

## RESEARCH PRODUCTIVITY IN PAKISTAN HEART JOURNAL FROM 2005 TO 2018: A SCIENTOMETRIC STUDY

Saeed Ullah<sup>1</sup>, Saeed Ullah Jan<sup>2</sup>, Habib Ur Rehman<sup>3</sup>, Najma Iqbal Butt<sup>4</sup>,  
Muhammad Abdur Rauf<sup>5</sup>, Sabir Shah<sup>6</sup>, Muhammad Yahya Jan<sup>7</sup>

<sup>1,7</sup>Postgraduate Medical Institute Hayatabad, Peshawar, Pakistan.

<sup>2</sup>Khushal Khan Khatak University, Karak, Pakistan.

<sup>3</sup>The University of Peshawar, Peshawar, Pakistan.

<sup>4</sup>The University of Lahore, Gujarat, Pakistan.

<sup>5</sup>Peshawar Medical College, Peshawar, Pakistan.

<sup>6</sup>Microbiology/department, University of Peshawar, Peshawar, Pakistan.

Address for Correspondence:

### Saeed Ullah

Postgraduate Medical Institute Hayatabad Peshawar

Emails: saeedbirqi@gmail.com

Date Received: January 01, 2019

Date Revised: February 15, 2019

Date Accepted: March 02, 2019

### Contribution

SU and MAR conceived the idea and designed the study. SUJ, HUR and NIB did data collection and manuscript writing. MAR and SS did review. All authors contributed equally to the submitted manuscript.

### All authors declare no conflict of interest.

This article may be cited as: Ullah S, Jan SU, Rehman HU, Butt NI, Rauf MA, Shah S, Ali U, Jan MY. Research productivity in pakistan heart journal from 2005 to 2018: a scientometric study. Pak Heart J 2019; 52 (02):117-23

### ABSTRACT

**Objective:** To describe bibliometric study of scholarly literature published in Pakistan Heart Journal covering period from 2005 to 2018 and to explore publication trends.

**Methodology:** This quantitative study applied bibliometric methods to analyze original articles, authorship pattern, citations, contributions from different regions and other relevant parameters of Pakistan Heart Journal covering period from January 2005 to December 2018. The data was collected from Postgraduate Medical Institute (PGMI) Library Hayatabad Peshawar and official website of PHJ.

**Results:** The study reveals that number of articles published in issues of the journal per year ranged from 09 to 57. Cardiology is main subject area covered in the articles with stable Ischemic heart disease as leading topic (15.46%) followed by Preventive cardiology (14.40%), Interventional cardiology, Heart failure and Acute Coronary Syndrome. Articles with three authors were more in numbers (23.30%). Journal (95.53%) proved to be the more cited source of information. Variation was found in the number of references cited in each article (40.05%) (153) articles had 11-20 references. Article's length was analyzed and it was revealed that a majority (30.22%) of articles comprised of five pages. In regards to productivity, more authors belonged to Khyber Pakhtunkhwa region (40.96%). Number of articles submitted by foreign authors has shown a steady increase reflecting international acceptance and recognition.

**Conclusion:** Pakistan Heart Journal is more than fifty years old journal with gradual increase in number of articles in the last seven years. This is specialty-orientated journal about heart diseases, larger number of articles were on ischemic heart disease followed by preventive cardiology, interventional cardiology and heart failure.

**Key Words:** Scientometrics, Bibliometrics, Original articles, Pakistan Heart Journal-Bibliometrics

## INTRODUCTION

The term bibliometric was first coined by a library scientist named Pritchard in 1969 which means application of mathematical and statistical techniques to research documents to describe its characteristics.<sup>1</sup> The term gained popularity in 1980 and scientists started using the term in their studies. Sengupta defines the term "bibliometric" as "The organization, classification and quantitative evaluation of Publication pattern of all macro and micro communications, along with their authorships by mathematical and statistical calculations."<sup>1</sup> Polanco describes bibliometric study as a technique used for description, evaluation, and monitoring of published research.<sup>2</sup> It describes a particular field, quantification as well as focus on research productivity by institution. Similarly, Broadus define Bibliometric study is the process of the quantitative study of physical published materials which includes articles, reports, and case studies.<sup>3</sup> A bibliometric study means the number of published articles, authorship, geographical location, authorship pattern, institutions affiliation, ranking by the subject of the article, research groups or individual investigators and affiliations, as well as the number of citations received.

