

## A statistical analysis of Pakistan Journal of Surgery: A bibliometric lens from 2007-2016

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### Abstract

**Objective:** To conduct a Bibliometric analysis of the Original articles published in the Pakistan journal of Surgery

**Methods:** The study was conducted in Postgraduate Medical Institute (PGMI) Peshawar and covered all original articles published in the Pakistan Journal of Surgery from 2007 and 2016. The articles were downloaded from the Journal website and Bibliometric parameters were analyzed.

**Results:** A total number of 597 articles were found in regular issues of the Journal, four-author contributions ranked the highest with 160(28.57%); 1219(57.77%) authors. Majority of the contributors belong to Sindh, Pakistan. Surgery was found to be the most popular medical subject. The number of articles published per year ranges between 24 and 71; most of the articles 281(47.15%) have 11–20 citations. The male authors 1769(79.29%) contribution were almost four times greater than female authors 462(20.71).

**Conclusion:** The number of papers published in Pakistan Journal of Surgery per issue increased from 2007 to 2016 and the main region in terms of contribution was Sindh.

**Keywords:** PJS Bibliometric, PJS570, geographical distributions, citation pattern, statistical lens, bibliometric study, medical journal bibliometric study.

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### Introduction:

Bibliometric is a quantitative approach towards the documentary flow of information. The main theme behind this attribute is to analyze the bibliographic data of documents. It is used to sum up the scholarly contributions of research documents especially journals and scholars in specific areas and in certain geographical zones.<sup>1</sup> Bibliometric is a tool to examine the developments made in various areas of science and technology and is considered a joint instrument for systematic scrutiny.<sup>2</sup> Reitz presented the term 'Bibliometric' in the following words:

"The use of mathematical and statistical methods to study and identify patterns in the usage of materials and services within a library or to

analyze the historical development of a specific body of literature, especially its authorship, publication and use, prior to the mid-20th century, the quantitative study of bibliographic data and usage was known as statistical Bibliography"<sup>3</sup>

The word "Bibliometric" was coined by Pritchard in 1969.<sup>4</sup> The first example of this nature of study was an analysis of the literature of comparative anatomy from 1543 to 1860, conducted by counting books and journal titles, and grouping them by countries of origin and periods. The second work was carried out by Hulme,<sup>5</sup> this study was related to scrutiny of history of science. Another contribution in this field was made by Gross and Gross in 1927<sup>6</sup> they worked on the literature of chemical society. In

Pakistan, Bibliometric is an emerging area of research in the field of LIS (Library and Information Sciences). Many eminent library experts worked on this important segment.<sup>7</sup> They have addressed Bibliometric analysis of various local and international journals belonging to various disciplines. Work has also been carried out on research productivity in the field of LIS and bio-Bibliometric. The present work is an endeavor to conduct a study for the statistical analysis of Higher Education Commission (HEC) recognized esteemed Journal.

“The Pakistan Journal of Surgery” published by Society of Surgeons Pakistan, and every quarterly the journal is been issued from Karachi. Bibliometric study being a portrait of the journal, it will serve as an instrument for the promotion, quality and standardization of The Pakistan Journal of Surgery. The frequency of this journal is quarterly. The main aim of the 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 International Standard Serial Number is (ISSN) 0258-8552. The journal editorial board consists of local and foreign scholars.

#### Objectives

- To determine year-wise distributions of articles
- To study the authorship pattern
- To analyze the gender-wise distribution of authors
- To study the length of articles
- To study the citation pattern of articles
- To study the country-wise contribution

#### Material and Method:

Before getting started, consent of the chief editor of the Pakistan Journal of Surgery was acquired through electronic correspondence. The main purpose behind the prior approval of the editor

was to know whether this type of work has been done on this journal or in pipeline in past. In order to examine the characteristics and trends of articles published in PJS, all the original articles, review articles and case reports published in Journal from 2007 to 2016 were analyzed. This study excluded editorials, short communications and letters to the editors. From each article the name of first author, geographical location and institutional affiliation of the author was taken as provided by the authors themselves. Number of authors, number of references, subject of the articles, gender of the authors and types of references were recorded.

Pakistan was geographically divided into four regions: Punjab, Sindh, KPK and Baluchistan. Three issues Volume 23 Issue 2 February 2007, Volume 30 Issue 4 April 2014 and Volume 32 Issue 2 February 2016 were not indexed in the online version of The Pakistan Journal of Surgery. The extracted data was first entered into Excel spread sheets using built-in MS-Excel functions. The data was filtered and then fed into the Software Package for Social Science (SPSS) for further refinement. The results derived were discussed and recommendations were made on the basis of the findings. Finally, conclusions were drawn for the sake of brevity.

