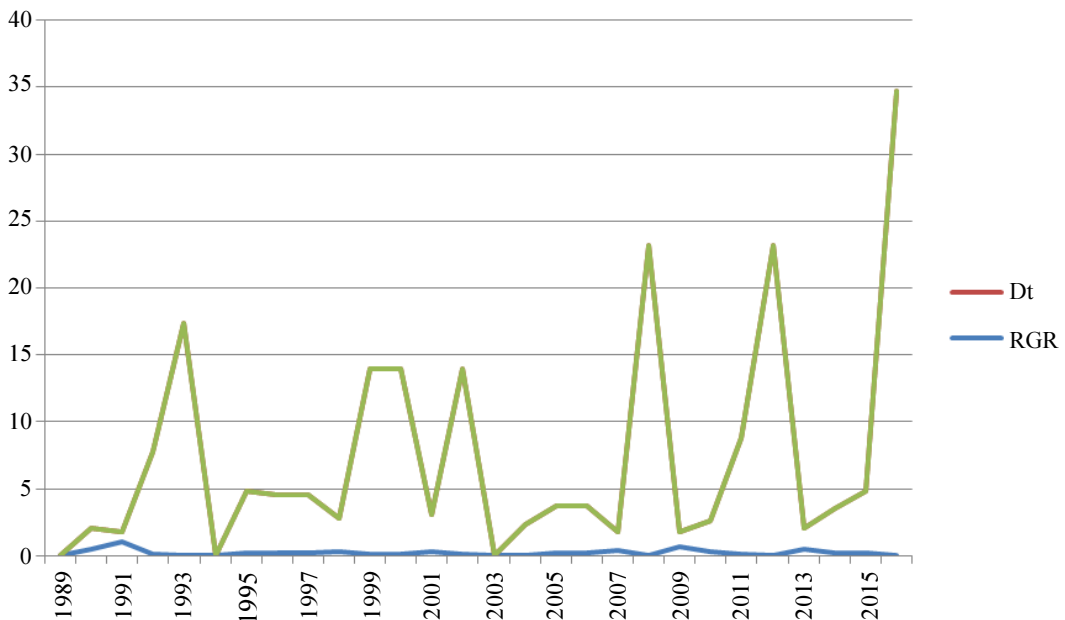
Table 3 observed that Degree of collaboration was measured in different years as per the Subramanian formulae and it reflects that degree of collaboration of the authors for over twenty eight years between 1989 and 2016. Normally where we can find the more quantum of

papers appeared on Multi authors rather than single authors. It can be found DC between 0.64 and 0.94. Further, overall DC measured 23.08 throughout study

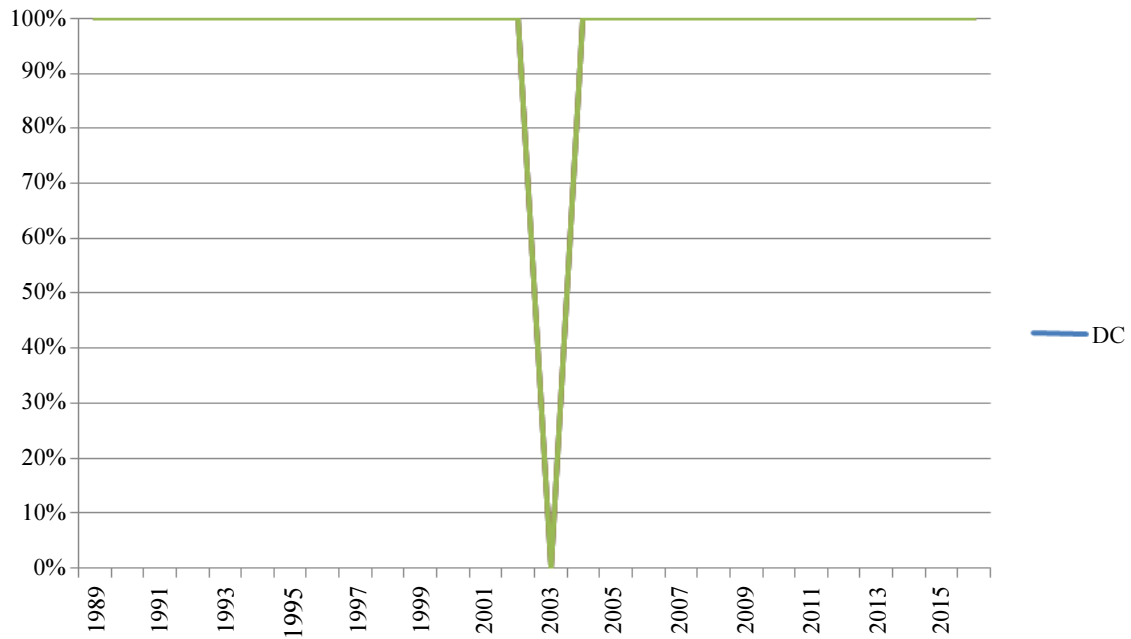
period. Finally, the results of the DC were an increased and a decreased trend appeared in the whole study period exhibited in Fig. 3.



