

A Bibliometric Study of Authorship Pattern and Collaborative Research Work in Journal of Indian Medical Heritage (JIMH)

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Abstract: *The present study concentrates on the publication trends of scholarly journal articles in Journal of Indian Medical Heritage (JIMH), quarterly publication journal which is published from New Delhi by Central Council for Research in Ayurvedic Sciences (CCRAS), an apex body of Ministry of Ayush, Govt. of India. This bibliometric study is an evaluation of authorship and collaboration work written in journal articles during the period 2000-2011. During this study period total 164 articles published and total number of authors are 379. Out of 164 articles, 62 articles are written by single author and the rest 102 articles were written by more than one author. So it is clearly stated that the multiple authorship pattern is prominent in the journal. The highest number of contribution i.e. 17 (10.36%) were published in the year 2010. Most of the contributors are by single author i.e. 62 (37.80%). the degree of collaboration is determined as 0.62, the average productivity per author in JIMH is 5.64 and the highest number of author's productivity i.e. 17 (0.41%) was in 2010 and the minimum number of author's productivity 11(0.52%) was in 2004.*

Keywords: *Authorship pattern, Degree of Collaboration, JIMH, CCRAS, Bibliometric Study*

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Introduction

Scientific cooperation is one of the key factors of scientific research and research collaboration in writing articles is one of the indicators that study credit of scientific articles. Any journal article has its own academic value and it may be written either by single author or multi-authorship pattern. The recent trends show that the most of the scholarly journal articles are written by multi-authorship pattern. It obviously directs as one of the prime indicators of reliability of scientific articles and it is rapidly increasing in our modern times. The main advantages of scientific collaborations are accessing the various ideas and sources, exchanges of new information in a more convenient and efficient way, learning the new skills and development in related fields, improve the result and efficiently increasing the quality of the scholarly research journal article.

About the Journal of Indian Medical Heritage (JIMH)

The Central Council for Research in Ayurvedic Sciences (CCRAS) established in the year 1962, an autonomous body under Ministry of Ayush, Govt. of India. It act as an apex body in India for coordinating, formulating, understanding, promoting and developing research on scientific lines in Ayurvedic Sciences. This council has publishing three journals namely Journal of Drug Research in Ayurvedic Sciences (JDRAS), Journal of Research in Ayurvedic Sciences (JRAS), and Journal of Indian Medical Heritage (JIMH). JIMH is a peer-reviewed online scholarly journal in the field of medical sciences covering Ayurveda, yoga and naturopathy, Unani, Homeopathy etc. pertaining to various aspects of medical history. Previously the name of the journal was 'Bulletin of the dept. of history of medicine', published bi-annually in the year 1963. The name again changed as bulletin of institute of history of medicine and bulletin of Indian institute of history of medicine in 1971 and 1974 respectively. At last the name of the journal stands as Journal of Indian Medical Heritage in the year 2009. This bi-annually journal turns into quarterly journal from October -December, 2022 (as vol. 1, no.1). This is one among the very few available journal dedicated to history of medicine and publishing literary and medico-historical research in all systems of medicine. It is a Pub-Med indexed journal. It covers editorials, case studies, research articles, book reviews etc. Bibliographies of medical history and abstracts of articles in other languages as well as news and notes on medical historical activities, history of medicine in India and abroad are also included in this journal. Since 1975 all the volume are now available in online (<http://ccras.nic.in> and <http://niimh.nic.in>). Now it is published by National Institute of Indian Medical Heritage (NIIMH) for CCRAS, Govt. of India and available in both print and digital format.

Review of Related Literature

Saha, M. (2019) conducted a bibliometric analysis on Authorship Pattern and Collaborative research work in Journal of Drug Research in Ayurvedic Sciences to explore the trends of publications of scholarly articles of JDRAS between the period of 2000-2011. It was found from the study that only 15 articles were written by single author and the rest 141 articles were contributed by more than one author. The highest number of research articles is 24 (15.38%) published in the year 2000. The most of the scholarly article were written by 3 authors 59(37.82%). The degree of collaboration is determined as 0.90.

Yadav, S. K., & et al (2019) conducted a study on evaluation of authorship and collaboration pattern in SRELS Journal of Information Management during 2008-2017. The study counted that the average collaboration index is 1.86, average collaboration coefficient is 0.36, average degree of collaboration is 0.66, average relative growth rate is 0.32 and average doubling time is 3.40 during 2008-2017.

