

Indian Journal of Pharmaceutical Education and Research: A Scientometric Analysis

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ABSTRACT

Aim: Scientometric profile of Indian Journal of Pharmaceutical Research has been carried out in this study to highlight and identify the year-wise growth of publication and citation, authorship pattern, prolific organizations, countries, citation profile, international outreach, two year and five year impact factor trend during year 2007-2018. **Materials and Methods:** Web of science core collection database of Clarivate Analytics was used to retrieve the data using advance search feature. Search field IS = 0019-5464 was used to extract the data. Document type "Correction" was excluded from the study. Software Vosviewer visualizing scientific landscape version 1.6.11 were used for keyword and co-author network analysis. **Results:** During 2007-2018 there were 997 papers published in Indian Journal of Pharmaceutical Education and Research with total citation 1714 and *h*-index 14. KLE University is the most contributing organization in Indian Journal of Pharmaceutical Education and Research. 30.2% of the articles published in journal are from foreign countries led by Turkey with 93 publications. Among top 10 highly cited papers, 9 articles published in the year 2011. **Conclusion:** Indian Journal of Pharmaceutical Education and Research has world-wide coverage with 58 countries other than India and citation rate is showing increasing trend. Two year and Five year impact factor is all time high in year 2018 with 0.445 and 0.425 respectively. This paper highlights its significance in coverage of Pharmaceutical Sciences and allied areas hence useful for students, teachers, publisher and Librarian in formulating policies for journal selection.

Key words: IJPER, Citation profile, Scientometrics, Pharmaceutics, Journal evaluation.

INTRODUCTION

Scholarly journals are primary source to disseminate research work in public domain and play significant role in knowledge generation and storage of a particular research area. Selection of journal for publishing research finding for a researcher is a tedious task. There are various journals mushrooming day by day thus, evaluation of journals becomes important to inform and suggest stakeholders in a particular research area. Journals are broadly evaluated by quantitative metrics and subjective methods. There are various methods proposed to evaluate journals depending upon several parameters thus making it complex task to evaluate journals unbiased. Researchers are always in quest for information about journals in

their respective fields to publish their manuscript in journal of repute. Journal evaluation is also significant for librarians in order to subscribe best source of information to their libraries. Some parameters for high standard journals are its inclusion in major citation indexing and abstracting databases, double blind peer review system for evaluation of manuscript submitted for publication, recommendation by subject experts, high frequency of citation of published articles by similar journals in their respective fields, readership and usage statistics, rate of submission of articles and their acceptance. Less acceptance percentage are also considered as reputation of academic journals. Bibliometric analysis is one of the most

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common trend of evaluating journals, organizations and individual researchers reflecting their productivity and impact based on various scientometric indicators. A number of researchers have used bibliometric methods to analyse research journals. Pathak and Bharati¹ (2018) analysed Indian journal of traditional knowledge to explore the indigenous tribal knowledge and its impact. Nishy *et al.*² (2012) studied the visibility and impact of Indian Journal of Chemistry section B to investigate its visibility and subject area covered in the journal. Prathap³ (2014) explored bibliometric profile of journal current science. Dutt *et al.*⁴ (2003) investigated journal Scientometrics. Schubert⁵ (2002) analysed first 50 volumes of journal Scientometrics.

Indian Journal of Pharmaceutical Education and Research (IJPER) is the official publication of Association of Pharmaceuticals Teacher of India. IJPER was conceived in 1967 and published quarterly. It publishes research in Pharmaceutical, Pharmacy and allied areas including issues and debates in Pharmaceutical education. IJPER is indexed with Science Citation Index Expanded, a database of Clarivate Analytics from Institute of Scientific Information, Philadelphia, USA under the category Pharmacology Pharmacy and Education Scientific Disciplines since 2007. Elsevier Scimago journal ranking indexes IJPER under Pharmacology, Toxicology and Pharmaceutics and has been ranked 28 out of 74 journals in this category from India with SJR value of 0.169 in Q3. It ranks 14 out of 21 journals in Pharmaceutical sciences indexed by SCI-E among Indian journals. Its current impact factor is 0.425 (JCR 2018). It is indexed by all other reputed citation databases such as Scopus, ABC Chemistry, African Index Medicus, Connect Journals, Geneva Foundation for Medical Education and Research (GFMER), Google Scholar, New Jour-Georgetown University Library USA, Open J Gate, Pharmaceutical Sciences Open Access Resources (PSOAR), Science Central, Ulrichs web, Indian Science Abstracts, Medicinal and Aromatic Plants Abstracts (MAPA), HINARI etc.