**Fig. 1:** Year-wise distribution of the Publication on Forensic Medicine (WOS)



**Fig. 2:** Relative Growth Rate (RGR) and Doubling time (Dt) of the Publications (WOS)



**Fig. 3:** Degree of collaboration of authors

**Table 2:** Relative Growth Rate (RGR) and Doubling time (Dt) of the publications (WOS)

Year	No. of output	%	W1	W2	$R(A) = W2-W1/T2-T1$	$Dt. = 0.693/R(A)$
1989	11	0.26	0.00	2.39	0.00	0.00
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	7.70
1993	45	1.08	3.76	3.80	0.04	17.32
1994	45	1.08	3.80	3.80	0.00	0.00
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	0.00	0.00	0.00	0.00	0.00
2004	82	1.97	4.43	4.40	0.03	2.31
2005	100	2.40	4.40	4.60	0.20	3.46
2006	101	2.42	4.60	4.61	0.20	3.46
2007	143	3.44	4.61	4.96	0.35	1.38
2008	148	3.56	4.96	4.99	0.03	23.10
2009	277	6.67	4.99	5.62	0.63	1.10
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	23.10
2013	447	10.76	5.68	6.10	0.42	1.65
2014	365	8.79	6.10	5.89	0.21	3.30
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	100.00	118.24	124.32	5.40	200.41

**Table 3:** Degree of collaboration of authors

Year	Single authored (NS)	Multi authored (Nm)	Total No. of authored (NS + Nm)	Degree of collaboration
1989	1	10	11	0.90
1990	2	15	17	0.88
1991	6	41	47	0.87
1992	5	38	43	0.88
1993	6	39	45	0.86
1994	11	34	45	0.75
1995	12	40	62	0.64
1996	9	52	61	0.85
1997	10	42	52	0.80
1998	9	60	69	0.86
1999	6	60	66	0.90
2000	20	49	69	0.71
2001	16	73	89	0.82
2002	20	64	84	0.76
2003	0	0	0	0.00
2004	19	63	82	0.76
2005	18	82	100	0.82
2006	23	78	101	0.77
2007	18	125	143	0.87
2008	11	137	148	0.92
2009	18	259	277	0.93
2010	15	283	298	0.94
2011	16	271	287	0.94
2012	20	274	294	0.93
2013	35	412	447	0.92
2014	21	344	365	0.94
2015	26	394	420	0.93
2016	29	401	430	0.93
Total	402	3750	4152	23.08

**Table 4:** 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	0.00
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
Total	402	3750	4152	29.2

*Collaborative Index (CI)*

Table 4 shows total number of single and multiple authored publications were contributed 373 and 3349 respectively during the period of study. It witnessed that CI values measured between 0.04 and 5.56 in the year 2014 and 2009 respectively.

It could be analyzed collaborative Index range between 0.01 and 5.56 calculated in the year 1998 and 2009 respectively and the whole CI growth was a fluctuated during the study period (Fig. 4).

*Collaborative Co-efficient (CC)*

It has been analyzed that the Collaborative Co-efficient of the authors in Forensic Medicine. Table 5 examines that CI growth was witnessed an increased and a decreased trend overall study period. The CC values measured between 9.87 in 2016 and 6.15 in 1995 and 1995, the whole CC observed as 230.26 over period of study (Fig. 5).

*Modified Collaborative Co-efficient (MCC)*

The equation is not defined for the trivial case when  $A = 1$ , which is 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  $1/A$ :

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

It is analysed that Modified Collaborative Co-efficient of authors contributed publications in Forensic Medicine. Table 6 examined the MCC was an increased and suddenly appeared a decreased trend during 1989-2016. The MCC values noticed that 0.02 in 1989 and 1.94 in 2016. It could be found to be whole MCC measured as 11.16 during the study period (Fig. 6).

