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JOURNAL OF POSTGRADUATE MEDICAL INSTITUTE: ANALYSIS THROUGH BIBLIOMETRIC LENS

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ABSTRACT

Objective: To analyze the publication patterns of Journal of Postgraduate Medical Institute (JPMI) over a period of 32 years.

Methodology: Bibliometric technique was used to evaluate original articles, review articles and case reports published in JPMI from 1986 to 2018. Publication patterns were analysed with regards to number of published articles per year, their specialty wise distribution and geographical distribution. Citations pattern was also noted.

Results: A total of 1671 articles were published in JPMI in a time span of 32 years. The year 2004 was recorded as the most productive year with 113 publications. Khyber Pakhtunkhwa (KP) province was the most contributing geographic zone (n=4614, 79.94%). The subject of surgery (n=205, 12.58%) followed by medicine (n=198, 12.15%) were the most frequent subjects of research. Journals (n=29400, 90.03%) followed by books (n=2035, 6.23%) were cited more in all publications. Five pages articles were larger in number. The female contribution was one-fifth of the total.

Conclusion: The study concluded that the subjects of surgery and medicine were more published and majority of the authors that contributed in the published articles were from KP.

Key Words: Bibliometric; Journal of Postgraduate Medical Institute; Publication.

INTRODUCTION

The most commonly used word for statistical analysis in library and information sciences is "Bibliometric". Bibliometric is a dynamic process for assessment of scholarly documents in library and information sciences. The word bibliometric is the combination of "Latin and Greek words "biblio" and "metrics", meaning the application of mathematics to the study of bibliography.¹ The term was first devised by Alan Pritchard in Statistical Bibliography or Bibliometrics, published in 1969. According to Pritchard, Bibliometric is "the application of mathematics and statistical methods to books and other media of communication".²

Journal of Postgraduate Medical Institute (JPMI) is the official journal of Postgraduate Medical Institute Peshawar (PGMI), which was started in 1986 as an annual publication. In 1993, the frequency of the journal changed to biannual and from 2004 till date, it is being published as a quarterly peer reviewed, open access medical journal.³ The editorial board consists of reputed medical professionals from Pakistan and abroad. The core objective of the journal is to provide a platform through which the research conducted in medical institutions is refined and communicated to health professionals.⁴ JPMI publishes articles of local and international researchers after peer-review. These

include original articles, case reports, review articles, commentaries, articles on medical education, letters to the editor and editorials.

This study is planned to reflect the portrait of JPMI over the last 32 years.

METHODOLOGY

Bibliometric technique was adopted for analysis of acquired data extracted from JPMI. Secondary data was extracted and evaluated. The characteristics and trends of the published articles were evaluated. This analysis was limited to the original articles, review articles and case reports published from 1986 to 2018. Letters to the editors and editorials were excluded. All the issues of the journal available in the periodical section of the library of Postgraduate Medical Institute Hayatabad, Peshawar, were collected, organized and scrutinized. The authors' institutional and geographic affiliations and addresses mentioned in the concerned research papers were taken into account for analysis. For geographical assessment, the whole country was categorized province-wise i.e., Punjab, Sindh, Khyber Pakhtunkhwa, Baluchistan, Gilgit Baltistan and Capital territory Islamabad. In addition, all foreign authors were placed in international category of authorship.

Data were entered into MS Excel and descriptive statistics were calculated.

■ RESULTS

A total of 1671 research articles were published during the study period. In 2004, highest number of articles (n=113, 6.76%) were published, followed by the year of 2005, in which 87 (5.21%) articles were published. Table 1 shows all the details.

Majority citations (n=29400, 90.03%) were from the journals, followed by books 2035 (6.23%). Details are given in table 2. There were 664 (40.94%) articles with 11-20 references, followed by 478 (29.47%) articles with 21-30, 293 (18.06%) articles with 1-10, 130 (8.01%) articles with 31-40 and

57 (3.52%) articles with over 40 references, respectively.

Three authors contribution was in 390 (23.52%) articles, followed by article with four authors (n=330, 19.90%), two authors (n=328, 19.78%), and more than 5 authors (n=171, 10.32%) in the rankings. Male authors (81.75%) were almost four times greater than female authors (18.25%). (Table 3).

Original articles were published mostly in the subject of surgery (n=205, 12.58%), followed by medicine (n=198, 12.15%). The details are given in table 4.

Most authors were from Pakistan (n=5423, 93.95%). Authors from other countries were 349 (6.65%). Table 5 gives further breakdown.

Majority of the articles (n=458, 27.54%) comprised of five pages, followed by articles

of four pages (n=399, 23.99%), of more than six pages (n=325, 19.54%), of six pages (n=267, 16.06%) and of two pages (n=59, 3.55%), respectively.