Pakistan Heart Journal (PHJ) is one of the leading international-repute peer-reviewed journals in the field of cardiology started publication fifty years ago. PHJ is an open access journal and published by Pakistan Cardiac Society on quarterly basis for the last 5 decades. PHJ aims at promoting high quality research in the field of cardiology by publishing documents reviewed by internationally recognized experts. Pakistan Heart Journal publishes original articles, review articles, case reports, editorials, special communications and short communications relating to cardiovascular diseases. The Pakistan Heart Journal accepts the contribution of researchers from local community as well as abroad. It is Indexed and abstracted in WHO IMEMR Current Contents, Index Copernicus Poland and EBSCO in DOAJ. It is registered with International Serials Data System of France. It is recognized by Higher Education Commission of Pakistan (X Category) and approved by Pakistan Medical & Dental Council. Pakmedinet, Google scholar & new jour cover it.

The aim of the journal to promote high quality research and disseminate the latest advances among all health care professionals interested in various fields of Cardiology. Pak Heart J offers a forum for exchange of knowledge among clinicians, research workers and health managers. Pak Heart J encourages contribution from all fields of Cardiology such as clinical, cardiac imaging, interventional, preventive, electrophysiology, paediatric cardiology and cardiac surgery. It tries to forecast important issues and trends in Cardiovascular medicine and health care. To achieve the highest level of ethical medical journalism and to produce a publication that is timely, credible, and enjoyable to read. To help improve patient management PHJ incorporates the latest knowledge and guidelines into clinical practice.

Pakistan Heart Journal is a peer-reviewed journal. All submitted manuscripts are reviewed for originality, relevance, statistical methods, significance, adequacy of documentation, reader interest and composition. All manuscripts considered suitable for review in the editorial office, are evaluated by a minimum of two reviewers. The manuscript is then sent to one or more foreign reviewers for further review. If statistical analysis is included,

further examination by a statistician may be carried out. Revised manuscripts are judged on the adequacy of responses to suggestions and criticisms made during the review process. All accepted manuscripts are subject to editing for scientific accuracy and clarity by the Editorial Office. The ultimate authority to accept or reject the manuscript rests with the Editor. PHJ uses blind review policy. Pakistan Heart Journal follows the uniform requirements for manuscripts submitted to Biomedical journals as approved by the International Committee of Medical Journal Editors as revised in 1997 published in N Eng J Med. All articles submitted to Pak Heart J are subjected to plagiarism testing. Pak Heart J follows the standard definition and description of plagiarism (<http://facpub.stjohns.edu/~roigm/plagiarism/Index.html>) and endorses ICMJE and Higher Education Commission policies regarding plagiarism. All articles are submitted to turnitin.com and the editorial board makes final decision. It utilizes current online system to accept articles, peer review and editing. It has an active website and full text articles are available free of cost.

Pakistan Heart Journal follows the uniform requirements for manuscripts submitted to Biomedical journals as approved by the International Committee of Medical Journal Editors as revised in 1997 published in N Eng J Med Detailed information can be downloaded from [www.icmje.org](http://www.icmje.org). All articles submitted to Pak Heart J are subjected to plagiarism testing. Pak Heart J follows the standard definition and description of plagiarism (<http://facpub.stjohns.edu/~roigm/plagiarism/Index.html>) and endorses ICMJE and Higher Education Commission policies regarding plagiarism available on [www.icmje.org](http://www.icmje.org) and [www.hec.gov.pk](http://www.hec.gov.pk). All articles are submitted to [www.turnitin.com](http://www.turnitin.com) and the editorial board makes final decision. It utilizes current online system to accept articles, peer review and editing. It has an active website and full text articles are available free of cost.

The literature review shows that significance of bibliometrics to measure the quality of a journal by analyzing its scientific productivity. The present study, therefore, aims to carry out bibliometric analysis of PHJ to find out its publication trends. The study had the following main objectives: to determine year-wise division of articles of PHJ, to study authorship and citation patterns of PHJ, to evaluate ranking of authors by geographical affiliation, to rank articles by subject, to find out length of articles published in PHJ and to explore number of references per article cited by author in PHJ.

## METHODOLOGY

This study was conducted to analyze the characteristics and trends of papers published in PHJ during the period from January 2005 to December 2018. To meet the objectives of the study, relevant bibliographical information regarding articles published in PHJ were recorded for analysis. Twenty eight issues were analyzed which composed of original article and case reports. PHJ had published two issues No. 1, 2 and 3,4 combined. This study was limited to original articles and case report published in PHJ. Editorials, short communication and letters were excluded from the study.

