

Research Article

**AUTHORSHIP PRODUCTIVITY TRENDS IN JOURNAL OF TRAVEL MEDICINE  
(2001-2013): COLLABORATION SCIENTOMETRIC ANALYSIS**

**Suradkar., Priya Ashok and DayaDalve (Patil)**

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad

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**ABSTRACT**

This paper presents a Scientometric study of Journal of travel Medicine. A total of 1175 research papers and volume, authorship pattern, degree of collaboration. Average number of authors per paper is 0.96, degree of collaboration among different categories of author. Multi-authored highest articles, Findings of the analysis revealed that the majority of the publications are contributed by multiple authors; degree of collaboration has been arrived at 0.94 for the year 2007. Co-authorship index and it is observed that the value of CAI for more than six authored papers is the highest, the value of group co-efficient for publications (gp) was 0.87

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**INTRODUCTION**

The focus of Scientometrics is the measurement of science and is therefore concerned with the growth, structure, interrelationship and productivity of scientific disciplines (Hood & Wilson, 2001). Scientometrics is also defined as the quantitative study of science, communication in science and science policy. Authorship studies also descriptive bibliometric studies focused on authorship patterns. They describe author characteristics and authorship of articles and degree of collaboration of a specific group of authors. The starting point in an authorship study was to select a group of publications. This selection of publications forms the unit of analysis based on a research group. This study especially focuses on the authorship patterns and degree of collaboration of Journal of travel Medicine research with the records of publications. The present study is based on 13 volumes, 6 issued per volume per year of the E- journal of Travel Medicine during 2001- 2013. The present study is based on overall 1175 articles.

**Journal of Travel Medicine**

The Journal of Travel Medicine publishes edited by Eric Caumes in Australia and up-to-date research and original, peer-reviewed articles in the challenging field of travel

\*Corresponding author: **Suradkar**

Dr. Babasaheb Ambedkar Marathwada University,  
Aurangabad

medicine, including: prevention and treatment of disease; clinic management; patient and staff education; immunizations; impact of travel on host countries; military medicine; problems of refugees; diseases such as malaria, travelers' diarrhea, hepatitis, TB, STDs and AIDS, jet lag, altitude sickness, trauma, special hosts, and more. Online ISSN: 1708-8305, Impact Factor: 1.579

**Definitional Analysis**

**Bibliometrics**

**According to Sengupta**

“Organization, classification and quantitative evaluation of publication patterns of all macro and micro communication along with their authorships by mathematical and statistical calculus”

**Scientometrics**

A complex of quantitative mathematical and statistical methods used to investigate such aspects as research staff, and to define evolutionary & prospectus of science (Bonitz, 1999). Scientometrics is a very recent term .It is often used synonymously with the term bibliometrics.

**Scientometric analysis**

The main currency for an academician is his reputation just as that for the politician is the power the commands and that for the business person is the wealth he has accumulated (Becher, 1989).

**E-Journal**

According to, a journal, academic in nature which is published using the World Wide Web, such a journal usually uses internet technology refereeing of papers. Many e-journals pride themselves on rapid refereeing and consequent repaid publication. (Gupta, 1998).

**Journal of Travel Medicine:**

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**Review of literature**

The number of authors contributing to scholarly publications in terms of authorship pattern is an instructing part of any bibliometric study. A count of number of authors contributing to articles offers some indication to degree of collaboration between authors. Cronin (2001) comment, authorship as "undisputed coin of the real in academic "and" absolutely central to the academic reward system". Vimala and Pulla Reddy, V (1996) traced "authorship pattern and collaborative research in zoology with a sample of 19,323 journal citations figured in the theses on zoology accepted for the award of the doctoral degree by Sri Venkateswara University, Tirupati, India" (p. 1). Zafrunnisha and Pulla Reddy (2009) studied the authorship pattern and collaborative research in the field of psychology. Amsaveni and Vasanthi (2013) revealed "the trend in authorship pattern and collaborative research in network security with a sample of 8051 articles downloaded from the database of web of knowledge during 2002 to 2011 (one decade) with 5343 LCS and 44721 TGCS measure" (p. 52). Karisiddappa, Maheswarappa, and Shirol (1990) studied the authorship pattern and collaborative research in psychology, based on the data collected from *Psychological Abstracts* for the year 1988.