■ DISCUSSION

Analysis depicted that research contribution of male authors was more, corresponding with other aspects of the society. Majority of the articles were published through joint authorship which is usual in other parts of the world as well. The subjects of medicine and surgery were reported as the more addressed subjects. This is due to the fact that both the subjects have more faculty and clinical units as compared to other specialties. The same results were recorded in a bibliometric study carried out about the Journal

Table 1: Number of Article Per Year

Year	Issue 01	Issue 02	Issue 03	Issue 04	Total	Percentage
1986	17	00	00	00	17	1.02
1987	00	18	00	00	18	1.08
1988	28	00	00	00	28	1.68
1990	25	00	00	00	25	1.50
1991	16	16	00	00	32	1.92
1993	17	18	00	00	35	2.10
1994	17	22	00	00	39	2.33
1995	18	15	00	00	33	1.97
1996	22	20	00	00	42	2.51
1997	19	20	00	00	39	2.33
1998	19	17	00	00	36	2.15
1999	26	24	00	00	50	2.99
2000	17	17	00	00	34	2.03
2001	20	17	00	00	37	2.21
2002	24	21	00	00	45	2.69
2003	30	16	00	00	46	2.75
2004	24	31	30	28	113	6.76
2005	21	24	22	20	87	5.21
2006	20	22	21	20	83	4.97
2007	15	15	15	17	62	3.71
2008	15	16	16	17	64	3.83
2009	21	16	16	16	69	4.13
2010	15	17	15	15	62	3.71
2011	15	16	14	20	65	3.89
2012	20	19	19	19	77	4.61
2013	21	19	19	22	81	4.85
2014	24	21	18	13	76	4.55
2015	11	10	17	20	58	3.47
2016	17	18	17	16	68	4.07
2017	17	21	20	19	77	4.61
2018	21	20	15	17	73	4.37
Total	592	526	274	279	1671	100

Table 2: Citation pattern

Year	Journal	Books	URL	Reports	Thesis	Others	Total
1986	62	20	00	06	00	03	91
1987	195	36	00	07	00	00	238
1988	99	45	00	00	00	02	146
1990	209	34	00	12	00	03	258
1991	216	39	00	04	00	05	264
1993	275	49	00	11	01	05	341
1994	443	59	00	12	01	13	528
1995	497	56	00	05	03	05	566
1996	552	62	00	02	00	10	626
1997	781	64	00	08	01	22	876
1998	526	57	00	04	02	10	599
1999	754	99	00	12	07	23	895
2000	511	63	00	09	04	10	597
2001	684	59	00	00	01	09	753
2002	702	74	13	08	01	18	816
2003	692	74	00	07	00	14	787
2004	1969	212	05	20	03	29	2238
2005	1561	154	09	24	04	23	1775
2006	1581	104	11	08	05	30	1739
2007	1263	78	07	12	02	26	1388
2008	1392	53	09	08	02	16	1480
2009	1386	74	09	13	01	21	1504
2010	1256	43	09	07	00	12	1327
2011	1356	85	36	20	01	13	1511
2012	1565	81	29	14	02	21	1712
2013	1631	64	19	22	00	37	1773
2014	1453	58	30	10	03	29	1583
2015	1188	40	22	06	00	19	1275
2016	1335	17	73	03	13	19	1460
2017	1636	62	59	12	03	36	1808
2018	1630	20	35	01	00	15	1701
Total	29400	2035	375	287	60	498	32655
Percentage	90.03	6.23	1.15	.88	.18	1.53	100

Table 3: Contribution of Authors Gender Wise

Year	Male	Female	Total	Male Percentage	Female Percentage	Total Percentage
1986	29	01	30	.50	.02	.52
1987	35	05	40	.61	.09	.70
1988	38	04	42	.66	.07	.73
1990	56	05	61	.97	.09	1.06
1991	64	06	70	1.11	.10	1.21
1993	62	10	72	1.07	.17	1.24
1994	68	12	80	1.18	.21	1.39
1995	87	04	91	1.51	.07	1.58
1996	120	06	126	2.08	.10	2.18
1997	91	10	101	1.58	.17	1.75
1998	94	12	106	1.63	.21	1.84
1999	139	16	155	2.41	.28	2.69
2000	78	26	104	1.35	.45	1.80
2001	87	18	105	1.51	.31	1.82
2002	116	11	127	2.01	.19	2.20
2003	123	11	134	2.13	.19	2.32
2004	303	43	346	5.25	.74	5.99
2005	253	51	304	4.38	.88	5.26