The main objective of this paper is to investigate the productivity and impact of IJPER on various scientometric indicators viz. year wise publication growth, most contributing organizations, Authors, Global outreach, highly cited papers, authorship pattern, collaboration, cited and citing journals, Impact factor trend over the years etc.

MATERIALS AND METHODS

Data for this study was retrieved from Web of Science-core collection database of Clarivate Analytics (earlier Thomson Reuters) on 24th Sept 2019. Search was per-

formed by using advance search feature of the database for year 2007-2019. This yielded total 1115 documents in six documents types. Web of science provides analyze results feature. By using this feature documents published in year 2019 were excluded from current analysis. Results under Document type “correction” was also excluded from this study as it is repetition of earlier published work. Thus total 997 results obtained and selected for the study. Search technique is as under: IS=0019-5464 Refined by: [excluding] PUBLICATION YEARS: (2019) AND [excluding] DOCUMENT TYPES: (CORRECTION) Timespan: All years. Indexes: SCI-EXPANDED, SSCI, CPCI-S, CPCI-SSH, CCR-EXPANDED, IC.

Results were exported in excel file for further analysis. Authors and organization's name were checked manually and all the variants for same name were normalized to standard name. Software VosViewer visualizing scientific landscape version 1.6.11 were used to map the co-authorship and keyword cluster analysis. Cited journal, citing Journal and Impact factor statistics were downloaded from Incites Journal Citation reports. Indexing and abstracting information was retrieved from Journal's webpage (<http://www.ijper.org/content/about-journal.asp>).

RESULTS AND DISCUSSION

Indian Journal of Pharmaceutical Education and Research is published since 1967 and till 2018, 52 volumes of the journal has been published including supplementary issues on diversified area of pharmaceutical sciences. During 2007-2018 IJPER published 997 papers, minimum number of papers i.e. 52 was published in year 2010 and 2015 while year 2017 has highest number of published manuscript with 223. Figure 1 depicts the year-wise publication and citations in the epoch. The highest number of cumulative citations have been received by publications published in year 2011 with 435 cites which is 25.37% of total citations received, followed by year 2017 with 173 citations and year 2012 with 154 citations. IJPER received 1714 citations till the date of data collection that indicates that there are 132 average citations per year and 1.71 citations per item. Overall citations behavior indicates that it is increasing exponentially with 1 citation in year 2007 to 248 citations in year 2019. (Table 1). Citation behavior is in direct correlation with its impact factor. In year 2009 journal impact factor was 0.150 which jumped to 0.425 (JCR 2018). Its five year impact factor is also showing increasing trend (Figure 2). The 997 articles published in journal have been contributed by 2890 authors. analysis of authors reveal that there are

2388 authors which contributed one article to the journal, 342 authors contributed 2 number of articles, 79 authors contributed 3 number of articles, 46 authors contributed 4 number of articles, 12 authors contributed 5 and 6 number of articles each. Table 2 shows the list of most productive authors with publications 7 or more. Sanjay PN Pai is the most productive author with 10 publications in the journal, followed by Swarnlata Saraf and Nazim Sekeroglu with 9 publications each, Anand Panchakshari Gadad, Kerim Guney, Kamla Pathak and Adhikrao Vyankatrao Yadav contributed 8 articles each, Mahesh Attimarad, Anroop Balachandran Nair, Shailendra Saraf and P V Swamy contributed 7 articles each in IJPER during 2007-2018. Table 3 shows the authorship pattern of published literature in the journal. There are 11 different authorship patterns.

Three author publication is the most prevalent authorship pattern in the journal during period of study with 249 publications, followed by 4 author (211), 2 author (198). Highest number of author in a paper is 11. There are 47 publications with single author. Table 4 shows the global outreach of Indian Journal of Pharmaceutical Education and Research. Country-wise analysis reflects that there are 59 countries which contributed in the journal. In countries other than India, Turkey is leading the list with 93 publications followed by Malaysia, Republic of China and Saudi Arabia with 43, 27 and 25 publications respectively. Top 10 contributing countries include Iran, Serbia, Pakistan, Egypt and South Korea. Analysis of contributing organizations indicates that KLE University is the most prolific organization contributing in IJPER with 46 publications followed by

Table 1: Year wise Publication and Citation details.

