

MEDICAL EDUCATION (ORIGINAL ARTICLES)**PAKISTAN ARMED FORCES MEDICAL JOURNAL: FIVE YEAR BIBLIOMETRIC ANALYSIS FROM 2011 TO 2015****Muhammad Mudasir Saleem, Mishal Pervaiz*, Bilal Baig, Waseem Ahmed Khan, Bilqees Akhtar Malik**

Combined Military Hospital Bahawalpur Pakistan, *Shahida Islam Teaching Hospital Bahawalpur Pakistan

ABSTRACT

Objective: To conduct a five-year bibliometric analysis of Pakistan Armed Forces Medical Journal from 2011 to 2015.

Study Design: Retrospective secondary data analysis.

Place and Duration of Study: Department of General Surgery, Combined Military Hospital Bahawalpur.

Material and Methods: The data of all publications excluding editorials and letters to editor published in Pakistan Armed Forces Medical Journal (PAFMJ) from 2011 to 2015 was downloaded from the Journal website and analyzed in terms of bibliometric parameters.

Results: Total number of research documents from 2011 to 2015 was 749, comprising of 648 original articles, 13 review articles and 88 case reports. The number of publications per year ranged from 130 to 186. Three-author contributions ranked the highest with 214 publications (28.57%). Most of the publications have an average of 11-20 citations (n=394, 52.60%). Pathology should have been further classified remained the most popular medical specialty with 83 publications (11.08%).

Conclusion: The issue numbers per year for PAFMJ and have been gradually increased over time. Original articles are the main type of papers for this journal. The publication is open for all fields of medical and dental sciences.

Keywords: Bibliometric analysis, Journal, Publication.

This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

INTRODUCTION

The term bibliometrics was first introduced by Prichard in 1969 and is defined as 'organization, classification and quantitative evaluation of publication pattern of all macro and micro-communications, along with their authorships by mathematical and statistical calculus¹. The first attempt at systematic data collection was provided by Alfred Lotka and Samuel Bradford, who subsequently established the fundamental laws of bibliometrics². Since then bibliometrics is being used with promising results in different research areas for health care scientists and practitioners analyzing and improving the academic trends. The medical field is an ever dynamic domain with a number of new developments and researches having positive

impact on patient care emerge on daily basis. Dissemination of this new vital information is of prime importance in order to get the maximum benefits from the research work. Scientific journals play a very important role in dissemination of this information³. Scientific journals not only help in growth and expansion of these scientific fields but also provide inspiration and motivation for the young researchers to explore more in the respective fields. Five distinct roles of medical journals in this regard are to build a collective knowledge base, to communicate information, to validate the quality of research, to distribute rewards and to build scientific communities⁴. Quality assessment of the published literature in scientific journals is necessary in order to ensure that the disseminated information in the respective fields is safely applicable⁵. Bibliometric analysis serves as a useful tool in this regard by identifying the highly cited journals, author's productive pattern, the journal impact factor and

Correspondence: Dr Muhammad Mudasir Saleem, Classified Surgeon, Combined Military Hospital Bahawalpur Pakistan
Email: mudasirsaleem759@yahoo.com

Received: 18 Apr 2017; revised received: 02 May 2017; accepted: 15 May 2017

other significant details of any specific literature under study⁶. A number of medical journal analyses have been conducted in western countries to evaluate the progress and leading trends in the field of research involving medical journals⁷. Developing countries lag far behind as far as bibliometric analysis of medical journals is concerned⁸. Decreased rate of scrutiny of published data and low participation of developing country researchers in the output of the international literature is a well-recognized problem which needs to be addressed⁹. PAFMJ) is a category X scientific journal which is being published since 1956 from Rawalpindi. PAFMJ is a bi-monthly medical journal of the Pakistan Army Medical and Dental Corps. PAFMJ has gained its place as a standard medical journal recognized by the Pakistan Medical and Dental Council (PMDC). It is included in Extra Med WHO and Indexed in Cumulative Index Medicus of Eastern Mediterranean Region Journals. The PAFMJ International Standard Serial Number (ISSN) for online publication is 2411-8842 and for print publication is 0300-9648. It started off with printed volumes, initially published biennially (1956–2005) and then became quarterly in 2006 followed by bimonthly publication started in 2015. Currently, the online version of PAFMJ has preceded the printed version and can be accessed online. PAFMJ attracts wide viewership and multidisciplinary authorship involving various fields of basic and clinical sciences. We conducted this study to provide bibliometric analysis of PAFMJ which is an authenticated and well reputed journal of Pakistan Armed Forces to access the leading trends in research. There has been no Bibliometric review of PAFMJ in the literature as far as the author's knowledge is concerned.

