

LITERATURE CITATION BY MEDICAL RESEARCHERS: A CITATION ANALYSIS OF THREE PAKISTANI MEDICAL JOURNALS

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ABSTRACT

Objectives: To analyze the citations of core Pakistani journals in the field of medical sciences; secondly it will provide an opportunity to provide access to the pattern of citations.

Methodology: Three esteemed medical journals were selected for examination; namely Journal of the College of Physicians and Surgeons Pakistan (JCPSP), Pakistan Heart Journal (PHJ) and Pakistan Journal of Surgeons (PJS). It was decided to cover all the volumes and issues published in the last ten years (from 2007 to 2016). The content-wise analysis of citations included: authorship pattern of citation, citations per article, distribution of citations according to bibliographic forms, age of cited documents and a list of top most cited journals.

Results: Pakistani journals were more frequently cited by these three reputed journals of medical field. Journal of Ayub Medical College (JAMC) was the most cited journal. In PHJ, most (27.71%) citations were three authored followed by four authored citations in JCPSP (27.17%). The frequency of citations up to 05 years old were PJS (33.34%), PHJ (30.28%) and JCPSP (29.99%). Furthermore, 90% citations were covered from journal sources.

Conclusion: Majority of the authors cited Pakistani Journals, JAMC being the most cited journal. Most of the citations were covered from journal sources.

Key Words: Citation analysis, Medical journals, Bibliometric analysis

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INTRODUCTION

Citations analysis is pool of published knowledge from where the authors regain established ideas and try to generate new knowledge or ideas¹. Citation analysis means the assessment of various formats of scholarly publications². The application of citation analysis is a common practice in many disciplines of natural and social science. This technique has been used for ranking of cited sources, their age of publication and type of cited documents. In our country, the research on this aspect of bibliometric analysis is not a common trend. There is scarcity of literature on this important subject. In Pakistan, there are thousands of doctors and other research scholars in the field of medical sciences³. To disseminate the research findings of medical researchers, there are a good number of journals in this field in Pakistan⁴; among them the principal author selected three reputed journals for the citation analysis i.e. JCPSP, PHJ and PJS. Furthermore, the researcher has easy access to these journals due to regular subscriber of these journals.

The journal of the College of Physician and Surgeons Pakistan (JCPSP) is a biomedical research journal. The journal was initially launched in 1991 and its frequency was quarterly. The main objective of this research journal is to promote and disseminate medical research of the postgraduate trainees and fellows of medical field within the country and abroad. The Pakistan Journal of Surgery (PJS) is published from Hamdard University Hospital, Taj Medical Complex, Karachi. The frequency of this journal is quarterly. The main aim of this research journal is to provide a global forum to the research scholar community from the range of academic disciplines and to encourage debates, controversy and reflection. The Pakistan Heart Journal (PHJ) is the official journal of Pakistan cardiac society. Pakistan Heart journal is 44 years old. The frequency of Pakistan Heart Journal is quarterly. The main aims of PHJ are to promote high quality research in the field of cardiology and increase the interest of cardiology professionals in different field of cardiology. The journal is available for free on its web to facilitate the researchers. All of the above journals are peer-reviewed.

The main objective of this research paper was to measure citation analysis of three above mentioned medical Journals. However, the specific objectives of the study are as under: period-wise number of citations per article; authorship pattern of citations; distribution of citations according to bibliographic form; age of cited documents; circulation of monographic citations of local as well as international publications; to enlist the most cited journals; and to compare the citation of three journals under the study.

Citation analysis can be used to assess the aptitude of researchers towards the learning resources they usually read and cite during the conduction of their research. It will also serve as a helping tool for the editors of the said journals for the improvement of their scholarly publications. This analysis will be fruitful for the researchers to cite latest literature as this study will report the age of cited literature along with bibliographic form of cited documents. The editors of these journals will revisit their citation policies as per recommendations of the report.