*Exponential Growth for Authors in Forensic Medicine Research*

Value n in the field of Forensic Medicine is being analysed, it has calculated the exponential growth is  $n = 4.4320914$  for author data presented in Table 7. It shows the calculation for exponent of the author productivity as given formulas below:

$$\begin{aligned} N &= N \sum xy - \sum x \sum y \\ N \sum x^2 - (\sum x)^2 & \\ &= 22 \times 278.83 - 64.81 \times 131.89 \\ &= 22 \times 129.62 - 64.81 \times 64.81 \\ &= 800499.76 / 180614.45 \\ &= 4.4320914 \end{aligned}$$

**Table 5:** 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	0.00
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
Total	402	3750	4152	230.26

**Table 6:** 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	0.00
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
Total	402	3750	4152	11.16

**Table 7:** Exponential growth for authors in forensic medicine research

No. of articles (X)	Observed (Y)	X = log (X)	Y = log (Y)	XY	X <sup>2</sup>
1	1345	0.00	7.20	0.00	0.00
2	1142	0.69	7.04	4.85	1.38
3	984	1.09	6.89	7.51	2.18
4	902	1.38	6.80	9.38	2.76
5	887	1.60	6.78	10.84	3.20
6	834	1.79	6.72	12.04	3.58
7	764	1.94	6.63	12.86	3.88
8	712	2.07	6.56	13.57	4.14
9	684	2.19	6.52	14.27	4.38
10	602	2.30	6.40	14.72	4.60
11	542	2.39	6.29	15.03	4.78
12	424	2.48	6.04	14.97	4.96
13	312	2.56	5.74	14.69	5.12
14	204	2.63	5.31	13.96	5.26
15	197	2.70	5.28	14.25	5.40
16	168	2.77	5.12	14.18	5.54
17	112	2.83	4.71	13.32	5.66
18	97	2.89	4.57	13.20	5.78
19	86	2.94	4.54	13.34	5.88
20	52	2.99	3.95	11.81	5.98
21	32	3.04	3.46	10.51	6.08
22	18	3.09	2.89	8.93	6.18
23	12	3.13	2.48	7.76	6.26
24	9	3.17	2.19	6.94	6.34
25	3	3.21	1.09	3.49	6.42
31	2	3.48	0.693	2.41	6.96
32	1	3.46	0.00	0.00	6.92
Total		64.81	131.89	278.83	129.62



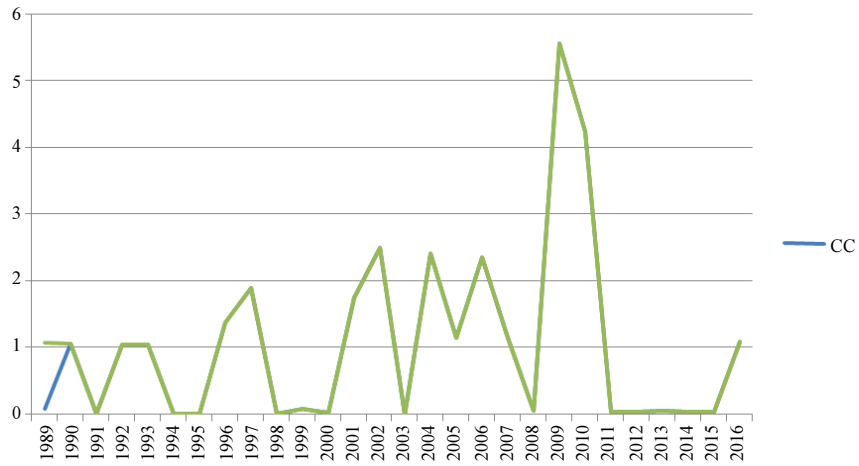


Fig. 4: Collaborative Index (CI)