Suradkar P.A. and Dr. Dalve Daya (2016) carried out the study presents the trends in authorship pattern and authors collaborative research in Academic Emergency Medicine Journal with a sample of 3586 articles during the period 2001-2013 Pradhan, Panda, and Chandrakar (2011) studied "the trends in authorship pattern and author's collaborative research in Indian chemistry literature with a sample of 53,977 articles downloaded from SCI-Expanded database in Web of Science during the period 2000-2009" Mahapatra (1985); carried out study in Further, if the number of articles in a subject doubles during a given period then the difference between the logarithms of numbers at the beginning and at the end of this period must be the logarithm of the number 2. Mahapatra (1985); assessed the Relative Growth Rates (RGR) is a measure to study the increase in number of articles / pages per unit of articles/ pages per unit of time. Teague *et al.*, (1981) Mamdapur Modin N. (2013); Lotka's law is tested and confers to a value of  $n=3.22$ . In all 12893 citations have been appended to 479 articles during the period 1997-2011. Jeys Shankar, B *et al.* (2012); The article in the SCOPUS

database covering the period 1966-2011 have been considered for this study. The results of the study indicate that there is an increasing trend towards collaborative research in India.

**Data Analysis**

The present study is based on 13 volumes, 6 issued per volume per year of the E- journal of Travel Medicine during 2001- 2013. The present study is based on overall 1175 articles.

**Objective of the study**

The main Objectives of the present study is

1. To examine the year wise distribution of contribution.
2. To observe the Authorship pattern among the contributions.
3. To find out Average number of authors per papers and papers per authors.
4. To examine the Degree of Collaboration.
5. To find out the Degree of Collaboration among different categories of authors.
6. To observe Co-Authorship Index (CAI).
7. To find out Value of Group Co-Effective for collaborative authors of publications.

**Data Analysis**

**Year Wise Distribution of Contribution**

Table 1 reveals the frequency distribution in journal o travel medicine.

**Table No. 6.1** Year Wise Distribution of Contribution

Year	Vol. No	Issues	Total Publications	%
2001	8	6	71	6.04
2002	9	6	76	6.47
2003	10	6	95	8.09
2004	11	6	85	7.23
2005	12	6	77	6.55
2006	13	6	85	7.23
2007	14	6	82	6.98
2008	15	6	100	8.51
2009	16	6	114	9.70
2010	17	6	100	8.51
2011	18	6	102	8.68
2012	19	6	98	8.34
2013	20	6	90	7.66
Total		78	1175	100.00

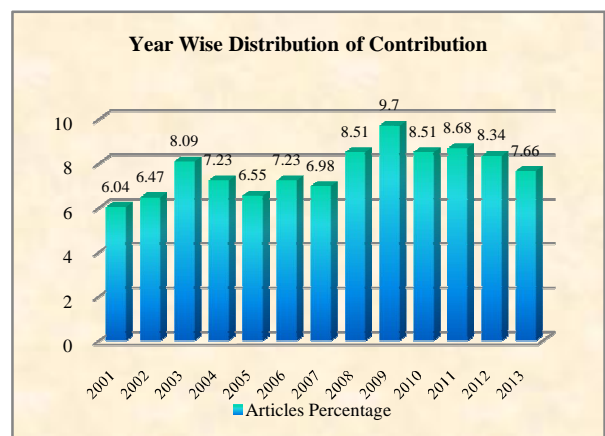


Table 1 and fig. no. 6.1 shows the number of contributions (i.e. research articles). The highest number of research articles 114 (9.70%) were published in 2009 from different countries.

The smallest amount of research articles 71 (6.04%) were published in 2001.

