



A Bibliometric Analysis of the Journal of Indian Prosthodontic Society (2011-2015)

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Abstract:

This paper presents a bibliometric study of 323 articles published in five volumes of 'The Journal of Indian Prosthodontic Society (JIPS)' during 2011-2015. All contributions of research papers have been examined to find out the year wise distribution of articles, authorship pattern, geographical distribution of contributions, State wise contribution, prolific authors, number of references per article, form of documents cited, etc. It has been found that majority of the articles published in the Journal's (JIPS) are results of the collaborative research, the degree of collaboration is 0.9195 which clearly indicates the dominance of collaborative research upon individual contributions.

Keywords: Authorship pattern, Bibliometric, Citation analysis, Dentistry, Implant dentistry, JIPS, Prosthodontic, Restorative dentistry

1. Introduction

The 'Bibliometric' is one of the wide areas of interest among LIS Professional. Bibliometric is useful to discipline where quantitative methods were in use to probe evaluate the scientific research and statistics to describe patterns of publications by measuring and analyzing various aspects of written documents. It helps to observe growth of literature and patterns of research. The word "Bibliometric" was first used by Alan Prichard (1969) as "The application of mathematics and statistical methods to books and other media of communication". Bibliometric studies involve quantitative analysis of a publication or set of publications using bibliographical details including authorship, year of publication, citation, figure and graphs in text, etc. According to Tsay (2011) "Bibliometric techniques using references made to other documents can be applied to establish statistical models of scholarly communication flow". Bibliometric is a quantitative evaluation of publication patterns of all macro and micro communication along with their authorship by mathematical and statistical calculation. [Sengupta, 1985]. There have also been several bibliometric analyses of specific subject areas, such as XML (Zhao and Logan 2002), computer supported collaborative work (Hols apple and Luo 2003) and information science (Cai and Card 2008).

Bibliometric study is mostly a technique of citation analysis which involves the process of collection, counting, analysis & explanation of citations given in various types of literature and thereby helping in recognition of significant sources of information. It is an emerging thrust unit of research in the field of library and information science.

2. Review of Related Literature

Desai, Kanchan Dinkar (2014) paper presents bibliometric analysis of DJLIT during 2012. Analysis covers various parameters like issue -wise distribution of papers, subject-wise distribution, authorship pattern, reference sources, length of the papers, special issues, institute-wise distribution, country –

wise distribution , major contributors , research method / type & average number of references per paper, etc.

Roy, Sanku and Basak, M (2013) Journal of Documentation: a Bibliometric Study carried out for these papers found that majority of papers are multi- authored. The degree of collaboration is found to be 0.51. The geographical distribution reveals that the contribution by United Kingdom is the highest. The average citations per paper are 43.

Manoj Kumar and A.L. Moorthy (2011) study under the paper bibliometric analyses of DJLIT during 2001-2010. The analysis covers various parameters like growth pattern, content coverage, authorship patterns, subject-wise distribution of articles, etc.

Thanuskodi S (2011) a bibliometric analysis was conducted by Indian Journal of Chemistry published during 2005-2009 and found that majority of the contributions (90%) was made by multiple authors.

Yeoh and Kaur (2008) analyses the publication output of Research in Higher Education for subject support in collection development in the light of growing interest in diversified domains of research in higher education. Analysis of 40 issues of publications open a diversified usage pattern of bibliographic reference sources by contributing researchers, with a cumulative total of citations being 8,374. A positive trend in research collaboration of contributing authors, and growth in the use of reference sources, periodicals and web documents in the citations mean the trend of scholarly communication of research works in the electronic era. Similar to other disciplines of research findings, journals and books were the most cited source materials for researchers thrash out.

Singh, Mittal and Ahmad (2006) conducted a bibliometric study of literature on digital libraries. Main findings are that most articles (61 percent) are single authored; author productivity is not in agreement with Lotka's Law, except in one case. The highest numbers of articles were published in 2003 with English being the most prolific language; maximum articles were published in the journal D-lib Magazine; distribution of articles nearly follows Bradford's Law; and USA ranked first for maximum number of journals.