METHODOLOGY

This retrospective secondary data analysis was conducted in Surgical Department of Combined Military Hospital Bahawalpur. Data regarding all the publications (original articles, review articles and case reports) excluding editorials and letters to editor in PAFMJ from

2011 to 2015 were downloaded from the PAFMJ website for analysis as the full text is available in portable document format (PDF) versions for free. Data regarding type and year of publication, authorship pattern, range and number of citations per article and subject of article was noted on data collection form. Data was selected by systematic sampling technique. The collected data was tabulated and entered into the Statistical Package for Social Sciences (SPSS) version 18.0 and analyzed through its statistical package. Frequency and percentages were determined.

RESULTS

Total number of publications (excluding editorials and letters to editor) in 22 issues from 2011 to 2015 was 749 including 648 original articles, 13 review articles and 88 case reports. Maximum number of publications (n=186, 24.83%) were in year 2015 followed by year 2011 (n=157, 20.96%) while the lowest number was 130 (17.35%) in year 2013. Maximum number of original articles (36) was published in June issue no: 64(2) in year 2014. Maximum number of case reports (09) was published in March issue no: 62 (1) of year 2012 while there was no case report in September issue no. 64(3) of year 2014 (table-I). Regarding authorship pattern, the detail has been shown in table-II. Range and percentage of citations present at the end of each publication was also calculated, data is given in table-III. The ranking of publications by subjects is given in detail in table-IV. A total of 27 specialities of basic and clinical medical science were covered by PAFMJ.

DISCUSSION

In today's era of dynamic and advancing medical science, access of health care professionals to reliable scientific information is very much essential. Scientific journals play a vital role in this regard¹⁰. The scientific information disseminated through medical journals provides evidence base guidelines with recent trends in the diagnosis and treatment of diseases. Therefore, bibliometric analysis of medical journals is of utmost importance in order to evaluate the

published data and provided information¹¹. Scientific activities of the researchers depict the scientific development of a country. Bibliometric analysis remains one of the key tools to assess these scientific activities published in medical journals¹². This analysis not only helps in consolidation of scientific knowledge but also helps in proper answering of professional questions. Bibliometric studies have been used in medical and other non-medical fields and have

technology (JASIST) revealed that the publication rate and number of papers published per year have been gradually increased over the period of time from 1985 to 2004¹⁵. Another study analyzing Malaysian journal of library and information science from 2001 to 2006 revealed that publications number has been increased steadily and the number of references per article as well as the length of the articles has also been increased over the study period¹⁶. Similarly,

Table-I: Distribution of publications by year and issue numbers.

Years	Issue No						Total	Percentage (%)
	1	2	3	4	5	6		
2011	38	40	38	41			157	20.96
2012	35	43	30	35			143	19.09
2013	32	30	34	34			130	17.35
2014	36	40	27	30			133	17.76
2015	33	30	30	32	32	29	186	24.83
							749	100.00

Table-II: Authorship pattern.

Year	Single author	Two authors	Three authors	Four authors	Five authors	Six authors	More than six authors
2011	09	24	44	30	28	20	02
2012	06	18	43	32	20	21	03
2013	07	19	40	30	20	14	00
2014	08	19	35	32	25	10	04
2015	02	19	52	48	39	16	10
Total	32	99	214	172	132	81	19
Percentage (%)	4.27	13.22	28.57	22.96	17.62	10.81	2.54