Years	Records	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Total
2007	64	1	4	9	16	13	7	17	11	5	9	5	5	2	104
2008	70		1	6	8	15	12	16	12	13	12	9	11	5	120
2009	56			1	5	6	7	10	11	8	6	12	7	3	76
2010	52					12	22	29	34	26	25	13	26	14	201
2011	58					1	34	41	64	58	64	64	74	35	435
2012	56						2	13	26	23	21	30	28	11	154
2013	57								9	13	18	17	21	9	87
2014	60								4	8	25	24	27	19	107
2015	52									5	12	28	27	11	83
2016	120										4	35	65	44	148
2017	223											21	73	79	173
2018	129												10	16	26
Total	997	1	5	16	29	47	84	126	171	159	196	258	374	248	1714

Table 2: Most Prolific Authors.

Sl. No.	Author	No. of Publication
1.	Pai, Sanjay PN	10
2.	Saraf, Swarnlata	9
3.	Sekeroglu, Nazim	9
4.	Gadad, Anand Panchakshari	8
5.	Guney, Kerim	8
6.	Pathak, Kamla	8
7.	Yadav, Adhikrao Vyankatrao	8
8.	Attimarad, Mahesh	7
9.	Nair, Anroop Balachandran	7
10.	Saraf, Shailendra	7
11.	Swamy, P V	7

Table 3: Authorship Pattern in IJPER.

No of Authors	Publication
3	249
4	211
2	198
5	164
6	76
7	32
10	6
8	9
1	47
9	4
11	1

Sl. No.	Countries/Regions	Records	% age
1.	India	695	69.709
2.	Turkey	93	9.328
3.	Malaysia	43	4.313
4.	Peoples Republic of China	27	2.708
5.	Saudi Arabia	25	2.508
6.	Iran	17	1.705
7.	Serbia	13	1.304
8.	Pakistan	12	1.204
9.	Egypt	10	1.003
10.	South Korea	10	1.003

Sl. No.	IF (JCR 2018)	Journals	Citation
1.	223.679	CA-Cancer Journal for Clinicians	3
2.	70.67	New England Journal of Medicine	10
3.	59.102	Lancet	7
4.	57.618	Nature Review Drug Discovery	5
5.	51.848	Nature Review Cancer	4
6.	51.273	Jama-Journal of American Medical Association	3
7.	43.07	Nature	8
8.	41.037	Science	9
9.	36.216	Cell	5
10.	27.604	BMJ-British Medical Journal	4

Sl. No.	Organizations	Publication
1.	KLE University, Belgaum, Karnataka	46
2.	JSS College of Pharmacy, Ooty, Tamil Nadu	34
3.	Kastamonu University, Turkey	23
4.	Bharati Vidyapeeth, Pune, Maharashtra	21
5.	Ordu University, Turkey	18
6.	Govt. College of Pharmacy, Banglore	17
7.	HKE Society College of Pharmacy, Gulbarga, Karnataka	17
8.	Manipal College of Pharmaceutical Sciences, Manipal, Karnataka	17
9.	Universiti Teknologi Mara, Malaysia	17
10.	University of Belgrade, Serbia	14

Citation	Papers
0	483
1-5	450
06-10	44
11-20	13
21-30	5
31-70	2

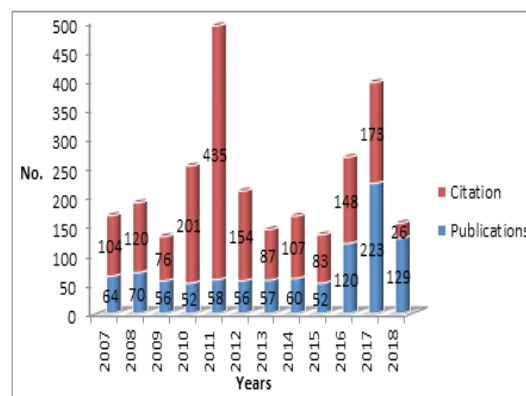


Figure 1: Publication and Citation trend.

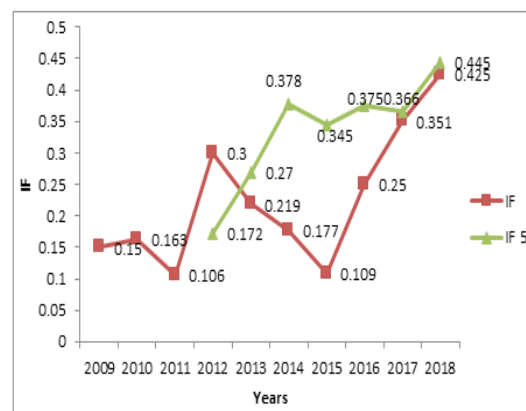


Figure 2: Impact Factor Trend of IJPER.