2006	242	37	279	4.19	.64	4.83
2007	218	36	254	3.78	.62	4.40
2008	229	42	271	3.97	.73	4.70
2009	244	50	294	4.23	.87	5.1
2010	231	38	269	4.00	.66	4.66
2011	234	32	266	4.06	.55	4.61
2012	264	48	312	4.57	.83	5.40
2013	230	78	308	3.98	1.35	5.33
2014	204	96	300	3.53	1.67	5.20
2015	142	77	219	2.46	1.33	3.79
2016	199	66	265	3.45	1.14	4.59
2017	214	106	320	3.71	1.84	5.55
2018	224	97	321	3.88	1.68	5.56
Total	4718	1054	5772	81.75%	18.25%	100%

of the College of Physician and Surgeon Pakistan in 2016.⁵ The research output in term of publications on Positron Emission Tomography (PET) during the study period of 2002 - 2012 for *Annals of Nuclear Medicine*, indicated that an increase was observed from 547 (2002) to 986 (2007) and 1838 (2012) articles.⁶ This showed that research output had increased during the study period in the said journal. Similarly, a research was conducted on the toxicology which elaborated that there was improvement in the output of toxicology research in journals of the Arab world.⁷ In Pakistan, a bibliometric study carried out to evaluate the *Journal of Ayub Medical College* from the period of 1997-2006, concluded that there was increase in the research output in term of volume and number of article. It was further stated that the articles submitted to the journal were predominantly original articles and majority of the papers submitted were from Pakistani authors.⁸ Similarly, another study was conducted which concluded that the research output had increased in the *Journal of College of Physician and Surgeon* from 2010 to 2014. Results showed that the research articles had increased during the last 5 years with the highest contribution from the province of Punjab, which may be due to the larger population of the province.⁵

Another study stated that there were 437 citations in 32 research articles published in the two issues of the volume 31 of *Rawal Medical Journal* from January to December 2006. The study concluded that most authors were Pakistani. The study also concluded that indexing methods like web of science and Ullrich indexing were used

to improve the literature search and improve journal quality.⁹

An international bibliometric study of dermatology revealed that research output had improved in terms of authorship pattern and number of citations per article over the years. Most of papers were having single author. The study indicated that authors from 12 different countries contributed to this journal as found in the study of 11 volumes.¹⁰

Analysis of data from JPMI depicted that three authors contribution was the most frequent as compared to one, two or more authorships. Four authors contribution was reported more prominent in *Pakistan Journal of Surgery*.¹¹ Journals were the most cited source. On the other hand, analysis of citation pattern of *Dialogue* showed that book was the more cited document.¹²

CONCLUSION

The year 2004 followed by 2005 were the most productive years. *Surgery* and *Medicine* were given more attention. Journals followed by books were cited more in all publications as compared to web sources, conference proceedings and other sources. Five pages articles were larger in number. The female contribution was one-fifth of the total.

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Table 4: Subjects Covered by the Journal as per the Original articles published

