

Bibliometric analysis of the Journal of College of Physicians and Surgeons Pakistan (JCPSP) from 2019-2023

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⁴ Enhanced the manuscript by addressing the insightful critique

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A B S T R A C T

Introduction: The research critically examines the bibliometric parameters of the Journal of the College of Physicians and Surgeons Pakistan (JCPSP) from 2019 to 2023. Journals are one of the most important means of popularizing scientific knowledge in the medical arena, among other fields. The bibliometric study analyzed the growth and impact of the Journal of College of Physicians and Surgeons Pakistan (JCPSP) from 2019 to 2023.

Methods: The study retrieved bibliographic data of JCPSP documents from the Web of Science (2019-2023) to analyze publication growth, citations, top authors, organizations, countries, keywords, and most-cited articles, using Microsoft Excel and VOSviewer software for data evaluation.

Results: A total of 2,082 documents were studied, averaging 1.76 citations per document. A growing trend was observed, with 2022 being the most productive year. Three-fourths of the documents were original research articles. Sadaf Sheikh was the most prolific author with 20 documents. Aga Khan University contributed the most, followed by the University of Health Sciences, Turkey. Authors from 44 countries contributed, with Pakistani authors accounting for 42% (871 articles), followed by Turkey (658) and China (376). COVID-19 and mortality were the most common keywords. The top 10 most-cited articles received 253 citations, averaging 25.3 per article.

Conclusion: JCPSP is one of the leading journals of Pakistan in medical sciences. Overseas authors have contributed about 58% of the documents, and international authors produced the most-cited articles. COVID-19 was found to be the most occurred keyword.

Keywords: Bibliometric; Journal of College of Physicians and Surgeons Pakistan; Research Productivity; Medical Research; Citation Analysis

Introduction

Journals are the widely used channels for distributing scientific communication to the scholarly community.^{1,2} Journals publish original research with unique findings, new theories and techniques, and the most recent advances in the field.² In the rapidly evolving field of medical science, academic journals play a crucial role in disseminating research findings, fostering academic discourse, and advancing clinical practice.^{3,4} A bibliometric analysis of a single journal specified the quality,

development, and publication growth in any field of study, in a country or region.⁵ Alan Prichard devised the term bibliometric in 1969, and it rose to fame in the 1980s.^{6,7} In bibliometric studies, we analyze the arrangement, categorization, and quantitative evaluation of the publication pattern of macro and micro levels, together with the authorships associated with them, using statistical and mathematical calculations.⁸ A bibliometric evaluation of a collection of literature recognizes the contributions made

by individuals and institutions engaged in the research process. It also identifies areas that require more research, which offers valuable guidance for subsequent research.⁹ It highlights an institution's research productivity and indicates a publication outcome in a specific field of knowledge.¹⁰ Bibliometrics is the key component of the Library and Information Science (LIS) profession, and LIS professionals have conducted several bibliometric studies and they have collaborated with scholars in various fields.¹¹ The Journal of the College of Physicians and Surgeons Pakistan (JCPSP) is a prominent platform that contributes significantly to medical literature, particularly within Pakistan and the broader region.

JCPSP is an open-access, peer-reviewed journal that shares the latest in medical diagnosis and treatment. It publishes original research, reviews, commentaries, and updates on new technologies, adhering to ICMJE guidelines and undergoing rigorous peer review. The journal is indexed in major databases like PubMed, SCIE, and Embase. Recognized by PM&DC and HEC, JCPSP has an Impact Factor and is highly respected in the medical community.¹² Ullah et al. examined the 1,106 papers published in JCPSP from 2010 to 2014. These papers used 14,411 references with an average of about 13 references per article and 92.36% references extracted from the literature published in journals. More than one-fourth (26%) of the articles were written by a four-author pattern and only 6.37% of the articles were contributed by a single author. The highest number of research was performed on Medicine, followed by Pathology and Surgery.