Table-III: Range and percentage of citations

Average no of citations	No of publications	Percentage (%)
01-10	89	11.88
11-20	394	52.60
21-30	238	31.78
31 or more	28	3.74
Total	749	100.00

equally helped in providing valid output for the betterment of these fields¹³. Very limited bibliometric studies have been conducted in past in Pakistan to explore the importance of scientific journals¹⁴. Much more is required to be done as far as bibliometric field in Pakistan is concerned to give dynamic input for improving the research activities. Besides medical sciences, Bibliometrics has its implications in other fields as well. Bibliometric evaluation of the journal of American society for information science and

analysis of research publications on positron emission tomography (PET) over a period of ten year from 2002 to 2012 revealed significant yearly increase from 547 publications in 2002 to 986 publications in 2007 which became 1838 publications in 2012 showing enhanced research productivity in this field¹⁷. We conducted a five year bibliometric analysis of PAFMJ from 2011 to 2015 in this study which is a bimonthly peer-reviewed medical journal of Pakistan Armed Forces including medical and dental publications.

No such analysis of the respective journal has been conducted in past.

For any journal, number of issues reflects basic research capacity by demonstrating the number of papers being produced over a specific time frame¹⁸. Data from our present bibliometric study has revealed that issue numbers as well as published articles have been gradually increased for PAFMJ to the present status of six issues per

been found in other bibliometric studies conducted in past²⁰. Collaboration of multiple authors for successful conduction of research work is also evident in another study involving dental field showing pan-national effort of researchers in various fields²¹. In our study, articles with an average of 11-20 citations remained on the top while articles with an average of greater than 30 citations ranked lowest in the list, findings which are supported by

Table IV: Ranking by subject.

Rank	Subject	Frequency	Percentage (%)
1	Anatomy	18	2.40
2	Anaesthesia	28	3.73
3	Biochemistry	08	1.06
4	Cardiology	43	5.74
5	Community Medicine	56	7.47
6	Dentistry	27	3.60
7	Dermatology	12	1.60
8	ENT	33	4.40
9	Gynecology/obstetrics	50	6.67
10	Medicine	79	10.54
11	Nephrology	05	0.67
12	Neurology	06	0.80
13	Neurosurgery	07	0.93
14	Oncology	15	2.00
15	Ophthalmology	45	6.01
16	Orthopaedics	06	0.80
17	Paediatrics	30	4.01
18	Pathology	83	11.08
19	Pharmacology	10	1.33
20	Physiology	08	1.06
21	Plastic surgery	07	0.93
22	Psychiatry	20	2.67
23	Radiology	35	4.67
24	Rehabilitation medicine	21	2.80
25	Surgery	82	10.90
26	Thoracic surgery	09	1.20
27	Urology	06	0.80
Total		749	100.00

year showing increasing interest of health professionals in research work, these findings are in accordance to other journals showing good growth rate over time¹⁹. Analysis of authorship pattern revealed that most of the contribution was from multiple authors showing enhanced cooperation between researchers for conduction and compilation of studies. Similar findings have

another bibliometric study conducted in Pakistan on journal of Ayub medical college (JAMC), Abbottabad²². In our study, pathology remained the most commonly addressed subject having contribution of 11.08% in under study duration followed by surgery (10.90%) and medicine (10.54%). In another study revealing Bibliometric analysis of the Journal of Pakistan Medical

Association form 2009 to 2013, maximum articles related to Clinical Sciences but as single specialty Community Medicine (Basic Sciences) was on the top with 140(15.3%) articles followed by Medicine 134 (14.7%) and Surgery 72 (7.9%), both from the clinical sciences²³. Another bibliometric analysis of journal of college of physicians and surgeons of Pakistan from 2010 to 2014 revealed that multiple authorship pattern is the most prevalent form of productivity revealing increased collaboration required to conduct a research work, a finding consistent with our study while medicine remained the most popularly addressed subject followed by pathology²⁴.

CONCLUSION

PAFMJ has successfully completed 60 years of publication with a positive increase in productivity in terms of volume numbers per year and publications in all fields of basic and medical sciences showing enhanced tendency of doctors towards research. It has inspired the young budding researchers in Army Medical and Dental Corps as well as form non-military set ups to actively participate in research and share their results for assessment and implication. It has also provided a bridge to the research workers in various fields to work in collaboration for the betterment of patients. PAFMJ has vast potential of increasing its productivity in future as well as influencing the research circle in the future. PAFMJ is comparable to any other influential medical journal in Pakistan in all the aspects.

CONFLICT OF INTEREST

This study has no conflict of interest to declare by any author.