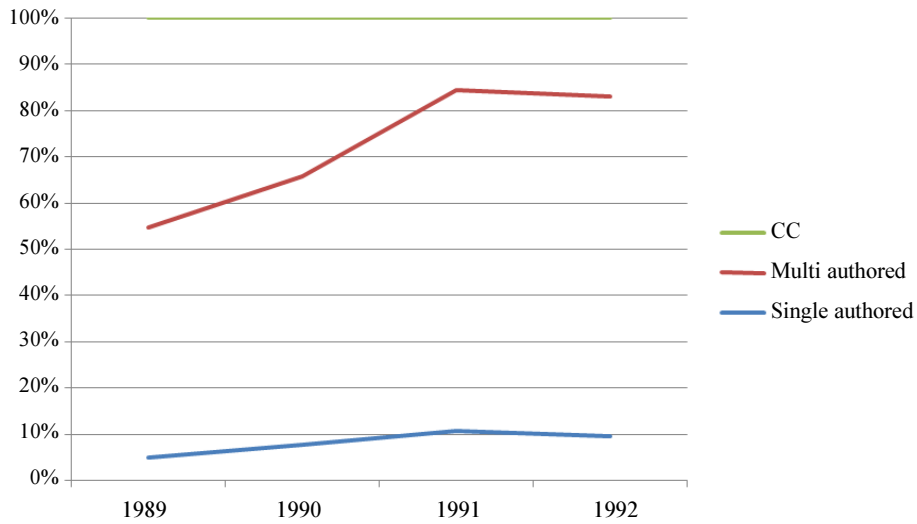


Fig. 5: Collaborative Co-efficient (CC)

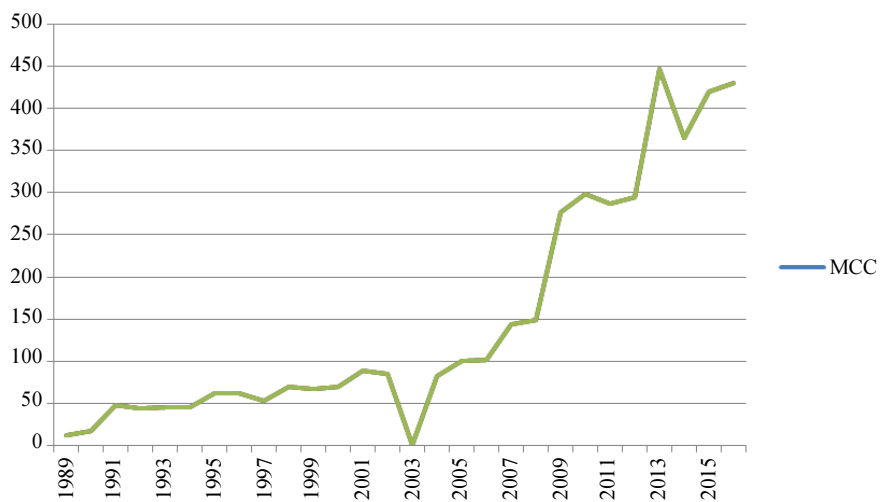


Fig. 6: Modified Collaborative Co-efficient (MCC)

### Year-Wise Activity Index of Forensic Medicine Research

It has been analysed that growth of B was found to be an increasing and a decreasing trend perform in the whole study period. Table 8 shows the whole Activity Index (A) was measured from Indian Output 0.84 by throughout study period. It can be found that activity index of world output in Forensic Medicine (B) was an increasing and a decreasing trend in whole study period. It is indicated the year-wise analysis of Activity Index (AI) was higher than an average ( $A1 > 1$  on the over period over 28 years (1989-2016).

It could be discussed that Activity Index Vs. year-wise analysis of Indian output and World output in Forensic Medicine. It witnessed that whole Activity Index found between 1 and 11, further, the activity trend appear to be a fluctuated trend during 1989-2016.

#### Major Findings

- Largest output was found 447 publications in the year 2013, it followed by 420 (10.38%) of the publication identified in the year 2015. There were no record published in the year 2003

- RGR was a fluctuates trend between 0.02 and 1.02 in 2005, 2006 and 1991 respectively. Dt was analyzed between 1.1 and 34.65 in the year 2009 and 2016 respectively during the study period
- DC between 0.64 and 0.94 and overall DC measured to be 23.08 throughout study period. The study could be found DC was an increased and a decreased trend appeared in whole study period
- Collaborative Index between 0.01 and 5.56 appeared in 1998 and 2009 respectively. It is witnessed that whole growth of CI was a fluctuated trend during the study period
- CC values measured between 9.87 in 2016 and 6.15 in 1995 and 1995, the whole CC observed as 230.26 during the period of study
- The MCC values noticed that 0.02 in 1989 and 1.94 in 2016 and the whole MCC measured as 11.16 during period of study
- Activity Index Vs. year-wise analysis of Indian output and World output in Forensic Medicine. It witnessed that whole Activity Index found between 1 and 11, further, the activity trend appear to be a fluctuated trend during 1989-2016
- The exponential growth was calculated  $n = 4.4320914$  for author