JSS College of Pharmacy with 34 publications. In the top 10 organizations four are from foreign countries. Kastamonu University is leading the list of organizations among foreign countries with 23 publications followed by Ordu University, Univ Tehnol Mara and Belgrade University with 18, 17 and 14 publications respectively

(Table 5). There are total 824 organizations which have contributed in this journal.

The co-authorship network analysis reveals that there are 8 cluster of co-authorship with 55 items and 138 links (Figure 3). Cluster 1 consists of 9 items, cluster 2,3 and 4 each with 8 items, cluster 5 and 6 consists 6 item

each and cluster 7 and 8 comprising of 5 items. Similarly Co-occurrence analysis of keywords depicts that there are total 3288 author keywords with antioxidant as most frequent keywords with 28 occurrences. The keyword network distributed in 82 clusters with 2569 items and 7734 links. Cluster 1 consists of 69 items followed cluster 2 with 63 items, cluster 3 and 4 each with 60 items. (Figure 4)

Out of 997 articles published in Indian Journal of Pharmaceutical Education and Research, 514 articles have received citation. Highest number of citations received is 68. There are two articles having citation between 31-70 5 articles have received citations between 21-30, 13 articles have citation range 11-20, 44 articles have citations between 6-10 and 450 articles have citations between 1-5 (Table 6). Total 3604 number of journals has been cited by IJPER. Table 7 enlists high impact

Table 8: High Impact cited Journal in IJPER.

Sl. No.	IF (JCR 2018)	Journals	Citation
1.	8.243	Advances in Colloid and Interface Science	2
2.	5.839	Food Hydrocolloids	2
3.	4.784	International Journal of Biological Macromolecules	7
4.	4.773	Pharmaceutics	3
5.	4.471	International Journal of Nanomedicine	4
6.	4.213	International Journal of Pharmaceutics	2
7.	4.191	Industrial Crops and Products	4
8.	4.011	Scientific Reports-UK	2

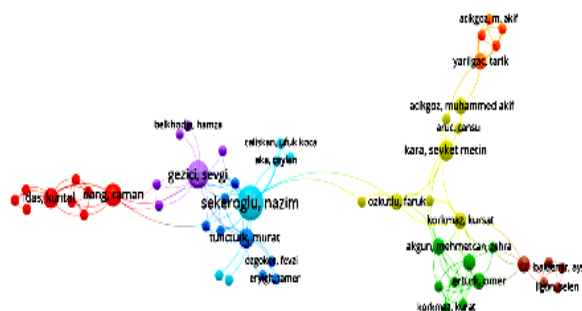


Figure 3: Co-Authorship Network Mapping.

Table 9: Highly Cited Publications of IJPER.

Sl. No.	Title	Authors	Vol. and Issue	Year	Page	Cites
1.	Recent Investigations of Plant Based Natural Gums, Mucilages and Resins in Novel Drug Delivery Systems	Avachat, Amelia M.; Dash, Rakesh R.; Shrotriya, Shilpa N.	45(1)	2011	86-99	68
2.	Polymeric Micelles: General Considerations and their Applications	Mourya, V. K.; Inamdar, Nazma; Nawale, R. B.; Kulkthe, S. S.	45(2)	2011	128-138	47
3.	Evaluation of the Kinetics and Mechanism of Drug Release from Econazole nitrate Nanosponge Loaded Carbapol Hydrogel	Sharma, Renuka; Walker, Roderick B.; Pathak, Kamla	45(1)	2011	25-31	30
4.	Stability Aspects of Liposomes	Yadav, A., V; Murthy, M. S.; Shete, A. S.; Sakhare, Sfurti	45(4)	2011	402-413	29
5.	Formulation and Characterization of Rapidly Dissolving Films of Cetirizine hydrochloride using Pullulan as a Film Forming Agent	Mishra, Renuka; Amin, Avani	45(1)	2011	71-77	28
6.	Microemulsions For Topical Use-A Review	Grampurohit, Nirmala; Ravikumar, Padmini; Mallya, Rashmi	45(1)	2011	100-107	25
7.	Formulation and Evaluation of Topical Liposomal Gel for Fluconazole	Mitkari, B. V.; Korde, S. A.; Mahadik, K. R.; Kokare, C. R.	44(4)	2010	324-333	24
8.	Potential of Novel Drug Delivery Systems for Herbal Drugs	Goyal, Ashwani; Kumar, Sandeep; Nagpal, Manju; Singh, Inderbir; Arora, Sandeep	45(3)	2011	225-235	18
9.	Formulation and Evaluation of pH-triggered <i>in situ</i> Gelling System of Levofloxacin	Mohanambal, E.; Arun, K.; Sathali, Abdul Hasan A.	45(1)	2011	58-64	18
10.	Radical Scavenging and Antioxidant Activity of Ethanolic Extract of <i>Mollugo nudicaulis</i> by <i>in vitro</i> Assays	Rajamanikandan, S.; Sindhu, T.; Durgapriya, D.; Sophia, D.; Ragavendran, P.; Gopalakrishnan, V. K.	45(4)	2011	310-316	17