REFERENCES

- Guido D, Morandi G, Palluzzi F, Borroni B. Telling the Story of Fronto temporal Dementia by Bibliometric Analysis. *J Alzheimers Dis* 2015; 48(3): 703-09.
- Thompson DF, Walker CK. A descriptive and historical review of bibliometrics with applications to medical sciences. *Pharmacotherapy* 2015; 35(6): 551-59.
- Primo NA, Gazzola VB, Primo BT, Tovo MF, Faraco IM Jr. Bibliometric analysis of scientific articles published in Brazilian and international orthodontic journals over a 10-year period. *Dental Press J Orthod* 2014; 19(2): 56-65.
- Doloon DJ. The Role of Peer Review for Scholarly Journals in the Information Age. *J Electron Publ* 2007; 10(1): 1-10.
- Poletto VC. Bibliometric study of articles published in a Brazilian journal of pediatric dentistry. *Braz Oral Res* 2010; 24(1): 83-88.
- Swain DK, Panda KC. J Intellectual Property Rights, 2002-2010: a bibliometric study. *Chinese Librarianship* 2012; 33; 1-11.
- Kurichi JE, Sonnad SS. Statistical methods in the surgical literature. *J Am Coll Surg* 2006; 202: 476-84.
- Manivannan G. The Indian Journal of Medical Research (2000-2005): A Bibliometric Analysis. *J Adv Libr Inf Sci* 2012; 2: 100-03.
- Momen H. The role of journals in enhancing health research in developing countries. *Bull World Health Organ* 2004; 82(3): 163.
- Dhillon JK, Gill NC. Contribution of Indian Pediatric Dentists to Scientific Literature During 2002-2012: A Bibliometric Analysis. *Acta Inform Med* 2014; 22:199-202.
- Jemec GB, Nybæk H. A bibliometric study of dermatology in central Europe 1991-2002. *Int J Dermatol* 2006; 45: 922-26.
- Warraich NF, Ahmad S. Pakistan Journal of Library and Information Science: A bibliometric analysis. *Pak J Library Information Sci* 2011; 12: 1-7.
- Jeter PE, Slutsky J, Singh N, Khalsa SB. Yoga as a Therapeutic Intervention: A Bibliometric Analysis of Published Research Studies from 1967 to 2013. *J Altern Complement Med* 2015; 21(10): 586-92.
- Javed M, Shah SS. Rawal medical journal-An analysis of citation pattern. *Rawal Med J* 2008; 33: 254-57.
- Tsay MY. Journal Bibliometric Analysis: A case study on the *Jasist*. *Malaysian J LibrInform Sci* 2008; 13: 121-39.
- BakriA, Willett P. The Malaysian journal of library and information science 2001- 2006: A bibliometric study. *Malaysian J Libr Inform Sci* 2008; 13:103-16.
- BaekS, YoonDY, MinKJ, LimKJ, SeoYL, YunEJ. Characteristic sand trends of research on positron emission tomography: a bibliometric analysis, 2002-2012. *Ann Nucl Med* 2014; 28: 455-62.
- Jain S, Patthi B, Singla A, Singh S, Singh K, Kundu H. Bibliometric analysis of two journals of community dentistry. *J Indian Assoc Public Health Dent* 2014; 12: 256-60.
- Rao MH, Khan N. Comparison of statistical methods, type of articles and study design used in selected Pakistani medical journals in 1998 and 2007. *J Pak Med Assoc* 2010; 60(9): 745-50.
- Mishra L, Pattnaik P, Kumar M, Aggarwal S, Misra SR. A bibliometric analysis of two PubMed-indexed high-impact factor endodontic journals: A comparison of India with other countries. *Indian J Dent* 2016;7(3): 121-25.
- Jain S, Basavaraj P, Singla A, Singh K, Kundu H. Bibliometric analysis of journal of clinical and diagnostic research (dentistry section; 2007-2014). *J Clin Diagn Res* 2015; 9(4): 47-51.
- Ullah M, Butt IF, Haroon M. The Journal of Ayub Medical College: A 10-year bibliometric study. *Health Info Libr J* 2008; 25(2):116-24.
- 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.
- 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 Coll Physicians Surg Pak* 2016; 26(11): 920-23.