Slightly more than one-third of the papers (n=416; 37.16%) were contributed by international authors.¹² Baladi reviewed 3,127 articles published in JCPSP from 2000 to 2015. The ratio of authors per article increased from 2.40 in the year 2000 to 4.19 authors per article in the year 2015 and the authorship analysis indicated that two-author collaboration was most active (23.47%) followed by four-author (20.28%). Only 271 (8.67%) articles were written by a single author. The authors affiliated with the Aga Khan University had the highest number of articles (n=393), followed by Combined Military Hospitals and Dow University of Health Sciences with 279 and 154 articles, respectively.¹³ Another study analyzed the 253 articles related to dentistry published in JCPSP from 1991 to June 2018 (28 years). The fluctuated trend of publication was

found and 46% (n=116) of the articles were published in the last five years (2014-2018). The Aga Khan University and NIMS University Dental College India contributed 27 articles each followed by Armed Forces Institute of Dentistry Pakistan (n=20). The analysis of the authorship pattern revealed that a two-author pattern was common (n=80; 31.60%) and 15% (n=38) articles produced by a solo author. Manas Bajpai emerged as the most profile author with 22 articles.¹⁴

Another study compared the citations/references of three Pakistani medical journals including JCPSP, Pakistan Heart Journal (PHJ), and Pakistan Journal of Surgery (PSJ). The study analyzed the publication data for ten years from 2007 to 2016. The average number of references per article was found low in JCPSP (14.36 references per article) as compared to PHJ (19.76 references per article) and PSJ (19.01 references per article). They also examined the authorship pattern and density by the years of the citations.¹⁵ The Library and Information Science (LIS) professionals and medical scholars conducted various bibliometric studies of different medical journals published in Pakistan.¹⁶⁻¹⁹ The bibliometric studies on JCPSP covered the period until 2015. No recent bibliometric study was found in this journal, so this study was intended to fill this gap.

The present study aims to provide valuable insights for researchers, clinicians, policymakers, and the editorial board of JCPSP through the bibliometric analysis of documents published in JCPSP from 2019 to 2023. This analysis can contribute to a better understanding of the journal's role in the medical research landscape and guide future directions for enhancing its impact and relevance.

The following are the objectives of the study:

1. To review the periodic growth of documents and citations.
2. To segregate the documents by type.
3. To analyze the authorship pattern and identify the top 10 most prolific authors.
4. To enlist the top 10 most contributing institutions.
5. To point out the top 10 contributing countries.
6. To scrutinize the Top-20 frequently used keywords.
7. To describe the characteristics of the 10 most cited articles.

Methodology

The dataset of JCPSP with publication years that range from 2019 to 2023 was collected from the Clarivate Analytic Web of Science database to carry out the prospective bibliometric inquiry method. The acquired dataset included all document types for bibliometric examination. The bibliometric indicators mentioned in the objectives were analyzed. The data was evaluated using Microsoft Excel (v16), and the co-occurrence of the top countries and commonly used keywords was visualized using VOSviewer software.

Result

Periodic distribution of articles and citations

Over five years (2019-2023), 2082 documents appeared in JCPSP, with an average ratio of 416.40 documents per year. A little bit more than 25% (n=530) of the papers were published in the year 2022 and the lowest number (n=340) was recorded in 2023. All selected documents (n=2,082) were cited 3,672 times with a proportion of 1.76 cites per document. The latest publications obtained the lowest citation impact, (0.37 cites/document), whereas the earliest papers released in 2019 acquired 1,306 citations, with a mean of 3.77 citations per paper (Figure 1).