METHODOLOGY

Three esteemed journals were selected for examination, the common factor is that all the three journal are medical journals i.e. JCPSP, PHJ and PJS. It was decided to cover all the volumes published in the last ten years. Therefore, all the issues published during the period of 2007 to 2016 were selected for examination. The researchers analyze all the original published articles, review articles and case reports. Editorials, short commu-

nications and letters were excluded from the study. The researcher took the data on a form called bibliometric form and then transferred it to the SPSS for proper tabulation. Authorship, age of cited documents, nature of cited documents, geographical status of monographs were the major areas for the desired data. The age of citations was computed as: age of citations = year of publication of citing article - cited documents. For the evaluation of the most cited journal, the author analyzed the journal citations to establish a list of the journals which were most cited. The ranked list of the top ten most frequently cited journals in the entire three journals under study was reported.

RESULTS

Ten volumes of the JCPSP included 1986 articles having total 28526 citations; the citations of these articles were between 07 and 98 per article. The average score of citations analysis for each article was 14.36%. Similarly, ten volumes of the PHJ included 254 articles having 5020 citations, the range of the citation were between 5 and 74 per article. This shows that 19.76% of score per article of this journal. The ten volumes of PJS included 635 articles having 12072 citations. Thus the mean score of citation for each article was 19.01%. (Table 1)

The authorship pattern of citations showed that 7750 (27.17%) citations were four authored in JCPSP; in PHJ the dominant citation was more than five authored 1546 (30.74%), whereas in PJS, the most dominant citations were three authored 3345 (27.71%). (Table 2)

Table 1: Citations per article

Year	JCPSP			PHJ			PJS		
	Articles	Citations	Cita-tions/ Article	Articles	Citations	Cita-tions/ Article	Articles	Cita-tions	Cita-tions/ Article
2007	225	2105	9.35	10	216	21.6	54	1022	18.92
2008	205	2742	13.37	12	240	20.00	67	1233	18.40
2009	160	1903	11.89	14	213	15.21	67	1379	20.58
2010	172	3010	17.5	11	216	19.64	71	1164	16.39
2011	207	2356	11.38	14	270	19.28	63	1341	21.28
2012	211	2119	10.04	44	906	20.59	64	1239	19.36
2013	225	2949	13.10	44	908	20.64	62	1179	19.01
2014	192	3977	20.71	40	702	17.55	61	1138	18.65
2015	195	4250	21.79	29	605	20.86	65	1169	17.98
2016	194	3115	16.06	36	744	20.67	61	1208	19.80
Total	1986	28526	14.36	254	5020	19.76	635	12072	19.01

Table 2: Authorship pattern of citations

No. of Authors	JCPSP		PHJ		PJS	
	Citations	%age	Citations	%age	Citations	%age
One Author	2148	07.53	331	06.60	406	03.36
Two	3720	13.04	308	06.13	1082	08.97
Three	6214	21.78	1086	21.63	3345	27.71
Four	7750	27.17	752	14.98	3108	25.74
Five	4464	15.65	1000	19.92	2204	18.26
Five+	4230	14.83	1543	30.74	1927	15.96
Total	28526	100	5020	100	12072	100

Table 3: Distribution of citations according to bibliographic forms (JCPSP)

Sub-ject	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total	%age
Journal	1905	2473	1742	2822	2100	1871	2673	3656	4111	3101	26454	92.74
Book	105	148	76	94	121	129	142	175	17	06	1013	03.55
Report	14	11	07	17	32	10	22	51	00	00	164	00.57
Thesis	04	08	01	02	15	01	13	20	00	01	65	00.23
URL	70	87	68	56	69	94	85	50	109	05	693	02.43
Other	07	15	09	19	19	14	14	25	13	02	137	00.48
Total	4112	4750	3912	5020	4367	4131	4962	5991	6265	5131	28526	100

Table 4: Distribution of citations according to bibliographic forms (PJS)