3. Need for the study

The periodicals are the indicators of literature growth in any field of knowledge. They emerge as the main channel for transmitting knowledge. Due to the increasing cost of the periodicals and lack of insufficient library budgets the selection of any particular journal for a library should be done more carefully. Therefore, the library authorities are forced to trim down the number of journal subscriptions. Bibliometric analysis has many applications in the Library and Information science filed in identifying the research trends in the subject, core journals, etc. and thereby framing new subscription policy for tomorrow. These studies will be helpful for librarians to plan a better collection growth.

4. Scope and Limitations of the Study

The Journal of Indian Prosthodontic Society, a publication of Indian Prosthodontic Society, is a peer-reviewed online journal with Quarterly print on demand compilation of issues published. The journal's full text is available online at <http://www.j-ips.org>. The journal is indexed with the following: DOAJ, Index Copernicus, Pubmed Central, Scimago Journal Ranking, and SCOPUS.

The journal will cover technical and clinical studies related to health, ethical and social issues in field of Prosthodontics and restorative dentistry including implants, esthetic, ceramics and reconstructive dentistry. The study is limited to the articles published in Volume 11 to 15 of the Journal's (JIPS) from 2011 to 2015 only and supplement issue is not including.

(<http://www.j-ips.org/aboutus.asp>)

5. Objectives of the study

The present study have been undertaken with the objective of

- To find Year wise / volume wise distribution of articles.
- To study of Authorship pattern
- To identify Geographical distribution of contributions.
- To study most prolific authors to the journal.
- To find Average length of articles.
- To find year-wise citation analysis.
- To describe the form of documents referred to.
- To find age of references
- To identify and rank the most frequently referred journals.

6. Methodology

A total number of 20 issues of the 'The Journal of Indian prosthodontics society' (from 2011 to 2015) include in this study. The details regarding 323 published articles were recorded and analyzed for making interpretation. The data has been calculated and represented in tables. The citation analysis conducted by using various statistical tools and techniques.

7. Analysis and Interpretation of Data

7.1 Year wise Distribution of Articles

Year	Vol. No.	No. of issues	No. of contribution	Percentage
2011	11	04	47	14.55
2012	12	04	43	13.31
2013	13	04	106	32.82
2014	14	04	63	19.50
2015	15	04	64	19.82
Total		20	323	100

The above table showed that the maximum number of articles were published in the year 2013 (106) and minimum in the year 2012 (43) articles. The journal publishes on an average of 65 articles per year.

7.2 Volume - wise Distribution of Articles

Month	Volume Number					Total
	11	12	13	14	15	
January – March	13	10	12	19	14	68
April – June	12	11	13	10	18	64
July - September	10	12	41	21	16	100
October - December	12	10	40	13	16	91
Total	47	43	106	63	64	323

The table 2 displays distribution of articles (volume-wise). Volume No. 13 shows the highest number of total articles. The second highest position is taken by Volume No. 15. It is followed by volume 14. The lowest number of total articles in volume 12. The contributions of articles in volume 13 were more in July-September.

7.3 Authorship Pattern

Year	Number of Authors					Total
	1	2	3	4	5 & more	
2011	03	11	12	14	07	47
2012	02	13	13	14	01	43
2013	12	25	22	19	28	106
2014	02	10	15	19	17	63
2015	07	06	09	19	23	64
Total	26	65	71	85	76	323
Percentage	8.05	20.12	21.98	26.32	23.53	100

Table 3 present the authorship pattern of the articles published during the period of study. Maximum numbers of articles were contributed by four authors 85 (26.32%). This is followed by five or more authors with 76 (23.53%) articles, three authors were contributed 71 (21.98%) articles, two authors with 65 (20.12%) and single author with 26 (8.05%) of the total articles.