**Authorship pattern is shown in table no 6.2**

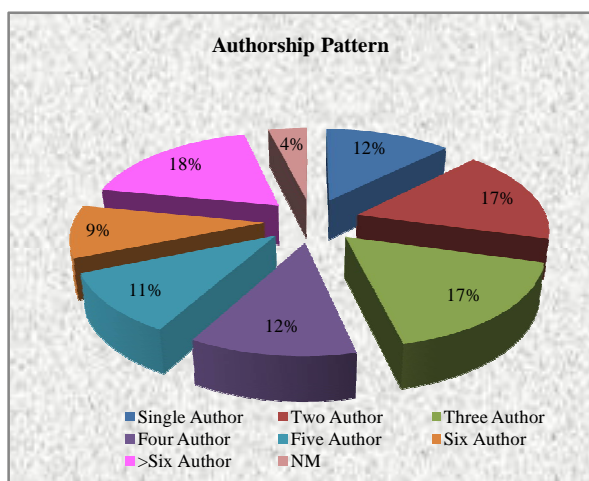
For studying the authorship pattern, the publications are arranged as single, double, triple, multi-authored and other categories.

Average number of authors per papers and papers per authors is shown in table no 6.3.

Yoshikane *et al* (2009) in their paper published in Scientometrics journal have given a formula to calculate

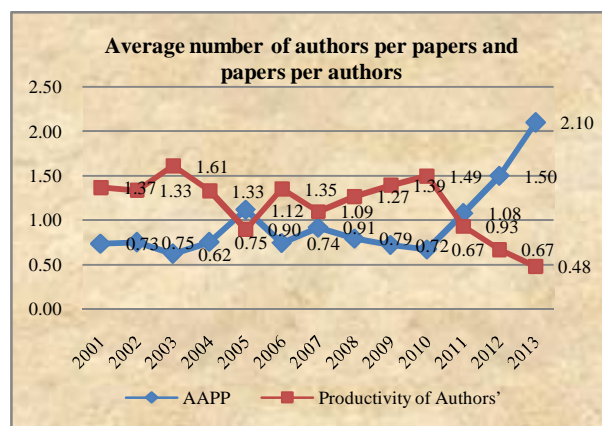
**Table no. 6.2** Authorship pattern

Year	Single Author	Two Author	Three Author	Four Author	Five Author	Six Author	>Six Author	NM	Total
2001	11	12	21	10	6	3	8	0	71
2002	15	22	14	5	5	5	10	0	76
2003	19	19	18	11	4	7	9	8	95
2004	7	14	20	12	8	8	11	5	85
2005	9	12	15	9	8	6	15	3	77
2006	14	14	14	11	10	10	12	0	85
2007	5	15	16	12	9	7	14	4	82
2008	13	19	13	9	10	14	19	3	100
2009	13	20	23	16	15	8	12	7	114
2010	8	14	11	12	12	11	23	9	100
2011	7	12	21	14	9	12	25	2	102
2012	13	9	11	8	18	8	29	2	98
2013	13	15	4	8	12	11	25	2	90
Total	147	197	201	137	126	110	212	45	1175
	12.51	16.77	17.11	11.66	10.72	9.36	18.04	3.83	100



**Table no. 6.2** Authorship pattern

Average Author Per Paper (AAPP) and Productivity Per Author.



**Figure No. 6.3** Average number of authors per papers and papers per authors

**Table No.6.3** Average number of authors per papers and papers per authors

Year	Total no. of Papers	Total no. of Authors	AAPP	Productivity of Authors'
2001	71	52	0.73	1.37
2002	76	57	0.75	1.33
2003	95	59	0.62	1.61
2004	85	64	0.75	1.33
2005	77	86	1.12	0.90
2006	85	63	0.74	1.35
2007	82	75	0.91	1.09
2008	100	79	0.79	1.27
2009	114	82	0.72	1.39
2010	100	67	0.67	1.49
2011	102	110	1.08	0.93
2012	98	147	1.50	0.67
2013	90	189	2.10	0.48
Total	1175	1130	0.96	1.04

It is observed from the Table No. 6.2 & figure no. 6.2 out of 8871 papers, the highest number of papers was published by more than three authors and it accounts for 201 with 17.11% followed by single authored articles account for 147 with 12.51%. 197 with 16.77% of articles were published by double authors. 45 with 3.83% of articles were published by unknown authors.