Tunga, S.K. (2014) conducted a citation study on authorship pattern and degree of collaboration in journal articles of 80 doctoral dissertations of Bidhan Chandra Krishi Viswavidyalaya and Uttar Banga Krishi Viswavidyalaya, West Bengal during 1991-2010. The study reveals that, out of 8,437 references cited, 1,763 (20.695%) are single authored articles and 6,665 (78.997%) are multi-authored articles. Two authored (37.039%) are the highest in the cited journals followed by three authored (25.116%), single authored (20.896%) and four authored (11.332%) papers. The highest number of cited articles is in the year 2005 with 947 (11.236%).

Thavamani K. and Velmurugan C, (2013) explores the publication trends of scholarly papers in Annals of Library and Information Studies published from New Delhi. The Bibliometric analysis has been conducted with 310 contributions published in the journal during the year 2002 – 2012. The highest number of contributions i.e., 43 (13.87%) were published in the year 2010. Most of the contributions are by two authored i.e., 136 (43.87 %.). The degree of collaboration is determined as 0.65.

Amsaveni, N., et al (2013) did the study of the authorship pattern and collaborative research in bioinformatics. The study found that the rate of increased in multiple authorship pattern mottled considerably with subject area. Totally 91655 authors were produced 17318 articles in this subject of bioinformatics. 9.77 percent of articles were single authors' contribution. 90.17 percent of articles produced by collaborative authors.

Khaparde, V. & Pawar, S. (2013) examine 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. The study found that the researches in Information Technology are keep toward team research or group research rather than solo research.

Objective of the study

- To find out the authorship pattern
- To study the period and volume wise authorship pattern
- To examine the year wise growth of articles
- To study the author's productivity
- To know about the single author and multi - author articles are written in JIMH.
- To measure the degree of author collaboration

Methodology

The data are collected for this study from the website of CCRAS and NIIMH and other websites also. There are 24 issues from 12 volumes from the year 2000 to 2011. (Volume 30 to 41). At first all the articles and other relevant data were noted and then downloaded in my personal computer from the main website of CCRAS and JIMH and NIIMH. Thereafter these collected data are examined and analyzed with the help of MS- Excel software. Thereafter the data were compiled, organized, calculated, tabulated, analyzed and scanned to study various aspects pertaining to authorship pattern, author's productivity, degree of collaborative work etc. and presented with the help of using simple arithmetic and statistical method of respective equations in order to arrive for its result.

Limitations

This research work is totally based on the data collected from some particular websites. Hence the conclusive results is totally depends on these websites. The term collaboration has a broader view in relating to a publishing a journal article. Collaboration could relate to consultation in composing article content, articles that deal with joint or co-operative work but written by only one author or articles that promote collaborative technologies, projects, theory as well as the scope of peer-review that represents the scholarly collaboration etc. This paper only considered

the joint authorship of the articles and other types of collaboration outside this authorship are not considered in this study. The JIMH (previously known as “Bulletin of Indian Institute of History of Medicine”) started its publication since 1975 and all the volume and issues are available in online platform. But in this research study, the period is taken only for 12 years (2000-2011) in order to easing the calculations, analyzing the data, hence the coming result of this study will not throws a light in a comprehensive manner but obviously these results give us a prime indicator regarding the trends of authorship pattern and collaborative research work in scholarly journal articles in future

Result and Discussion

Table 1: Year wise Distribution

Sl. no	Year	No. of Articles	% of Records
1	2000	14	8.53
2	2001	14	8.53
3	2002	14	8.53
4	2003	12	7.31
5	2004	11	6.70
6	2005	13	7.92
7	2006	13	7.92
8	2007	15	9.14
9	2008	13	7.92
10	2009	13	7.92
11	2010	17	10.36
12	2011	15	9.14
Total		164	100 (99.92)

Table-1 shows the volume and issue number corresponding to year wise number of the journal article publications of JIMH. In total, there are 164 articles published in JIMH from 2000 to 2011. The highest number of contributions is 17 (10.36%) in 2010 followed by 15 (9.14%) articles each in 2007 and 2011 respectively. The least 11 articles (6.70%) published in the year 2004.