#### Results:

A total of 597 articles (Original Articles and Case Reports) were published in PJS within 10 years (2007–2016). The items that were not selected included: editorials, letters to editors, and general section publications. Quantitative growth of articles by volume and year (Table 1) summarizes the total number of articles (597) published across 10 years (2007–2016) of the study. The number of articles published varied each year. The distribution of articles by year shows that in 2010 highest number of articles 71 were published with 11.89% followed by 2009 with 69 (11.56%) articles. The highest numbers of articles published during the period under study were 71 and the lowest numbers of articles were 24. Table 2 reveals the authorship pattern of the journal articles. Four-author contributions amounted to 160 (28.57%) ar-

Table 1: Number of Article per year

Year	Issue No. 01	Issue No. 02	Issue No. 03	Issue No. 04	Total	% age
2007	17	00	19	18	24	04.02
2008	20	17	17	14	68	11.39
2009	16	14	18	21	69	11.56
2010	20	20	14	17	71	11.89
2011	15	15	16	17	63	10.55
2012	20	17	16	14	67	11.22
2013	17	18	10	17	62	10.38
2014	22	20	19	00	61	10.22
2015	21	18	17	12	68	11.40
2016	13	00	15	16	44	07.37
Total	181	139	161	146	597	100

Table 2: Authorship Pattern

Year	07	08	09	10	11	12	13	14	15	16	Total	%
Single Author	08	03	02	02	03	01	02	02	02	01	26	4.64
Two Authors	09	07	05	07	08	06	03	04	06	04	59	10.54
Three Authors	12	21	17	23	17	12	15	15	13	11	156	27.86
Four Authors	13	20	22	18	18	16	14	18	12	09	160	28.57
Five Authors	05	10	00	10	10	14	11	10	09	09	88	15.71
Six Authors	04	03	00	06	05	07	07	03	10	06	51	9.11
More than six	02	00	00	02	02	05	02	02	03	02	20	3.57
Total	53	64	46	68	63	61	54	54	55	42	560	100

Table 3: Contribution of Authors Gender Wise

Year	Male	Female	Total	Male % age	Female % age	Total % age
2007	149	26	175	06.68	1.17	7.85
2008	193	49	242	08.65	2.20	10.85
2009	57	23	80	02.55	1.03	3.58
2010	228	51	279	10.22	2.29	12.51
2011	181	54	235	08.11	2.42	10.53
2012	213	54	267	09.55	2.42	11.97
2013	205	63	268	09.19	2.82	12.01
2014	184	44	228	08.25	1.97	10.22
2015	224	52	276	10.04	2.33	12.37
2016	135	46	181	06.05	2.06	8.11
Total	1769	462	2231	79.29	20.71	100

Table 4: Geographical Affiliation/Contribution of Authors

Area	07	08	09	10	11	12	13	14	15	16	Total	%
Punjab	07	07	05	04	05	10	02	05	31	29	105	4.98
KPK	35	17	41	82	56	76	73	39	130	45	594	28.15
Sindh	135	142	69	171	147	157	141	31	143	83	1219	57.77
Balochistan	02	03	00	01	02	00	06	00	00	00	14	0.66
International	04	04	00	20	23	33	26	17	42	09	178	8.44
Total	183	173	115	278	233	276	248	92	346	166	2110	100

articles and ranked the highest of all the categories.

Three-author contributions amounted to 156 (27.86%) and five-author contributions amounted to 88 (15.71%), attaining second and third ranking, respectively. Articles written by more than six-authors marked the lowest with a total of 20 (3.57%) articles. The male authors were almost four-time greater than female authors.

Regarding geographical affiliation of authors, two categories namely national and international zones were made. Contributions from Pakistan were 1932 (91.56%) in which major contribution was of Sindh 1219(57.77%) followed by Punjab 594(28.15%), KPK 105 (4.98%) and Balochistan 14 (00.66%)(Table-4). Contributions from other countries were 178(8.44%). In terms of length, 220(36.07%) articles were 4 pages in length followed by 156 (25.57%) of 5 pages and 123(20.16%) of 3 pages table 5. Articles of 6 pages were 58(9.51%) and more than 6 pages 29(4.76%). Authors who preferred journals for citation were numbered 11,041(92.52%) followed by those who cited books 478(4.01%) and URL 145(1.22%) (Table-6). Among the other sources of information cited, like newspapers, thesis/dissertation etc., the Internet was on top with 269(2.25%) citations. Table 7 shows articles with 11-20 references were 281(47.15%), 21-30 references 220(36.91%) and 5-10 reference 58(9.73%). Articles containing 31-40 references were 33(5.54%) and over 40 references 04(0.67%).

**Discussion:**

A recent study evaluated International Journal of Medical and Health sciences (IJMHS) and revealed that the journal intends to build upon the observed momentum by strengthening international relationships, supporting new research collaborations.<sup>8</sup> Similarly, research publications have been analysed on Positron Emission Tomography (PET) from 2002 to 2012 with the result that a yearly considerable increase was noticed from 547 (2002) to 986 (2007), and 1838 (2012).<sup>9</sup> A study on toxicology research productivity in Middle Eastern Arab countries during a 10-year period (2003-2012) explored present data, showing a promising rise and a good start