The official website [<http://www.pakistanheartjournal.com>] was used as a primary source of information. In this study, geographically Pakistan was divided into four zones i.e. Punjab,

KP, Baluchistan and Sindh, all foreign contributions were conceded into international zone. The data were analyzed using Microsoft excel 2010.

## RESULTS

The collected bibliographical data was scrutinized and systematically analyzed. The data produced the following results. Total number of articles published was 382. In the first seven years (2005 to 2011), the highest number of articles per year was 3.66% of the published articles. It increased to 11.52% in 2012 and 2013 as per analysis of table 1. Authorship pattern were different in articles: single author (3.14%), two authors (8.64%), three authors (23.30%), four authors (19.11%), five authors (18.32%), and more than five were (27.49%) as per scrutiny of (Table 2). The contributions of male authors were 1481 (85.80%) out of total 1726 authors (Table 3). Foreign contributors were reported as 117 (7.27%). Among national authors, 659 (40.96%)

contributed from KP, 446 (27.72%) from Punjab, 368 (22.87%) from Sindh, and 19 (1.18%) from Baluchistan as shown in table 4. Data about the length of article is shown in table 5. It was reported that these articles are of various length: two pages (0.44%), three pages (6.67%), four pages (14.67%), five pages (30.22%), six pages (26.67%) and more than six pages (21.33%) articles were reported respectively. Out of 8404 references, the number of references taken from journals were 8028 (95.53%), 181 (2.15%) from books, 66 (.78%) from case reports and 68 (.81%) from website (Table 6). Number of references per article was reported in different ranges: 34 (8.90%) had 5-10 references, 153 (40.05%) articles had 11-20 references, 21- 30 references were cited for 122 (31.94%) articles and 31- 40 references were cited for 61 (15.97%) articles as per table 7. Cardiology was the major theme of the articles published in this Journal. Stable Ischemic heart disease 59 (15.46%), preventive cardiology 55 (14.40%), heart failure and intervention cardiology 30 (7.85) 28 (7.33%) respectfully.

**Table 1: Number of Article Per Year**

Year	Issue No. 01	Issue No. 02	Issue No. 03	Issue No. 04	Total	% Age
2005	05	05			10	2.61
2006	04	05			09	2.35
2007	05	05			10	2.61
2008	06	06			12	3.14
2009	07	07			14	3.66
2010	06	05			11	2.88
2011	05	09			14	3.66
2012	12	11	11	10	44	11.52
2013	11	11	11	11	44	11.52
2014	11	10	10	09	40	10.47
2015	10	11	10	10	41	11.73
2016	09	06	08	11	34	8.90
2017	08	14	09	11	42	10.99
2018	16	15	12	14	57	14.92
Total	115	120	71	76	382	100

**Table 2: Authorship Pattern**

Year	05	06	07	08	09	10	11	12	13	14	15	16	17	18	Total	%Age
Single Author	01	00	00	01	03	01	01	01	01	01	00	00	00	02	12	3.14
Two Author	02	00	01	01	03	01	00	01	05	05	01	03	06	04	33	8.64
Three Author	03	06	01	04	02	02	04	04	13	08	15	04	08	15	89	23.30
Four Author	02	00	03	03	01	04	02	02	04	06	10	09	11	16	73	19.11
Five Author	00	00	03	03	02	01	03	09	10	08	09	07	06	09	70	18.32
> Five Author	02	03	02	00	03	02	04	26	11	12	06	11	11	12	105	27.49
Total	10	9	10	12	14	11	14	43	44	40	41	34	42	58	382	100

**Table 3: Contribution of Authors Gender wise**

Year	Male	Female	Total	Male % Age	Female % Age
2005	34	03	37	1.97	.17
2006	36	02	38	2.09	.12
2007	39	08	47	2.26	.46
2008	38	04	42	2.20	.23
2009	43	07	50	2.49	.41
2010	35	07	42	2.03	.41
2011	60	06	66	3.48	.35
2012	230	16	246	13.33	.93
2013	188	11	199	10.89	.64
2014	177	20	197	10.25	1.16
2015	147	24	171	8.52	1.39
2016	123	42	165	7.13	2.43
2017	148	34	182	8.57	1.97
2018	183	61	244	10.59	3.53
Total	1481	245	1726	85.80	14.2