7.4 Authorship pattern (Year wise)

Authorship	Year					Total	Percentage
	2011	2012	2013	2014	2015		
Single	03	02	12	02	07	26	8.05
Joint	44	41	94	61	57	297	91.95
Total	47	43	106	63	64	323	100

The above table-4 showed that out of 323 articles joint authors contributed 297 (91.95%) articles while the rest 26 (8.05%) articles were contributed by single author. Here, in this study the formula proposed by K. Subramanyam has been used to find out the degree of collaboration in quantitative terms.

$$C = \frac{NM}{NM+NS}$$

Where C= Degree of Collaboration

NM = Number of Multi authored papers

NS = Number of Single authored papers

$$NM = 297$$

$$NS = 26$$

$$C = \frac{297}{297+26} = 0.9195$$

Thus the degree of authorship collaboration for articles published in the journal (JIPS) is 0.9195 which clearly indicates is power ahead contributions by individual authors.

7.5 Geographical Distribution of Articles (National and International)

Sr. No.	Name of the state	Contribution						
		2011	2012	2013	2014	2015	Total	Percentage
1	Karnataka	8	9	20	10	15	62	19.19
2	Tamil Nadu	11	5	20	11	4	51	15.79
3	Maharashtra	8	3	13	3	5	32	9.91
4	Uttar Pradesh	5	5	10	4	4	28	8.67
5	Andhra Pradesh	3	5	3	5	1	17	5.26
6	Kerala	3	1	7	4	1	16	4.95
7	Gujarat	1	2	4	2	6	15	4.64

8	New Delhi		2	3	4	5	14	4.33
9	Madhya Pradesh	2		3	5	3	13	4.02
10	Haryana	2	2	2		2	8	2.48
11	Rajasthan	1	1	2	1		5	1.55
12	West Bengal	1	1	3			5	1.55
13	Pondicherry					5	5	1.55
14	Punjab	1	1		2		4	1.24
15	Telangana			2		2	4	1.24
16	Jammu and Kashmir				3		3	0.93
17	Manipal		1	1	1		3	0.93
18	Himachal Pradesh				1	1	2	0.62
19	Orissa			1	1		2	0.62
20	Goa		2				2	0.62
21	Chhattisgarh	1	1				2	0.62
22	Uttarkhand		1				1	0.31
23	Meghalaya			1			1	0.31
24	Foreign		1	11	6	10	28	8.67
	Total	47	43	106	63	64	323	100

The geographical distribution of contributions (National and International) to the journal is presented in above Table Out of the total 323 contributions in the five volumes of the journals under study, 295 contributions have been made by Indian states. Foreign contribution is 28 (8.67%). Karnataka has a maximum contribution of 62 (19.19%), Tamil Nadu 51 (15.79%), Maharashtra 32 (9.91%), which is followed by Uttar Pradesh, Andhra Pradesh, Kerala, Gujarat, New Delhi and Madhya Pradesh. From the above analysis India has highest number of contributions compared to foreign

7.6 Most prolific authors

A rank list of contributors to this journal's with more than four articles, during 2011 to 2015 has been prepared. Total 323 articles were contributed by 839 authors (including single and co-authors).

Sr. No.	Rank	Author	No. of Article	Percentage
1	1	Ravindra C. Savadi	10	0.89
2	1	T. V. Padmanbhan	10	0.89
3	2	Hari Prakash	6	0.53
4	2	Padma Ariga	6	0.53
5	2	Seema Pattanaik	6	0.53
6	3	Balendra Pratap Singh	5	0.44
7	3	C. L. Satish Babu	5	0.44
8	3	D. Krishna Prasad	5	0.44
9	3	Jayanta Bhattacharyya	5	0.44
10	3	Ramesh Chowdhary	5	0.44
11	3	Rupal J. Shah	5	0.44
12	3	S. Shilpa Shetty	5	0.44
13	3	V. Rangarajan	5	0.44
14	4	D. R. Prithviraj	4	0.36
15	4	E. G. R. Solomon	4	0.36
16	4	Jayashree Mohan	4	0.36
17	4	K. Chandrasekharan Nair	4	0.36
18	4	K. Kamalakanth Shenoy	4	0.36
19	4	Komal Lodha	4	0.36