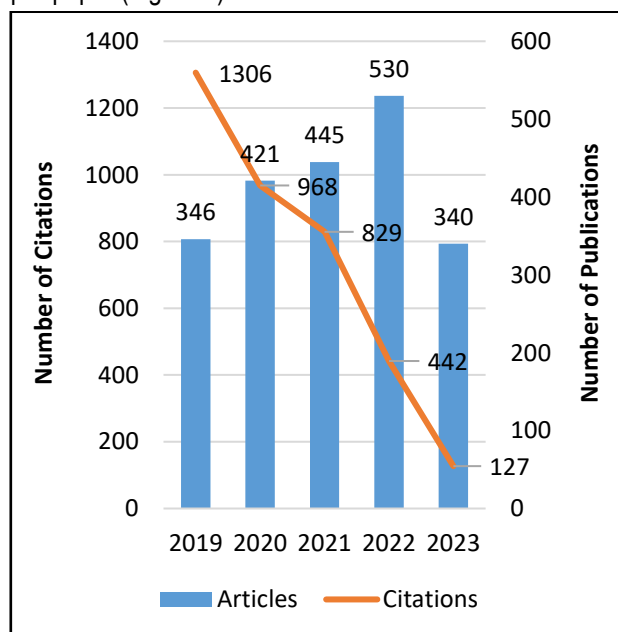


Figure 1: JCPSP- Publications with citations

Analysis of documents by types

The analysis of document types shows that the maximum number of documents consists of original articles (n=1577; 75.74%), followed by letters (n=385; 18.49%), editorial materials (n=74; 3.55%), review articles (n=46; 2.20%) and one document published as proceeding paper.

Authorship Pattern

The review of authors stated that 7,963 individuals have been verified including duplicate counts, averaging 3.82 authors per paper, 6,144 authors were found with distinctive names, and 82.71% of them (n=5,082) performed in a single paper. Figure 2 exposed the authorship trends, only 9.08% (n=189) of the documents were written by a single author and six-author was the most common collaboration trend (n=428; 20.56%), after three-author collaboration (n=416; 19.98%). The collaboration of nine authors gained the most citation impact (3.75 cites/document), while the single-author document had the lowest influence (0.75 cites/document).

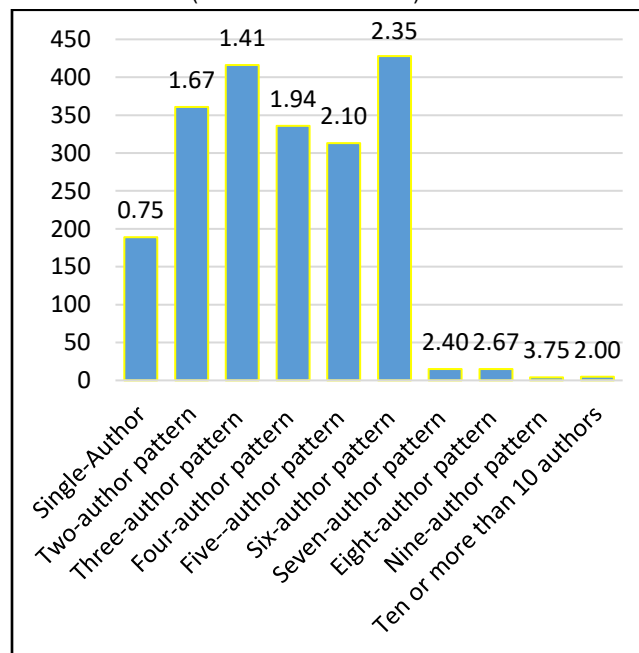


Figure 2: Collaboration trends of authors with Citation Impact

Top-10 Highly Prolific authors

The list of 10 highly productive authors is shown in Table 1. Sadaf Sheikh of Sultan Qaboos University emerged as the most prolific author with 20 documents during five years followed by Zia Ur Rehman of Pakistan

Institute of Nuclear Science & Technology and Shimin Yuan of Reproductive and Genetic Hospital CIT XIANGYA with 17 and 14 documents, respectively.

Table 1: Ten Most Prolific Authors

Rank	Author	Affiliation	Total Documents	Total Citations
1	Sadaf Sheikh	Sultan Qaboos University, Oman	20	9
2	Zia Ur Rehman	Pakistan Institute of Nuclear Science & Technology, Pakistan	17	12
3	Shimin Yuan	Reproductive and Genetic Hospital CIT XIANGYA, China	14	25
4	Ahmed Nadeem Abbasi	Aga Khan University, Pakistan	12	10
5	Farooq Azam Rathore	Armed Forces Institute of Rehabilitation Medicine	12	19
6	Sikandar Hayat Khan	National University of Medical Sciences & Combined Military Hospital Multan, Pakistan	11	26
7	Samina Qamar	King Edward Medical University, Pakistan	10	31
8	Usama Bin Zubair	Connolly Hospital Dublin	10	1
9	Muhammad Aamir	Armed Forces Institute of Pathology	10	16
10	Zujaja Hina Haroon	Armed Forces Institute of Pathology	10	12

Top-10 Most Productive Research Organizations

The scrutiny of affiliated organizations demonstrates that the authors belonging to 1,371 organizations contributed to 2,082 documents and more than two-thirds (n=928; 67.68%) of the organizations had produced one document. Aga Khan University was found the most contributing organization, followed by the University of Health Sciences-Turkey with 178 and 152 documents, respectively. Only these two organizations produced more than one hundred documents. Out of the top 10 organizations, six belonged to Pakistan and four belonged to Turkey as shown in Table 2.