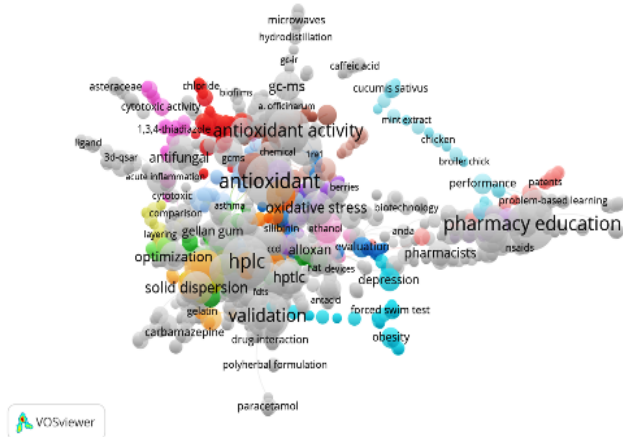


Figure 4: Keyword Network in IJPER.

citing journals. *CA- Cancer Journal of Clinicians* having impact factor 223.67 have been cited twice in this journal, followed by *New England Journal of Medicine* (70.67), *Lancet* (59.102), *Nature Review Drug Discovery* (57.618), *Nature Review Cancer* (51.848), *JAMA-Journal of American Medical Association* (51.273), *Nature* (43.07) and *Science* (41.037). There are total 69 journals in which IJPER has been cited. Among high impact journals in which published article of IJPER has been cited includes *Advanced Colloid Interface* (8.243), *Food hydrocolloid* (5.839), *International Journal of Biological Macromolecule* (4.784), *Pharmaceutics* (4.773) (Table 8).

Table 9 highlights the top 10 highly cited articles in IJPER. Out of 10 top highly cited article 9 have been published in year 2011 and one article published in 2010. This reveals that article published in year is the most impactful. The most cited work is entitled *Recent Investigations of Plant Based Natural Gums, Mucilages and Resins in Novel Drug Delivery Systems by Avachat et al.* published in 2011 with 68 citations followed by *Polymeric Micelles: General Considerations and their Applications* by Mourya et al. with 47 citation, *Evaluation of the Kinetics and Mechanism of Drug Release from Econazole nitrate Nanosponge Loaded Carbopol Hydrogel* by Sharma et al. and *Stability Aspects of Liposomes* by Yadav et al.

CONCLUSION

It can be concluded that Indian Journal of Pharmaceutical Education and Research is one of the significant journal in the field of Pharmaceutical research. This study will be useful to teachers, students, Publishers and Librarians in evaluating research and status of the journal. This may also be useful for policy and planning to focus on pharmaceutical research and explore the unidentified and uncovered area in Pharmaceutical Sciences and Pharmacy.

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CONFLICT OF INTEREST

The author declare no conflict of interest.

ABBREVIATIONS

IJPER: Indian Journal of Pharmaceutical Education and Research; **SCI-E:** Science citation Index – Expanded; **JCR:** Journal Citation Report; **IF:** Impact Factor.

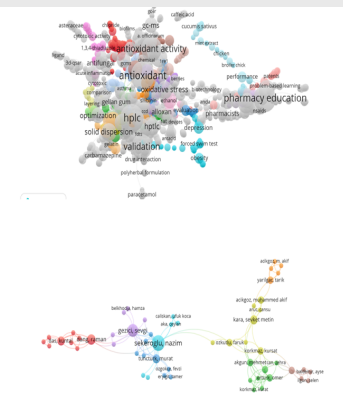
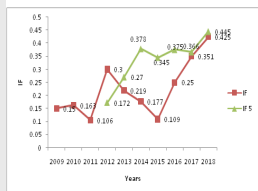
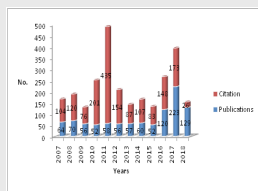
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SUMMARY

Pictorial abstract depicts the publication and citations during 2007-2018 as well as 2-year and five year impact factor trend of Indian Journal of Pharmaceutical Education and Research. In addition it also highlights the cluster of author keyword network and co-authorship network.

PICTORIAL ABSTRACT



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