Table 2: Author Pattern

Sl. no	No. of Authors	Total No. of Contributions	% of Records
1	Single Author	62	37.80
2	Two Authors	44	26.82
3	Three Authors	31	18.90
4	Four Authors	18	10.97
5	Five Authors	3	1.82
6	Six Authors	1	0.60
7	Seven Authors	-	-
8	Eight Authors	2	1.21
9	Nine Authors	3	1.82
Total		164	100

In Table-2, it is observed that majority of the scholarly articles were written by multi- authorship pattern. Out of 164 articles, 102 articles (i.e.62.20%) were written by more than one author where as only 62 articles (37.80%) were written by individual author which is the highest number of contributions is during this study period. The total numbers of 44 articles (i.e. 26.82%) were written jointly by two authors, followed by 31 articles (18.90%) and 18 articles (i.e.10.97%) contributed by 3 and 4 authors respectively. The least contribution is 1 article (0.60%) which was written jointly by 6 authors.

Table 3: Period/ Volume wise Authorship Pattern

Sl. no	Year	Volume	Single Author	Two Authors	Three Authors	More than Three Authors	Total	% of Records
1	2000	30 (1 & 2)	10	3	-	1	14	8.53
2	2001	31 (1 & 2)	10	1	2	1	14	8.53
3	2002	32 (1 & 2)	7	4	2	1	14	8.53
4	2003	33 (1 & 2)	5	6	1	-	12	7.31

5	2004	34 (1 & 2)	4	4	3	-	11	6.70
6	2005	35 (1 & 2)	5	3	4	1	13	7.92
7	2006	36 (1 & 2)	2	2	2	7	13	7.92
8	2007	37 (1 & 2)	-	3	7	5	15	9.14
9	2008	38 (1 & 2)	2	6	1	4	13	7.92
10	2009	39 (1 & 2)	2	3	6	2	13	7.92
11	2010	40 (1 & 2)	7	4	3	3	17	10.36
12	2011	41 (1 & 2)	8	5	-	2	15	9.14
Total			62	44	31	27	164	100
Percentage (%)			37.80	26.82	18.90	16.46	100	

Table-3 shows the volume wise authorship pattern of contributions. It depicts that out of 62 contributions, volume no-30 and vol.no.-31 together have the highest number i.e. 10 (16.12%) in the consecutive year 2000 and 2001. It is also noticed that there is no articles written by single author in vol. no.-37 of 2007. The total articles are written by two authorship collaboration in the period in between 2000 to 2011 is 44 and the highest contribution in this segment is 6 (13.63%) in the year of publication 2003 and 2008 corresponding vol. no.-33 and vol. no.-38. Out of 31 articles written by 3 authors, the highest number of articles published is 7 (22.58%) in the year 2007 under the volume number-37 of JIMH. The lowest number is 1 (3.22%) contribution under the volume number 33 and vol. no 38 in the year 2003 and 2008 respectively. There were 27 contributions were done by more than 3 authors vol. No-36 of the year 2006 is the highest i.e., 7 contributions (i.e.25.92%) and the vol. no.-30, 31, 32 and 35 of the respective year 2000, 2001, 2002 and 2005 have the contribution 1 article (i.e.3.70%) shows one of the lowest contributions. It is also revealed from the table no-3, there is no contribution of journal articles by single author in vol. no 37 of the year 2007 followed by no articles is written by 3 authorship collaboration in 2000 and 2011 of corresponding vol. no-30 and 41 as well as no authorship collaboration of journal articles of more than 3 authors is found in the year 2003 and 2004 of vol. no.-33 and 34 respectively.

Table 4: Author Productivity

Sl. no	Year	Total no of Articles	No. of Authors	AAPP*	Productivity per Year
1	2000	14	20	1.42	0.70

2	2001	14	22	1.57	0.63
3	2002	14	25	1.78	0.56
4	2003	12	20	1.66	0.60
5	2004	11	21	1.90	0.52
6	2005	13	27	2.07	0.48
7	2006	13	41	3.15	0.31
8	2007	15	48	3.20	0.31
9	2008	13	49	3.76	0.26
10	2009	13	34	2.61	0.38
11	2010	17	41	2.41	0.41
12	2011	15	31	2.06	0.48
Total		164	379	2.29	0.47

*average authors per paper (AAPP) = number of authors/number of papers.