Sub-ject	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total	%age
Journal	920	1138	1252	1093	1263	1107	1121	1048	1050	1052	11044	91.48
Book	77	62	80	39	33	43	33	27	55	20	469	03.89
Report	00	00	03	04	00	01	00	10	03	14	35	00.29
Thesis	00	00	03	05	00	03	00	15	07	13	46	00.38
URL	06	21	25	10	13	18	17	10	38	70	228	01.89
Other	19	12	16	13	32	67	08	28	16	39	250	02.07
Total	3029	3241	3388	3174	3352	3251	3192	3152	3184	3224	12072	100

Table 5: Distribution of citations according to bibliographic forms (PHJ)

Sub-ject	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total	%age
Journal	201	230	205	206	260	866	861	652	585	732	4798	95.58
Book	05	04	04	03	04	23	18	35	04	06	106	02.11
Report	04	00	02	03	01	07	15	08	08	06	54	01.08
Thesis	00	00	00	00	00	00	00	00	00	00	00	00.00
URL	05	03	00	01	03	05	06	05	07	00	35	00.69
Other	01	03	02	03	02	05	08	02	01	00	27	00.54
Total	2223	2248	2222	2226	2281	2918	2921	2716	2620	2760	5020	100

Table 6: Age of citation

Age of Citation	JCPSP		PHJ		PJS	
	Number	%age	Number	%age	Number	%age
Before 1990	850	2.98	130	2.59	357	2.96
1991-1995	2360	8.27	394	7.85	587	4.86
1996-2000	4298	15.07	857	17.07	1104	9.14
2001-2005	5128	17.98	980	19.52	2406	19.93
2006-2010	7334	25.71	1139	22.69	3594	29.77
2011-2016	8556	29.99	1520	30.28	4024	33.34
Total	28526	100	5020	100	12072	100

Table 3 contains various kinds of sources cited by contributors of the scholarly publications for the JSPSP whereas Table 4 deals PHJ and Table 5 covers PJS. The distribution of references amongst six general methods of sources (Journals, Books, Reports, URL, Theses and others) is given in these tables. In the JCPSP, 92.74% of the total citations were from journals, in PJS (91.48%) while in PHJ it was (95.58%). The age of citations of five years were 29.99% in JCPSP, 30.28% in PHJ and 33.34% in PJS. (Table 6) All the three journals prefer to cite the national journals, and in this context, the Journal of Ayub Medical College was on the top. The top 06 journals in all the three journal list were national (Pakistani) journals including, Journal of Postgraduate Medical Institute (JPMI), JCPSP, PJS, Khyber Medical University Journal (KMUJ) and PHJ.

DISCUSSION

In case of PHJ and PJS the average score of citations per article does not shows a significant variation among the two journals, while in case of JCPSP they

show some difference among these three. The earlier citation study of some Pakistani journals found that the mean score of citations per article was 17.88¹ and 13.24². The result of our study was similar. However, many of the research-based disciplines' average citation rates vary significantly^{5,6}. It was noted that in the entire three journals the minimum citations were single authored i.e. 2148 (07.53%), 331 (06.60%), and 406 (03.36%) in JCPSP, PHJ and PJS respectively. The previous researchers showed that citations with single authors usually dominate^{1,7}. According to Sharif et al¹ 46.9% citations were reported having age five years. The study of foreign journals of the same nature reflect that more than 50% of the citations are from journals because the book as a citation source is on decline in most of the disciplines⁸.

CONCLUSION

Citation analysis of the journals covered in this research, showed that Journal of Ayub Medical College was the most cited journal as compared to others. The analysis showed that the first six journals mostly cited

were Pakistani journals. Majority of the citations are from journal sources. About one third of the total citations in all 03 journals were up to five years old.

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CONTRIBUTORS

SU conceived the idea, planned the study and drafted the manuscript. SUJ, SS and NIB helped acquisition of data, did statistical analysis and critically revised the manuscript. All authors contributed significantly to the submitted manuscript.