Subjects	86	87	88	89	90	91	93	94	95	96	97	98	99	2000	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	Total	%
Anatomy	00	02	00	00	00	00	00	00	00	00	00	03	01	03	01	00	00	01	00	00	00	00	00	00	00	01	01	03	00	01	00	00	18	1.11
Anesthesia	00	02	02	00	00	00	00	00	00	00	00	00	01	01	00	00	00	03	02	01	03	03	01	03	01	00	02	01	00	00	01	01	29	1.78
Biochemistry	00	00	00	00	00	00	00	02	00	00	00	00	00	00	00	02	00	00	00	00	00	00	00	00	03	00	02	00	00	00	00	22	1.35	
Bio statistics	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	3	0.18	
Cardiology	1	1	00	2	1	1	1	1	3	2	00	1	4	3	4	5	2	6	4	3	4	3	1	5	3	10	4	4	3	1	4	3	89	5.46
Cardio thoracic	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	22	1.35	
Cardiac Surgery	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	25	1.53	
Community Med	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	25	1.53	
Dentistry	1	00	1	00	1	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	1	1	2	3	2	2	2	1	21	1.29	
Dermatology	1	00	00	00	1	00	1	00	1	2	1	00	1	00	1	00	00	2	3	1	00	00	1	3	00	2	2	1	00	1	2	3	30	1.84
Endocrinology	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	34	2.09	
Gastroenterology	1	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	53	3.25	
Gynecology	0	0	1	0	1	1	1	7	3	3	1	4	3	6	6	3	3	10	11	10	7	5	6	7	7	9	16	12	8	8	7	4	169	10.37
Medical Edu	00	00	00	00	1	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	21	1.29	
Medicine	2	1	3	3	2	4	4	5	8	5	8	5	4	5	3	7	9	9	11	9	12	7	9	6	7	6	7	3	10	12	8	198	12.15	
Microbiology	00	1	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	6	.37		
Nephrology	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	12	.74	
Neurology	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	10	.61	
Neurosurgery	00	00	00	00	00	2	3	2	1	5	00	00	00	00	00	00	2	2	3	00	2	1	2	3	2	3	6	2	2	5	4	3	55	3.38
Nuclear Medici	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	02	.12	
Oncology	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	13	.80	
Ophthalmology	00	2	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	53	3.25	
Orthopedics	00	00	00	00	1	3	00	1	1	00	00	00	00	00	1	00	1	5	2	4	1	4	3	2	5	2	4	1	00	00	1	44	2.70	
Otolaryngology	1	00	00	00	00	00	00	1	4	2	1	3	6	1	5	1	00	10	7	9	2	3	3	3	5	4	2	00	00	3	2	81	4.97	
Pathology	1	1	00	3	00	00	00	1	00	00	00	00	00	00	00	00	1	3	5	2	1	1	3	5	1	2	00	1	3	2	1	47	2.89	
Hematology	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	4	.25	
Pediatrics	2	2	2	5	0	1	2	2	1	1	1	1	4	2	0	5	2	6	2	0	2	3	3	1	3	2	4	3	2	2	5	72	4.42	
Pharmacology	1	00	2	00	00	00	00	1	00	1	00	2	3	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	26	1.60	
Physiology	00	1	1	2	1	2	1	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	12	.74		
Physiotherapy	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	1	.06	
Plastic Surgery	00	00	00	00	1	00	00	1	1	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	20	1.23	
Psychiatry	1	00	00	1	00	00	00	00	00	1	00	1	00	1	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	59	3.62	
Pulmonology	1	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	2	21	1.29	
Radiology	1	00	2	00	00	00	00	3	1	00	00	00	1	00	00	00	1	1	1	2	1	1	1	1	00	4	5	3	4	7	1	2	48	2.95
Radiotherapy	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	6	.37	
Surgery	1	5	3	5	1	0	6	7	6	7	5	7	5	7	3	7	6	9	19	12	13	10	11	8	7	6	7	8	5	2	6	205	12.58	
Surgery Peads	00	00	00	00	00	00	2	1	00	1	00	00	1	00	00	00	1	3	2	3	1	2	6	00	00	1	1	00	00	1	00	27	1.66	
Urology	2	00	3	1	3	2	00	00	3	2	1	1	1	1	1	00	1	2	2	1	2	00	00	3	3	3	2	2	1	2	3	2	50	3.07
Total	17	18	20	25	16	17	39	33	42	39	36	50	34	37	45	46	113	87	83	62	64	69	62	65	77	81	76	58	68	77	73	1629	100	

Table 5: Geographical Affiliation/Contribution of Authors

Year	Islamabad	KPK	Punjab	Sindh	Baluchistan	International	Total
1986	00	23	00	00	00	07	30
1987	00	37	02	00	00	01	40
1988	00	37	00	00	00	05	42
1990	00	50	04	00	00	07	61
1991	00	67	00	01	00	02	70
1993	00	68	01	00	00	03	72
1994	00	72	00	00	00	08	80
1995	00	91	00	00	00	00	91
1996	00	115	03	01	00	07	126
1997	00	69	11	12	02	07	101
1998	00	104	00	00	00	02	106
1999	00	143	02	05	00	05	155
2000	02	81	08	02	06	05	104
2001	00	102	01	02	00	00	105
2002	00	113	01	00	04	09	127
2003	00	131	01	00	00	02	134
2004	01	337	00	00	00	08	346
2005	02	269	07	06	00	20	304
2006	01	255	20	00	00	03	279
2007	00	238	10	03	00	03	254
2008	11	215	09	13	00	23	271
2009	00	260	18	02	00	14	294
2010	00	249	12	00	00	08	269
2011	12	212	11	06	00	25	266
2012	04	251	24	11	02	20	312
2013	14	211	26	13	00	44	308
2014	29	169	34	43	01	24	300
2015	27	144	14	21	04	09	219
2016	28	175	38	10	00	14	265
2017	42	166	58	21	00	33	320
2018	31	160	92	01	06	31	321
Total	204	4614	407	173	25	349	5772
Percentage	3.53	79.94	7.05	3.00	0.43	6.05	100

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Author's Contribution

MYJ conceived the idea, drafted initial manuscript, collected data from the record and carried out corrections after per reviewers' remarks. SU did sequence wise data provision, carried out data compilation, analysis, critical review and literature search. SUJ carried out data compilation, analysis, critical review and literature search. HNA did data collection, bibliography and drafting of final manuscript. Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

Conflict of Interest

Authors declared no conflict of interest

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None

Data Sharing Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.