**Table 4: Geographical Affiliation/Contribution of Authors**

Area	05	06	07	08	09	10	11	12	13	14	15	16	17	18	Total	%age
Punjab	01	23	08	24	14	17	14	28	44	67	81	32	49	44	446	27.72
KP	00	06	00	00	09	05	43	192	90	70	46	67	61	70	659	40.96
Sindh	27	06	39	17	17	17	09	10	21	29	31	44	28	73	368	22.87
Baloch.	03	03	00	00	00	00	00	00	00	00	00	00	01	12	19	1.18
Foreign	06	00	00	02	10	03	00	16	32	21	17	00	09	01	117	7.27
Total	37	38	47	43	50	42	66	246	187	187	175	143	148	200	1609	100

**Table 5: Length of Article**

Pages	05	06	07	08	09	10	11	12	13	14	15	16	17	18	Total	%age
02 pages	00	00	00	01	00	00	00	00	00	00	00	00	00	00	1	.44
03 pages	01	01	00	00	03	01	00	02	01	05	03	03	02	03	25	6.67
04 pages	00	03	00	01	01	01	02	04	04	11	11	08	08	06	60	14.67
05 pages	05	02	04	01	05	02	04	16	16	11	10	16	15	22	129	30.22
06 pages	02	02	01	01	02	01	05	14	13	10	12	04	10	12	89	26.67
>06 Pages	02	01	03	08	03	05	03	08	11	02	04	08	07	13	78	21.33
Total	10	9	8	12	14	10	14	44	45	39	40	39	42	56	382	100

**Table 6: Citation Pattern**

Subject	05	06	07	08	09	10	11	12	13	14	15	16	17	18	Total	%age
Journal	253	179	206	240	315	236	305	966	969	732	842	767	812	1206	8028	95.53
Book	06	07	05	04	04	03	04	23	18	35	15	10	19	28	181	2.15
Report	06	05	09	00	02	03	01	07	15	08	09	00	00	01	66	.78
URL	00	04	05	03	00	01	03	05	06	05	10	02	10	14	68	.81
Other	00	02	01	03	02	03	02	05	08	02	03	10	04	16	61	.73
Total	265	197	226	250	323	246	315	1006	1016	782	879	789	845	1265	8404	100

**Table 7: References per Article**

No. of Reference	05	06	07	08	09	10	11	12	13	14	15	16	17	18	Total	%age
5 -10	01	01	00	03	02	00	01	02	03	06	06	02	02	05	34	8.90
11-20	03	03	05	04	08	03	04	14	19	17	13	12	23	25	153	40.05
21-30	03	03	02	03	01	08	07	17	15	12	14	11	11	15	122	31.94
31-40	02	02	02	00	02	00	02	10	05	09	08	06	05	08	61	15.97
41-50	00	00	01	01	01	00	00	00	01	01	00	01	00	02	8	2.09
>50	01	00	00	00	01	00	00	00	01	00	00	00	00	01	4	1.05
Total	10	9	10	11	15	11	14	43	44	45	41	32	41	56	382	100

**Table 8: Subjects Covered by the Journal**

Subject	05	06	07	08	09	10	11	12	13	14	15	16	17	18	Total	%age
Interventional Cardiology	02	01	00	01	01	01	03	03	06	00	05	01	01	03	28	7.33
Preventive Cardiology	01	03	01	01	01	01	02	07	06	10	07	01	05	09	55	14.40
Heart Failure	01	00	00	00	02	02	01	02	07	04	03	02	04	02	30	7.85
Stable Ischemic Heart Disease	01	01	03	03	02	03	05	13	03	06	04	06	03	06	59	15.46
Electro Physiology	01	01	00	01	02	01	00	02	02	04	03	02	03	01	23	6.02
Cardio vascular	01	00	01	02	00	01	00	01	03	00	02	03	02	02	18	4.71
Cardio thoracic	01	00	00	01	00	00	00	03	01	02	01	02	02	01	14	3.66
Rheumatic heart disease	01	00	00	00	02	01	00	02	01	04	03	02	03	06	25	6.54
Congenital Heart Disease	00	00	02	00	00	00	00	01	02	02	02	02	06	08	25	6.54
Peripheral arterial Disease	00	00	00	01	00	01	01	03	03	02	02	03	05	06	27	7.07
Acute coronary syndrome	00	02	00	00	01	00	01	03	03	00	03	05	04	05	27	7.07
Miscellaneous	01	01	03	02	03	01	01	05	06	05	04	07	05	07	51	13.35
Total	10	09	10	12	14	12	14	45	43	39	39	36	43	56	382	100