6	Shoukat Khanum Memorial Cancer Hospital & Research Centre	26	48
7	Shifa International Hospital	26	61
8	Balikesir University, Turkey	23	47
9	Diskapi Yildirim Beyazit Training Research Hospital, Turkey	23	54
10	Sakarya University, Turkey	22	66

Table 2: List of Top Ten Most Productive Research Organizations

Rank	Affiliated organization	Total Documents	Total Citations
1	Aga Khan University	178	208
2	University of Health Sciences, Turkey	152	232
3	Dow University of Health Sciences	62	60
4	Combined Military Hospitals	44	67
5	King Edward Medical University	40	97

Top 10 Most Contributing Countries

The inspection of articles by contributing countries exhibits that the authors belonged to 44 countries that contributed to the JCPSP during the targeted period. The authors of 14 (31.81%) countries had contributed in one document. The authors belonging to Pakistan contributed about 42% (n=871) of the articles, while the international authors contributed 58% (n=1211) of the documents and Turkey stood on the top as an international country, followed by China with 658 and 376 documents, respectively as shown in Table 3.

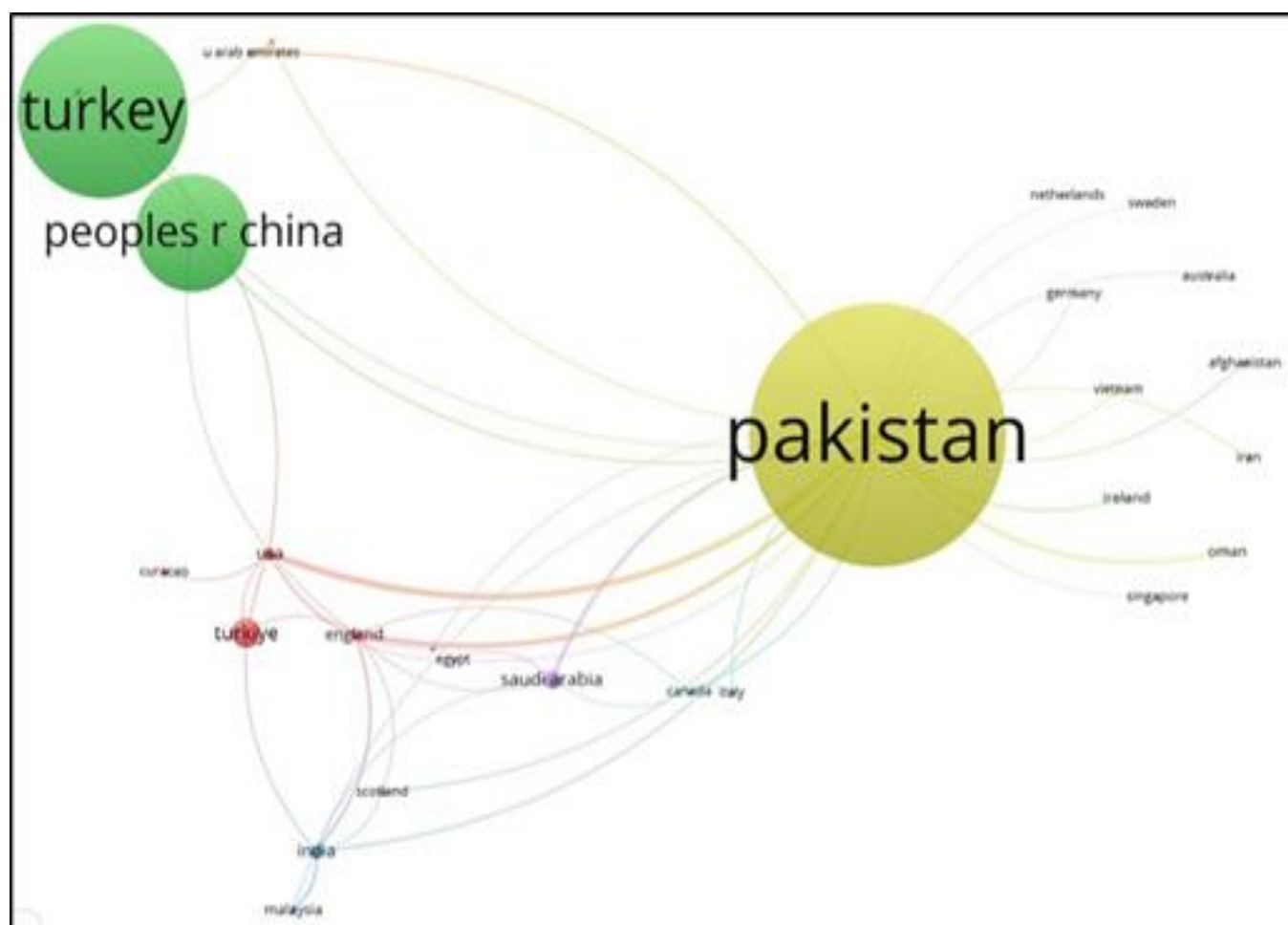


Figure 3: Co-authorship Network of 44 countries taken from VOSviewers

Table 3: List of the top ten Most Contributing countries

Rank	Affiliated organization	Total Documents	Total Citations	Citation Impact
1	Pakistan	871	1,405	1.61
2	Turkey	658	1,145	1.74
3	China	376	955	2.54
4	Saudi Arabia	54	125	2.31
5	India	43	22	0.51
6	United States	36	19	0.53
7	England	32	43	1.34
8	Malaysia	19	13	0.68
9	Oman	18	10	0.56
10	Ireland	15	3	0.20

The documents contributed by China gained the maximum citation impact followed by Saudi Arabia, Turkey, and Pakistan. Figure 3 demonstrates the co-authorship network of 29 countries consisting of 15 clusters.

Co-Occurrence of Top-20 Author-used keywords