20	4	M. Dhanraj	4	0.36
21	4	M. Vasanthakumar	4	0.36
22	4	Manesh Lahori	4	0.36
23	4	Manoj Shetty	4	0.36
24	4	Meena Aras	4	0.36
25	4	Pooran Chand	4	0.36
26	4	Raghuwar D. Singh	4	0.36
27	4	Rahul Nagrath	4	0.36
28	4	Srinivasan Jayaraman	4	0.36
29	4	Suryakant Chhagan Deogade	4	0.36
30	4	Swatantra Agarwal	4	0.36
31	4	Vidya Chitre	4	0.36
Total			150	13.37

Table 6 lists 31 authors with contribution of four or more articles during the period under study. The contributions from all of them taken together constitutes 150 (13.37%) of the total 323 articles. The two authors namely Ravindra C. Savadi and T. V. Padmanbhan have contributed 10 (0.89%) articles each securing first rank in terms of number of contributions. The three authors namely Hari Prakash, Padma Ariga and Seema Pattanaik have obtained second rank with contribution of 6 (0.53%) articles each. The rest of the eight authors secure third rank with contribution of 5 (0.44%) and the eighteen authors secure fourth rank with contribution of 4 (0.36%) articles each.

7.7 Length of Articles

Pages	Year					Total	Percentage
	2011	2012	2013	2014	2015		
Two	00	00	04	00	00	04	1.24
Three	04	03	04	03	02	16	4.95
Four	13	08	14	13	08	56	17.34
Five	06	05	26	13	17	67	20.74
Six	10	08	20	06	16	60	18.58
Seven	07	13	21	08	12	61	18.89
Eight	02	03	04	10	08	27	8.36
Nine	03	01	06	01	00	11	3.40
Ten & more	02	02	07	09	01	21	6.50
Total	47	43	106	63	64	323	100

Table 7 reveals that the majority of articles 67 (20.74%) have the length of 5 pages followed by 61 (18.89%) articles with 7 pages, 60 (18.58%) articles with 6 pages, 56 (17.34%) with 4 pages, 27 (8.36%) with 8 pages, 21 (6.50%) with 10 & more pages, 16 (4.95%) with 3 pages, 11 (3.40%) with 9 pages and the remaining 4 (1.24%) articles have the length of 2 pages.

7.8 Distribution of Citations

The references provided by the authors at the end of articles are the basis of citation analysis. Citation traces a connection between two documents, one which cites and the other which is cited. The year-wise distribution of citations is given in below table:

Year	Volume	Issues	Articles	Citation
2011	11	04	47 (14.55%)	677 (10.28%)
2012	12	04	43 (13.31%)	827 (12.55%)
2013	13	04	106 (32.82%)	2202 (33.43%)

2014	14	04	63 (19.50%)	1384 (21.01%)
2015	15	04	64 (19.82%)	1497 (22.73%)
Total	05	20	323 (100%)	6587 (100%)

Table 8 shows that maximum number of citation 2202 (33.43%) produced in 2013 followed by 1497 (22.73%) in 2015, 1384 (21.01%) citations in 2014, 827 (12.55%) in 2012 and 677 (10.28%) in 2011. Citation published during 2013 entails least numbers of references to various forms of documents

7.9 Forms of Document cited

Forms of Document	Total No. of Citation	Percentage
Journals	5773	87.64
Books	624	9.47
Thesis/Dissertations	26	0.40
Conference/Workshop/Seminar/ Symposia proceeding	29	0.44
Manuals/Handbooks/Guides/Guidelines	41	0.62
Reports	17	0.26
Software	1	0.01
Standards/Patents	3	0.05
Websites	73	1.11
Total	6587	100

The table 9 above showed that majority of the contributors preferred journals as the source of information which occupied the top position with the highest number of citations 5773 (87.64%) of the total 6587 citations. The second highest position is occupied by books with 624 (9.47%) citations. It is followed by websites with 73 (1.11%), manuals/handbooks/guides/guidelines with 41 (0.62%) and Conference/Workshop/Seminar/ Symposia proceeding with 29 (0.44%) citations. Besides references made are also thesis/dissertations, reports, standard/patents and software etc are used other sources of information by author for writing articles.