## DISCUSSION

The Pakistan Heart Journal is the official journal of Pakistan Cardiac Society being published regularly for the last fifty years. The Journal has enhanced the number of issue and is being published regularly since 2011. A progression was seen in the articles per year ratio in the last seven years. With special reference to Pakistan, only a few Bibliometric studies have been conducted so far to explore the significance of medical journals. Swain conducted the bibliometric study of Library Philosophy and Practice from 2004-2009 and analyzed productivity of various countries.<sup>5</sup> Thanuskodi made a bibliometric study of the Indian Journal of Chemistry to examine various trends of publication.<sup>6</sup> Asha et al conducted a study on Indian Journal of Pure and Applied Mathematics which showed that journal articles are the more cite documents.<sup>7</sup> The contribution of foreign authors is more dominant as compared to local authors. Ahmed also carried out a bibliometric study to evaluate documents in the field of health sciences.<sup>8</sup> Ullah et al conducted a bibliometrics on the Journal of the Ayub Medical College (JAMC) to find out publication and citation patterns.<sup>9</sup> The study found that majority of authors contributed from Khyber Pakhtunkhwa. Jena, in the bibliometric study of Indian Journal of Fiber and Textile Research 1996-2004, studied the various aspects of Publications.<sup>10</sup> Bojoet al. conducted a study on Spanish Journal of Chemotherapy.<sup>11</sup> They studied that most of the articles were original and the work of autonomous regions Madrid and Valencia were in greatest Percentage. In another study, the authors explained bibliometric ally study of Indian journal of plant physiology.<sup>12</sup> Ibrahim et al<sup>13</sup> made a study on bibliometric analysis of the Journal of Pakistan Medical Association and contents of the journal were analyzed geographically by dividing the country into seven different regions.

Three author's papers were reported as high, which shows similarity with the JAMC study of Midrar et al<sup>9</sup>. Many bibliometric studies of this type have been carried out in other countries as well as in Pakistan by Kaylyan and Seninin 1995 on the Journal of Oil Seeds Research, which revealed that the single-author papers account for only 12%. Papers with two authors (39%) were found to be in majority.<sup>14</sup> Space Medicine and Medical Engineering documented that 94 (13.1%) were single-author papers in Beijing.<sup>15</sup> In a study, Journal of Collage of Physicians and Surgeons Pakistan was analyzed from 2010 -2014 and explored various bibliometric indicators.<sup>16</sup> Bibliometric analysis of Journal of Surgery, was examined for authors contributions, geographical affiliation, citations, and gender-wise contribution.<sup>17</sup> Due to an unprecedented growth in scientific research output during the last decade, Bibliometric studies gained great significance in research area by applying it on publications to find out various aspects of research output.<sup>18</sup> The bibliometric study of individual journals helps the librarians to make the right selection of journals for its libraries,<sup>19</sup> therefore, need arises to carry out bibliometric studies on individual journals to find out its publication traits.

A 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>20</sup> 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>21</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 Journal. The trend of joint authorship was at high level. It was documented that journals were the more cited source by researchers.<sup>16</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>22</sup> Male predominance were reported in PHJ which were same in SU et al in JCPSP.<sup>16</sup>

The results show a very low self-citation rate in PHJ, the authors need to cite other work in the journal to improve its status as a useful knowledge base for medical science in Pakistan. In the current study, co-authored papers were more prevalent than those with a single author which suggests that medical publications need collaboration.

Majority of the authors were geographically affiliated to KP region for the reason that PHJ is published from KP by Lady Reading Hospital Peshawar. These data suggest that distribution of the authors is influenced by location of the journals. Same results were reported in bibliometric study of JAMC.<sup>9</sup> However, if compared with JAMC, Punjab contributed more papers in PHJ. Unlike JCPSP and JPMA, Ischemic heart disease is the dominant subject in PHJ.<sup>16,17</sup> This study indicates that more than 95% of the total citations are from journal literature as a result of the decline in the importance of the book as a vehicle of communication which is more than JAMC<sup>9</sup>.

