



RESEARCH SCENARIO OF ALL INDIA INSTITUTE OF MEDICAL SCIENCES (AIIMS) DELHI DURING 2017-21: A BIBLIOMETRIC STUDY

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ABSTRACT The paper reflects research output of AIIMS (India) during 2017 to 2021 using data from Scopus database. It shows the research output by the medical scholars of the institute, high profiled authors, and Research collaborations on International and National basis and top sources of publications preferred during the year period. The study finds that research contribution of AIIMS, Delhi during five years was 12797 publications; Maximum productivity was marked in the year 2021 followed by its preceding year 2020; Highest publications were published in the source 'BMJ Case Reports' (515 papers); Highest collaboration was made with USA in publication of research papers (1154 papers); Highest research produce was made by Tripathi, M. (196 Papers) followed by Sharma N. and Tandon N. (195 papers each).

KEYWORDS : Research Output, Scientometrics, Bibliometrics, Report, Productivity, AIIMS, Delhi

1. Introduction

Research is considered as scientific investigation that advances knowledge. It is further addition to the body of information that can be used to develop understanding. It is clear that research influences recognition and appreciation in the higher education system. The evaluation and ranking of higher education systems is becoming more important in India. Top rankings of higher education institutions demonstrate the significance of research impact and productivity in assessing an institution's overall performance. One of the key metrics used to evaluate higher education institutions is research. Publications give a better understanding of an institution's research productivity because they reflect that institution's research activity.

Bibliometrics is considered as one of the most popular methods for locating, compiling, assessing, and examining the research output of a researcher or groups, institutions, nations, or organizations. Comparing the productivity of research among individuals, groups, institutions, and nations is possible because of bibliometrics. As the name reflects the term "bibliometrics" is made up of two Latin and Greek word "biblio & biblion" and "metrics." We can easily understand from the word Metrics that the use of metrics or statistical analysis to written document or books is bibliometrics. If we wish to know the origin of the term 'Bibliometrics' it is found that it was first coined by Alan Pritchard in 1969. Different authors have defined it in their own ways. Pritchard (1969) defined it as "the application of mathematics and statistical methods to books and other media of communication". Bellis (2009) defined it as "Bibliometric is a set of methods to quantitatively analyze scientific and technological literature."

Many a bibliometric studies have been conducted to assess the research output of various institutions and fields. Similarly, the present study has been carried out to determine research output of a premier institute in the field of medical Sciences i.e AIIMS New Delhi.

2. Objectives

The main objective of this study is to analyze the research productivity of a premier Institute in the field of medical sciences "AIIMS, New Delhi". The specific objectives are:

1. To analyze the yearly research output of AIIMS during 2017-21;
2. To study the citation profile of the institute during penta period;
3. To identify the most prolific authors;
4. To understand the subject wise research contribution;
5. To find out the top ten most preferred sources for publishing;
6. To show the top affiliations in terms of research output
7. To identify the top countries conducting research.

3. Methodology

For the present study, research productivity of AIIMS, New Delhi from 2017 to 2021 has been analyzed. The data has been extracted from the largest abstracting and citation database of peer- reviewed literature- "Scopus database". The data was extracted from the Scopus on 31st

October 2022 using the strings "AF-ID ("All India Institute of Medical Science, New Delhi") and limit to publication years 2017-2021. The data was shifted to MS-Excel for analysis and presented in tabular form for further conclusions. The study is limited to the Scopus database covering a five years period only.

4. Review

A number of studies have been conducted on Bibliometric analysis of different institutions. It is not possible to cover all the studies so efforts have been made to cover a number of latest studies.

Angadi, et al. (2012), studied the research productivity of University of Madras during 1999 -2011 and found the authorship pattern, most prolific authors, most preferred journals etc. Baskaran (2013) studied research output of Alagappa University during 1999-2011 and analysed authors' productivity, preferred discipline for publishing and institution-wise collaboration. Thomas and George (2021) analysed the research performance of PGIMER, Chandigarh during 2011-20.

A few other studies conducted by Parmar & Siwach (2018) Kumber et al (2013), Mukherjee (2008) , Kaur & Mahajan (2012) etc. were also consulted for interpretation and analysis of data.

5. Data Analysis

5.1 Type of Research Output of AIIMS

The table 1 shows different type of publications preferred by authors of AIIMS during penta period 2017-21. It is apparent that large number of publications were published in form of articles (63.91%) followed by Letters (11.71%) and Review papers (10.92%). 6.85 percent papers were published in the form of Notes. Other publications were Editorial Notes (2.42%), Book Chapters (1.74%) and Conference Papers (1.12%). Other publication types like short survey, erratum, book, retracted, data paper, etc. were least appeared.