7.10 Age of the documents referred to

Sr. No.	Year	Total No. of references	Percentage
1	Up to 1950	91	1.38
2	1951 to 1960	163	2.47
3	1961 to 1970	255	3.87
4	1971 to 1980	436	6.62
5	1981 to 1990	1105	16.78
6	1991 to 2000	1782	27.05
7	2001 to 2005	1266	19.22
8	2006 to 2010	1019	15.47
9	2011 to 2015	445	6.76
10	Year not given	25	0.38
Total		6587	100

Table 10 makes it clear that 27.05% references are made to the various sources of information originated during 1991-2000. About 19.22% references refer to the documents belonging to 2001-2005. It has been found that doctor /authors used information sources originating before 1950 for 1.38% references. Publication years have not been mentioned for twenty five references.

7.11 Most frequently referred journals

Journal's Rank	Journal title	Number of references	Percentage
1	Journal of prosthetic dentistry	1906	33.02
2	International journal of prosthodontics	245	4.24
3	International journal of oral and maxillofacial implants	193	3.34
3	Journal of oral rehabilitation	193	3.34
4	Journal of American dental association	181	3.14
5	Journal of dental research	138	2.39
6	Journal of prosthodontics	116	2.00
7	British dental journal	99	1.71
8	Dental clinic of North America	97	1.68
9	Dental material	95	1.65
10	Oral surgery Oral medicine Oral pathology Oral radiology	83	1.44
11	Quintessence international	77	1.33
12	Journal of dentistry	73	1.26
13	Clinical oral implant research	70	1.21
14	Journal of Indian prosthodontic society	60	1.04
15	Journal of periodontology	53	0.92
16	International journal of periodontics and restorative dentistry	44	0.76
17	Gerodontology	40	0.69
17	Journal of clinical periodontology	40	0.69
18	Journal of oral and maxillofacial surgery	37	0.64
19	Acta odontologica scandinavica	34	0.59
20	Australian dental journal	31	0.54
21	Dental material journal	30	0.52
22	Journal of dental education	29	0.50
22	Operative dentistry	29	0.50
23	Biomaterials	28	0.49
23	International dental journal	28	0.49
24	Journal of oral implantology	26	0.45
25	American journal of orthodontic and dentofacial orthopedics	24	0.42
25	Journal of endodontic	24	0.42
26	Journal of contemporary dental practice	23	0.40
27	Journal of Canadian dental association	22	0.38
28	Implant dentistry	20	0.35
28	Journal of biomedical materials research	20	0.35
	Other (729 journals)	1565	27.11
Total		5773	100

Table 11 enlists the most frequently cited journals for writing articles. "Journal of prosthetic dentistry" has highest number of references, i.e. 1906 (33.1%) out of the 5773 references to journals. The "International journal of prosthodontics" has second highest number of references, i.e. 245 (4.24%). This is followed by "International journal of oral and maxillofacial implants and Journal of oral rehabilitation" 193 (3.24%). About 1565 (27.11%) references are made to the articles published in 729 journal titles ranging from 1-19 references.

8. Findings

The following are the major findings of the study:

1. The maximum numbers of papers 106 were published in Volume No 13 and minimum of 43 in Volume No 12.
2. Authorship pattern of Indian Journal of Prosthodontic society (JIPS) for the year 2011-2015, the majority of articles are contributed by four authors 85 (26.32%).
3. The national contributions are maximum in the journal. Among the Indian states
4. Karnataka 62 (19.19 %) tops the list of contributors and among International contribution Indians are the top runner researchers in the present day scenario.
5. The maximum number of citations 2202 (33.43%) were published in Volume No 13 and minimum of 677 (10.28%) in Volume No 11. The journal publishes on an average of 20 citations per articles.

9. Conclusion

The journal has published 323 articles during the period of study. The maximum numbers of articles 106 (32.82%) were published in the year 2013. The present study reveals that the maximum numbers of contributors are joint authors with 297 (91.95) %, Also most of the contributions are from India with 91.33%, while foreign contributions are very less. The studies open that majority of the authors favored journals as the source of information providing the highest number of citations 5773 (87.64%). The maximum numbers of contributions have the length of 5 pages with 67 (20.74%).

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