## CONCLUSION

Pakistan Heart Journal is being published for the last fifty years with gradual increase in number of articles. A significant increase in number of articles was observed during last seven years. Furthermore, the journal's irregular frequency was normalized and issues are being published regularly on quarterly basis in the last seven years. Original articles are the main type of the articles published. Submissions from foreign authors has increased steadily but the majority of authors are from Pakistan. In this heart journal, higher numbers of articles were on Ischemic heart disease followed by preventive cardiology, interventional cardiology and heart failure. The bibliometric study of Pakistan Heart Journal may help the editors to know about the strengths and gaps of the journal like identification of references approach, authorship pattern, geographic affiliation of author and thematic approach.

## REFERENCES

1. Sengupta IN. Bibliometrics: a bird's eye view. *IASLIC Bull* 1985;30(4):167-74.
2. Gauthier É. *Bibliometric analysis of scientific and technological research: a user's guide to the methodology*. Canada: Science and Technology Redesign Project, Statistics Canada; 1998.
3. Broadus R. Toward a definition of "bibliometrics". *Scientometrics* 1987;12(5-6):373-9.
4. Garfield E. From the science of science to Scientometrics visualizing the history of science with HistCite software. *J Inform* 2009;3(3):173-9.
5. Swain DK. Library philosophy and practice, 2004-2009: a scientometric appraisal. *Lib Phil Prac* 2011;11:1-18.
6. Thanuskodi S. Journal of social sciences: a bibliometric study. *J Soc Sci* 2010;24(2):77-80.
7. Narang A, Kumar A. A bibliometric study of Indian journal of pure and applied mathematics. *SRELS J Inform Manag* 2010;47(1):31-9.
8. Abubakar AB, Harande YI. A snapshot of information-seeking behavior literature in health sciences: a bibliometric approach. *Lib Phil Prac* 2010;5:1-9.
9. Ullah M, Butt IF, Haroon M. The Journal of Ayub Medical College: a 10 year bibliometric study. *Health InformLibJ* 2008;25(2):116-24.
10. Jena KL. A bibliometric analysis of the journal 'Indian Journal of Fibre and Textile Research, 1996-2004. *Ann Lib Inform Stud* 2006;53(1):22-30.
11. Bojo CC, Carabantes AD, Veiga DC, Martínez HD. Bibliometric analysis of the Spanish Journal of Chemotherapy (1996-2000). *Revistaespanola de quimioterapia: publicacionoficial de la Sociedad Espanola de Quimioterapia* 2004;17(2):161-8.
12. Shokeen A, Kaushik SK. Indian Journal of Plant Physiology: a citation analysis. *Ann Lib Inform Stud* 2004;51(3):104-7.
13. Ibrahim M, Jan SU. Bibliometric analysis of the Journal of Pakistan Medical Association form 2009 to 2013. *J Pak Med Assoc* 2015;65(9):978-83.
14. Kalyane VL, Sen BK. A bibliometric study of the Journal of Oilseeds Research. *Ann Lib Sci Doc* 1995;42(4):121-41.
15. Xia X, Li M, Xiao CF. Author analysis of papers published in "Space medicine & medical engineering" from 1988 to 1998. *Hang tian yi xue yu yi xue gong cheng* 1999;12(6):431-5.
16. Ullah S, Jan SU, Jan T, Ahmad HN, Jan MY, Rauf MA. Journal of the College of Physicians and Surgeons of Pakistan: five years bibliometric analysis. *J CollPhysicians Surg Pak* 2016;26(11):920-3.
17. Ullah S, Ahmad HN, Jan SU, Jan T, Shah S, Butt NI, Jan MY. A statistical analysis of Pakistan Journal of Surgery: a bibliometric lens from 2007-2016. *Pak J Surg* 2017;33(2):123-7.
18. Swain DK, Jena KL, Mahapatra RK. Interlending and document supply: a bibliometric study from 2001 to 2010. *Webology* 2012;9(2):e103.
19. Swain C, Swain DK, Rautaray B. Bibliometric analysis of Library Review from 2007 to 201. *Lib Rev* 2013;62(8/9):602-8.
20. Ullah S, Jan SU, Shah S, Butt NI. Literature citation by medical researchers: a citation analysis of three Pakistani medical journals. *J Postgrad Med Inst* 2018;32(4):414-8.
21. Crawley-Low J. Bibliometric analysis of the American Journal of Veterinary Research to produce a list of core veterinary medicine journals. *J Med Lib Assoc* 2006;94(4):430.
22. Javed M, Shah SS. Rawal Medical journal: an analysis of citation pattern. *Rawal Med J* 2008;33(2):254-7.