A total of 5,038 keywords have been used by the authors in 2,082 documents, and 82.10% (n=4,124) keywords have been used once in the whole dataset. Table 4 presents the list of the top 20 most occurred keywords with the ratio of occurrence. These keywords support understanding the insights of the most preferred research themes in the documents of JCPSP. The keyword COVID-19 has been used most frequently, followed by mortality, Pakistan, children, and breast cancer. The visualization network of 127 most co-occurred keywords with the

minimum number of occurrences of five, generated by VOSviewer software, has been shown in Figure 4.

Table 4: Top 20 most occurred author-used keywords

Serial No.	Keyword	Occurrence
1.	Covid-19	88
2.	Mortality	36
3.	Pakistan	32
4.	Children	29
5.	Breast Cancer	24
6.	Prognosis	24
7.	Surgery	22
8.	Pregnancy	20
9.	Chemotherapy	18
10.	Computed Tomography	17
11.	Diagnosis	17
12.	Survival	17
13.	Laparoscopy	16
14.	Meta-Analysis	16
15.	Metastasis	16
16.	Obesity	16
17.	SARS-Cov-2	16
18.	Magnetic Resonance Imaging	15
19.	Gastric Cancer	14
20.	Oxidative stress	14

Discussion

The review of literature revealed that two bibliometric studies have been done on JCPSP and both studies were published in 2016. One study analyzed 1,106 papers published in five years from 2010 to 2014, while the other study examined 3,127 papers published in 16 years from 2000 to 2015.¹²⁻¹³ The scope of these studies was limited as they collected the data directly from the website of the journal and an important bibliometric indicator of citation analysis was missing. JCPSP is the premier medical journal of Pakistan the study evaluated the medical research of Pakistan from 2001 to 2020 and reported that JCPSP was found the second most preferred source for publication after the Journal of Pakistan Medical Association (JPMA).³⁰