The data pertaining to author productivity has presented in the Table 6.3 & Figure No.6.3. The table shows that the total average number of authors per paper is 0.96 for the 1175 articles. The years 2013 has the relatively highest average number of authors per article when compared the total average number of authors per article. The average productivity per author is 1.04 during the year 2001 - 2013.

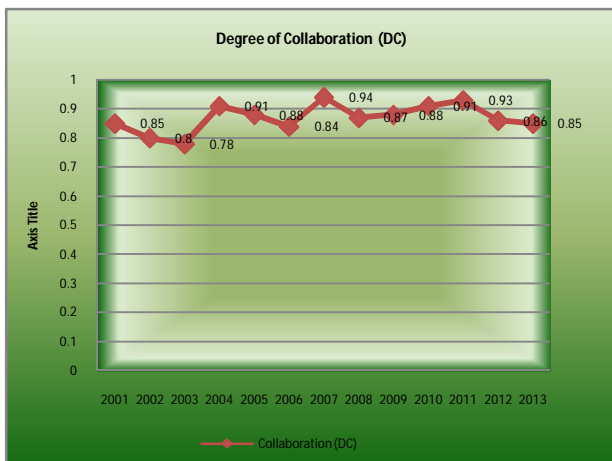
**Degree of Collaboration is shown in table no 6.4**

The degree of collaboration for different years is calculated as per the equation proposed by Subramanian and is presented in Table 6.4.

Table 6.4 and fig no 6.4 reveals that the value of the higher Degree of Collaboration (DC) was 0.94 for the year 2007 followed by 0.80 minimum degree of collaboration for the year 2002.

**Table no. 6.4** Degree of Collaboration

Year	Single Author Paper (NS)	Multiple Author Paper (NM)	NM + NS	Degree of Collaboration (DC)
2001	11	60	71	0.85
2002	15	61	76	0.80
2003	19	68	87	0.78
2004	7	73	80	0.91
2005	9	65	74	0.88
2006	14	71	85	0.84
2007	5	73	78	0.94
2008	13	84	97	0.87
2009	13	94	107	0.88
2010	8	83	91	0.91
2011	7	93	100	0.93
2012	13	83	96	0.86
2013	13	75	88	0.85
Total	147	983	1130	11.29



**Figure no. 6.4.** Degree of Collaboration

**Degree of Collaboration among different categories of authors is shown in table no 6.5.**

The Degree of Collaboration (DC) among different categories of authors in Journal of Travels Medicine is presented in Table 6.5.

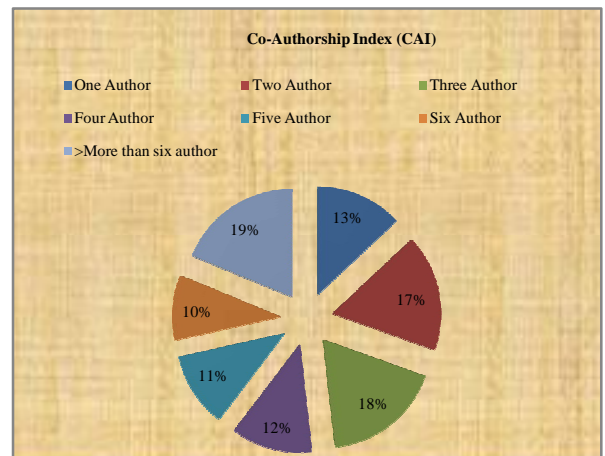
**Table no. 6.5** Degree of Collaboration among different categories of authors

Year	Two authors publications	Three authors publications	Four authors publications	Five or more than five authors publication
2001	0.17	0.30	0.14	0.24
2002	0.29	0.18	0.07	0.26
2003	0.22	0.21	0.13	0.23
2004	0.18	0.25	0.15	0.34
2005	0.16	0.20	0.12	0.39
2006	0.16	0.16	0.13	0.38
2007	0.19	0.21	0.15	0.38
2008	0.20	0.13	0.09	0.44
2009	0.19	0.21	0.15	0.33
2010	0.15	0.12	0.13	0.51
2011	0.12	0.21	0.14	0.46
2012	0.09	0.11	0.08	0.57
2013	0.17	0.05	0.09	0.55
Total	0.17	0.18	0.12	0.40

It is clear from Table 6.5 In the study; the degree of collaboration of all two author publication in 13 years is almost of the mean value as 0.17. Three author’s publication degree of collaboration value as 0.18, four authors’ publication degree of collaboration value as 0.12 and five or more than five author’s publication degree of collaboration value as 0.40.