Productivity per author = number of papers/number of authors.

It is noticed from the data related to author productivity, which shows that the total average number of authors per paper is 2.29 and the average productivity per author is 0.47. The highest number of author productivity i.e., 49(3.76) were published in the year 2008.

Table 5: Year wise Single and Multiple Authored papers

Sl. no	Year	Single Authored		Multi Authored		Total	% of Records
		Papers	%	Papers	%		
1	2000	10	16.12	4	3.92	14	8.53
2	2001	10	16.12	4	3.92	14	8.53
3	2002	7	11.29	7	6.86	14	8.53
4	2003	5	8.06	7	6.86	12	7.31
5	2004	4	6.45	7	6.86	11	6.70
6	2005	5	8.06	8	7.84	13	7.92

7	2006	2	3.22	11	10.78	13	7.92
8	2007	-	-	15	14.70	15	9.14
9	2008	2	3.22	11	10.78	13	7.92
10	2009	2	3.22	11	10.78	13	7.92
11	2010	7	11.29	10	9.80	17	10.36
12	2011	8	12.90	7	6.86	15	9.14
Total		62	100	102	100	164	100

This table shows the details about the single and multi authored papers. Out of 164 scholarly articles only 62 (37.80%) contributions are written by single author and the rest 102 articles i.e., (62.20%) contributed by multiple authors.

Table 6: Degree of Collaboration

Sl no	Year	Single Authored Paper (N_s)	Multiple Authored Papers (N_m)	Total ($N_s + N_m$)	Degree of Collaboration
1	2000	10	4	14	0.28
2	2001	10	4	14	0.28
3	2002	7	7	14	0.50
4	2003	5	7	12	0.58
5	2004	4	7	11	0.63
6	2005	5	8	13	0.61
7	2006	2	11	13	0.84
8	2007	-	15	15	1.00
9	2008	2	11	13	0.84
10	2009	2	11	13	0.84
11	2010	7	10	17	0.58
12	2011	8	7	15	0.46
Total		62	102	164	0.62

Table 6 presents the details the degree of collaboration. It is a very important and essential part of any research area. In this bibliometric study this table shows the trends in single and joint authorship collaborative work during the period from 2000 to 2011. The degree of collaboration

is formulated by using the following formula (k. subramanyam, 1982)

The formula is, where

$$C = \text{degree of collaboration} \quad C = \frac{N_m}{N_m + N_s}$$

N_m = number of multiple authors

$$N_s = \text{number of single author} \quad C = \frac{102}{102 + 62}$$

$$\text{In the present study, the value of } c \text{ is} \quad C = 0.62$$

Here, the table shows that the degree of collaboration ranges from 0.28 to 1.00 and the average degree of collaboration is 0.62. Hence it clearly manifests that the multi authorship contributions in JIMH dominance over the single authorship contributions.

Conclusion

In this research work, the collaboration of scholarly journal article's trend in JIMH can be noticed during specified study period of 2000-2011. The total articles are 164 and total authors are 379 in between this the study period. The authorship pattern has changed from the single author in early years to increased multi-author collaboration in recent years. In the first half of the study period i.e. 2000 -2005, it is noticed that there were 41 articles were written by single author as compared to 37 articles were written only by multi-author collaboration. But in the 2nd half of the period i.e. 2006-2011 there is only 21 articles by single author as compared to 65 articles were contributed by joint author's collaboration. On the other hand, out of 164 articles, only 62 articles (i.e., 37.80%) were written by single author where as 102 articles i.e., (62.20%) were contributed by more than one author. The highest number of articles were published in the year 2010. The total average number of author per person is 2.29 and the average productivity per author is 0.47. The degree of collaboration ranges from 0.28 to 1.00 and the average degree of collaboration is 0.62 in this study period. Here collaboration is studies only relates to joint authorship. Outside of authorship such as consultation in composing article content, peer-reviewed team for scholarly collaboration etc. are not considered. Here the result has tilted towards the joint authors of about 62% as compared to single author contribution of about 38%. Therefore the main objectives of any scientific collaboration are knowing the new skills, ideas and developments of the related fields and also accessing these more efficiently which obviously improve the quality of the scholarly and research oriented journal articles.

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