Table 5: Length of Article

Pages	07	08	09	10	11	12	13	14	15	16	Total	%
02 pages	00	04	00	06	03	03	01	02	05	00	24	3.93
03 pages	21	25	17	09	08	09	10	11	09	04	123	20.16
04 pages	18	20	30	21	19	27	23	19	28	15	220	36.07
05 pages	11	15	21	25	18	16	13	12	13	12	156	25.57
06 pages	02	01	00	08	11	04	07	08	07	10	58	9.51
>06 Pages	02	02	01	03	10	02	01	04	02	02	29	4.76
Total											610	100

Table 6: Citation Pattern

Sub- ject	07	08	09	10	11	12	13	14	15	16	Total	%
Jour- nal	901	1138	1232	1343	1263	1111	1121	1048	1050	834	11041	92.52
Book	77	52	80	58	33	43	33	27	55	20	478	4.01
URL	06	15	05	10	13	18	17	10	38	13	145	1.22
Other	19	11	16	33	32	67	08	28	16	39	269	2.25
Total	1003	1216	1333	1444	1341	1239	1179	1113	1159	906	11933	100

Table 7: Reference Per Article

No. of Refer- ence	07	08	09	10	11	12	13	14	15	16	Total	%
5-10	07	09	05	07	06	09	02	05	05	03	58	9.73
11-20	25	35	34	31	29	24	27	25	31	20	281	47.15
21-30	19	18	26	20	19	32	26	22	19	19	220	36.91
31-40	02	05	03	06	08	01	02	03	03	00	33	5.54
40+	01	00	00	01	00	00	00	01	01	00	04	0.67
Total											596	100

for toxicology research activity in toxicology journals from the Arab world.<sup>10</sup> Besides, there have been noted bibliometric studies conducted in the field of Medical Sciences.<sup>11</sup> With special reference to Pakistan, only a few Bibliometric studies have been conducted so far to explore the significance of medical journals. One of the noted studies evaluated the Journal of Ayub Medical College from 1997 to 2006, concluding that the volume and number of articles in the JAMC had increased. Original articles are the main type of papers for this journal, and papers by authors from Pakistan make up the largest proportion.<sup>12</sup> A study was conducted to evaluate the journal of college of Physician and Surgeon Pakistan from 2010 to 2014, concluding that the number of articles in the JCPSP increased in the recent years. The total number of articles published during the mentioned 5 years was 1106 including 721 original articles and 385 case reports. Female contribution was less as compared to male. The province of Punjab was far ahead while contributing in this re-

puted Journal. The trend of joint authorship was at high level. It was documented that journals were the more cited source by researchers.<sup>13</sup> Another study was conducted to rate Pakistani medical journals using the principles of citation analysis. It revealed that the JPMA remained on the top in all three rankings, while the Journal of College of Physicians and Surgeons-Pakistan attained second position in the ranking based on the total number of citations.<sup>11</sup> One study evaluated the significance of Rawal Medical Journal and revealed that there were 437 citations in 32 research articles in the two issues of Volume 31 from January to December 2006. Majority of contributions were by Pakistani authors; author and journal self-citations were low indicating a high Impact factor. More research activities and better literature search are required to improve journal quality.<sup>14</sup> Besides the subject of Medical Science, various Bibliometric studies have also been conducted in other subjects on different national and international journals. The findings of each study reveal interesting facts on authorship pattern, number of citations per article, increase in the output of each journal. For example, one revealed that most of the papers were single-author contribution and, being a Pakistani-origin journal, majority of the authors belonged to Pakistan. Authors from 12 foreign countries also contributed in this journal as found in the study of 11 volumes.<sup>15</sup>

### Conclusion:

The study has depicted a finicky portrait of The Pakistan Journal of Surgery. This venerated journal has maintained its esteemed status in the academic circle by publishing quality literature due to the standard editorial policy. The publications of this journal are highly appreciated by researchers. The Pakistan Journal of Surgery is proved to be a leading journal publishing quality medical related research papers. Original articles are the main type of papers for this journal, and papers by authors from Pakistan make up the largest proportion. It can also be concluded that the publication is open for all subjects of medical sciences. The study reveals that majority of the authors have preferred journals as a source



of information followed by books. The contributors of Sindh have played a dominant role by publishing more research articles as compared to the rest of the world. Bibliometric studies of this nature can help identify citation behavior trends, author productivity can help identify possible problems, such as the need to encourage authors to cite their own local literature as well as the international literature, which would help to increase the authority of national medical journals. It is expected that The Pakistan Journal of Surgery will further grow its stature in the days ahead.

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**Role and contribution of authors:**

Saeed Ullah, Assistant Librarian, collected the data and references and wrote the initial writeup

Hafiz Nafees Ahmad, Assistant Librarian, helped in collecting the references and helped in writing the discussion and results.

Saeed Ullah Jan, Assistant Professor, critically analyze the article and make the necessary changes

Tahir Jan, Assistant Librarian, helped in collecting the data and references and helped the first author in writing the discussion.

Sabir Shah, BS Student(Microbiology), helped in collecting the data and references.

Najma Iqbal Butt, Lecturer in Islamiat, also helped in collecting the references and

helped in statistical analysis

Muhammad Yahya Jan, Assistant Librarian, helped in writing the discussion, result and conclusion.

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