**Co-Authorship Index (CAI) is shown in table no 6.6**

For this study, the authors have been classified into seven blocks; vz Single, Two, Three, Four, Five, Six and more than six authors and the results of Co-authorship index as per the formula have been presented in the Table No.6.6.



**Figure no. 6.5** Co-Authorship Index (CAI)

Table 6.6 reveals that the result of co-authorship index and it is observed that the value of CAI for more than six authored papers is the highest and for six authored papers was lowest, which indicated that the collaborative research is increasing in the field of Journal of Travel Medicine. With regard to the multiple authored publications with more than single authors, the co-authorship has shown fluctuation trend.

**Value of Group Co-Effective for collaborative authors of publications is shown in table no 6.7**

To conduct such authorship analysis, the authors of publications are the main element of study. The ‘g’ for the publications may be represented as  $g_p$  and the ‘g’ for the articles may be written as  $g_c$ . The table no. 6.7 Value of Group Co-Effective for collaborative authors of publications. The value of group co-efficient for publications ( $g_p$ ) was 0.87. The degree of collaboration among the co-authors was minimum 0.17% in articles written by three authors and maximum 0.70% in more than three author’s publications.

**CONCLUSIONS**

1. The highest number of research articles 114 (9.70%) were published in 2009
2. The highest number of papers was published by more than three authors and it accounts for 201 with 17.11%
3. The table shows that the total average number of authors per paper is 0.96 for the 1175 articles.
4. The value of the higher Degree of Collaboration (DC) was 0.94 for the year 2007
5. The degree of collaboration among different categories of authors highest five or more than five author’s publication degree of collaboration value as 0.40.
6. The result of co-authorship index and it is observed that the value of CAI for more than six authored papers is the highest
7. The value of group co-efficient for publications ( $g_p$ ) was 0.87.



**Table no. 6.6** Co-Authorship Index (CAI)

Year	Single Author		Two Authors		Three Authors		Four Authors		Five Authors		Six Authors		>Six Authors		Total
	No	CAI	No	CAI	No	CAI	No	CAI	No	CAI	No	CAI	No	CAI	
2001	11	119	12	97	21	166	10	116	6	76	3	43	8	60	71
2002	15	152	22	166	14	104	5	54	5	59	5	68	10	70	76
2003	19	168	19	125	18	116	11	104	4	41	7	83	9	55	87
2004	7	67	14	100	20	141	12	124	8	90	8	103	11	73	80
2005	9	93	12	93	15	114	9	100	8	97	6	83	15	108	74
2006	14	127	14	94	14	93	11	107	10	106	10	121	12	75	85
2007	5	49	15	110	16	115	12	127	9	103	7	92	14	96	78
2008	13	103	19	112	13	75	9	77	10	92	14	148	19	104	97
2009	13	93	20	107	23	121	16	123	15	126	8	77	12	60	107
2010	8	68	14	88	11	68	12	109	12	118	11	124	23	135	91
2011	7	54	12	69	21	118	14	115	9	81	12	123	25	133	100
2012	13	104	9	54	11	64	8	69	18	168	8	86	29	161	96
2013	13	114	15	98	4	26	8	75	12	122	11	128	25	151	88
Total	147		197		201		137		126		110		212		1130

**Table no. 6.7** Value of Group Co-Effective for collaborative authors of publications

Number of authors per article	Number of publications	(%) from total personal author publication	Value of per Nm gp----- Ns + Nm
Total no of personal author publications	1130	----	-----
Number of single Author publications	147	13.01	-----
Number of co-authors Publications	983	86.99	0.87
Two authors Publications	197	17.43	0.17
Three authors publications	201	17.79	0.18
More than three Authors publications	585	51.77	0.52

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