This paper presents the salient bibliometric parameters of the 2,082 documents that were published in JCPSP during the five years from 2019 to 2023, with an average of 416.40 documents per year. The previous bibliometric study on JCPSP focused on documents published from 2010 to 2014 and reported an average ratio of 221.20 documents per year.¹² This finding indicates that the average number of publications has almost doubled. In line with this outcome, another study quantified the medical research in Pakistan from 2001 to 2020 and also highlighted the growing trend. Only 731 papers on medical sciences were published in 2001 and this number reached 6,685 in the year 2020 and more than three-fourths (76.52%) of the papers published in the last decade from 2011-2020.³⁰

Citation is an important parameter of quality and indicates the channel of fair exchange of knowledge.³¹ In our study, the selected documents were cited with a mean ratio of 1.76 cites/document. Memon analyzed the publication output (n=7,245) of JPMA from the year 1965 to 2018 and discovered that these publications were cited with a mean ratio of 3.84 cites/document. The period of this study was comprised of over fifty years, so the older articles usually gained comparatively more citations.³² In our study, the scrutiny of document types illustrations that the maximum documents consist of original articles (n=1577; 75.74%). This finding coincides with a previous study on JPMA in which 78.88% of documents were published as original research articles.³²

Our study reported that 82.71% of the authors had contributed in one document and an average ratio of authors per document was 3.82. Single-author documents counted 9.08%, while the six-author pattern was found the most common (20.56%), followed by the three-author pattern (19.98%). Only four documents were produced by nine-author collaboration and these documents obtained the maximum citations with the proportion of 3.75 cites/document. Ullah et al., (2016) study on JCPSP stated that four-author collaboration produced 26% of the papers, and a single author wrote only 6.37%.¹² Baladi reviewed the papers published in JCPSP from 2000 to 2015 and the study endorsed almost similar findings as the average ratio of authors per article was found 3.65 and 8.67% of papers were found with a single author.¹³ The scrutiny of affiliated organizations demonstrates that the Aga Khan University is the most contributing organization, followed by the University of Health Sciences-Turkey with 178 and 152 documents, respectively. Another study also endorsed that the authors belonged to Aga Khan University and contributed to 26% of the documents in JPMA.³²

In our study, the authors belonging to 44 countries contributed to the JCPSP and Pakistan authors contributed to about 42% of the documents, while the international authors contributed in 58% of the documents and Turkey stood at the top as an international country, followed by China. Interestingly, the previous study on JPMA revealed that foreign authors contributed 42.17% of the documents, whereas in our study contribution of the international authors has increased. This study also pointed out that the maximum international contribution comes from Turkey followed by India and Iran.³² The analysis of keywords supports recognizing the understanding of the most preferred research themes in JCPSP. The keyword of Covid-19 has been used most frequently, followed by mortality, and Pakistan. Covid-19 was found to be the most researched area from 2019 to 2023. The scrutiny of the 10 most-cited articles showed that these articles gained an average of 25.3 citations per article and most of these articles were contributed by international authors.

This bibliometric study has certain limitations, as the data used in this study came from the Web of Science database, thus there's the possibility that some documents have been skipped or overlooked. Future studies can validate the number of documents from the JCPSP

website. The citation data is also limited to Web of Science, further study may compare the citation analysis of Web of Science with other databases for in-depth analysis of the citation metrics. We utilized only one VOSviewer software for data visualization, the other bibliometric tools could be used in further studies.

Conclusion

JCPSP is one of the prominent journals published in Pakistan in medical sciences. The study utilized the bibliometric research technique to ascertain the publication trends in JCPSP over the past five years. A stable increase in documents has been observed except in 2023. Over half of the literature was written by authors from 44 countries reflecting the confidence of the international community in the authenticity and excellence of JCPSP. COVID-19 was found to be the most occurred keyword. These insights are valuable for researchers, clinicians, policymakers, and stakeholders. Future research could explore the long-term impact of JCPSP articles, editorial policy effectiveness, and emerging trends in medicine and surgery in Pakistan. Continued analysis of JCPSP will support its growth and influence, benefiting the broader healthcare community.

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