**Table 8:** Year- wise activity index of forensic medicine research

Year	Indian output	(A)	World output	(B)	A/B	AI
1989	4	0.01	11	0.29	0.030	11
1990	5	0.01	17	0.45	0.020	7
1991	8	0.02	47	1.25	0.010	4
1992	7	0.02	43	1.15	0.010	4
1993	9	0.03	45	1.20	0.020	7
1994	6	0.02	45	1.20	0.010	4
1995	9	0.03	52	1.39	0.020	7
1996	8	0.02	61	1.69	0.010	4
1997	9	0.03	52	1.2	0.020	7
1998	8	0.02	69	1.85	0.010	4
1999	9	0.03	66	1.77	0.010	4
2000	9	0.03	69	1.85	0.010	4
2001	7	0.02	89	2.39	0.008	3
2002	7	0.02	84	2.35	0.008	3
2003	0	0.00	0	0.00	0.000	0
2004	9	0.03	82	2.20	0.010	4
2005	8	0.02	100	2.68	0.007	3
2006	10	0.03	101	2.71	0.010	4
2007	13	0.04	143	3.84	0.010	4
2008	11	0.04	148	3.95	0.010	4
2009	13	0.04	277	7.44	0.005	2
2010	12	0.04	308	8.27	0.004	1
2011	17	0.06	287	7.71	0.007	3
2012	11	0.04	294	8.89	0.004	1
2013	13	0.04	447	12.00	0.003	1
2014	15	0.05	365	9.80	0.005	2
2015	16	0.05	420	11.28	0.004	1
2016	15	0.05	430	12.16	0.004	1
Total	268	0.84	4152	12.96	0.279	103

## Conclusion

The study analysed the publication pattern into activity Index and exponential growth of authors in Forensic Medicine during 1989-2016. The highest Dt was observed at 13.86 in 2002. It also seems the lowest Dt found to be 0.32 in the year of 2015. It could find overall RGR was 9.12 and Dt was 172.42 in the whole study period. The *study discussed on the publications trend in terms of author Collaborations and productivity, Source-wise publications, Institutions-wise productivity, citations counting and h-index etc. measured in the field of Forensic Medicine during 1989-2016. The aim of the study deals the medico legal autopsy brings still more medical advantages and benefits. MCC were noticed that 0.02 in 1989 and 1.94 in 2016. It also happened to be the whole MCC measured as 11.16 during the period of study.*

The study finds that there was witnessed that whole Activity Index could be found between 1 and 11, also activity trend is appear a fluctuated trend during 1989-2016. *The aim of the study deals the medico legal autopsy brings still more medical advantages and benefits. The ones presented here are not imaginary, hypothetical, or unrealistic pros of this activity, but true and palpable outcomes of the author's daily medico legal work on necropsies. Quality and training, that is, education, is indeed one of the three major platforms on which forensic pathology needs to build in the future, the other two aims being good legislation and organization. It is impossible to be a credible and convincing teacher unless one has continuing practical experience on the subject. The scholarly outcomes of the research collaboration of Forensic Medicine at global context there should be constant support and encouragement from the Government and WHO to bring out qualitative research in the field. In this study, the research part has been divided that in first part as Year- wise output of Forensic Medicine from Web of Science (WOS) and PubMed database.*

## Author's Contributions

**Dr. C. Baskaran:** Librarian (Professor Cardre), Research Supervisor in Library and Information Science & Project Director (ICSSR), Alagappa University, Karaikudi, India, He published more than 100 research papers and 3 books. He has been acted experts in various committees. Six Ph.D awarded and Eight Ph.D undergoing under his research supervision.

**P. Ramesh Babu:** Research Scholar in the Department of Library and Information Science, He has more than 15 years of experience in Library/Digital Archives areas.

## Ethics

This article is original and contains unpublished material. The corresponding author confirm that all of other author have read and approved the manuscript and there are no ethical issues involved.

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