Table 1 Type of publication output of AIIMS

Source	TP	%
Article	8179	63.91
Letter	1499	11.71
Review	1397	10.92
Note	877	6.85
Editorial	310	2.42
Book Chapter	223	1.74
Conference Paper	143	1.12
Short Survey	84	0.66
Erratum	61	0.48
Book	10	0.08
Retracted	5	0.04
Data Paper	4	0.03
Undefined	5	0.04
Total		100.00

5.2 Yearly distribution of Publications and Citations

Table 2 depicts the year wise distribution of AIIMS publications during the period 2017-2021. Table shows that a total of 12797 records of IIT Delhi were observed in Scopus database during the study period. It is very clear from the table that most productive year has been 2021 (26.36%) followed by 2020 (22.47%). The table clearly shows that there is an increasing trend in research productivity of AIIMS, Delhi. Table shows that ACP is highest (11.55) for the year 2021. It shows that the new publications received more citations rather than old publications.

Table 2 Research output and citations of AIIMS

Year	TP	%	TC	%	ACPP
2017	2087	16.31	1137	1.35	0.54
2018	2177	17.01	6477	7.69	2.98
2019	2284	17.85	13835	16.42	6.06
2020	2876	22.47	23838	28.29	8.29
2021	3373	26.36	38972	46.25	11.55
Total	12797	100.00	84259	100.00	6.58

5.3 Most Prolific Authors of AIIMS

Table 5.3 presents the status of 10 most productive authors of AIIMS during period of fifteen years. These 10 authors contributed 1746 papers, which is 13.64 % share of cumulative total research output. More research output was contributed by Tripathi, M. followed by Sharma, N.; Tandon, N.; Lodha, R, Madan, K. and Kumar, R.

Table 3 Authors wise output during 2017-21

Author	TP	%	% of Total TP
Tripathi, M.	196	11.23	1.53
Sharma, N.	195	11.17	1.52
Tandon, N.	195	11.17	1.52
Lodha, R.	184	10.54	1.44
Madan, K.	180	10.31	1.41
Kumar, R.	175	10.02	1.37
Kumar, S.	173	9.91	1.35
Bakhshi, S.	158	9.05	1.23
Pandey, R.M.	146	8.36	1.14
Guleria, R.	144	8.25	1.13
Total	1746	100.00	13.64

5.3 Subject wise Output

Scopus classifies the different subject categories for the indexed articles. The papers published by AIIMS can be divided into different subject categories as shown in Table 4. A paper may appear in more than one subject category so the total number of articles exceeds in all subject categories. Maximum publications appeared in the subject category Medicine (10921 publications). It was distantly followed by Biochemistry, Genetics and Molecular Biology (1741), Neuroscience (898) and Pharmacology, Toxicology and Pharmaceutics (507). Immunology and Microbiology had more than 400 hundred publications while Engineering, Psychology, Nursing and Dentistry received more than 200 publications.

Table 4 Subject wise research output by AIIMS

Subjects	TP	% of TP (N=12797)
Medicine	10921	85.34
Biochemistry, Genetics and Molecular Biology	1741	13.60
Neuroscience	898	7.02
Pharmacology, Toxicology and Pharmaceutics	507	3.96
Immunology and Microbiology	412	3.22
Engineering	253	1.98
Psychology	232	1.81
Nursing	219	1.71
Dentistry	218	1.70
Chemistry	184	1.44

5.5 Highly preferred Sources for publications

Table 5 presents the status of top 10 journals which had published 17.16 % share of total publications of AIIMS. BMJ Case Reports was

most preferred journals for publications (23.45%) followed by Indian Journal of Ophthalmology (18.49 %), Neurology India (11.48 %), Indian Journal of Pediatrics (10.88 %). Indian Journal of Medical Research and Indian Pediatrics had almost similar share (7.60 and 7.38 respectively). Indian Journal of Anesthesia covered 5.78 %, National Medical Journal of India covered 5.24%, World Neurosurgery covered 4.92% while Journal of Anesthesiology Clinical Pharmacology 4.78 % papers.

Table 5 Most productive Sources of publications

Source Title	TP	% of Top Source	% of TP
BMJ Case Reports	515	23.45	4.02
Indian Journal of Ophthalmology	406	18.49	3.17
Neurology India	252	11.48	1.97
Indian Journal of Pediatrics	239	10.88	1.87
Indian Journal of Medical Research	167	7.60	1.30
Indian Pediatrics	162	7.38	1.27
Indian Journal of Anaesthesia	127	5.78	0.99
National Medical Journal of India	115	5.24	0.90
World Neurosurgery	108	4.92	0.84
Journal of Anaesthesiology Clinical Pharmacology	105	4.78	0.82
Total	2196	100.00	17.16

5.6 Collaboration at National and International Level

AIIMS contributed its research output in collaboration with different institutes at national as well as International level. Top 10 collaborating institutes at national level and international level have been listed in table 6. At National level, AIIMS provided highest research output with Dr. Rajendra Prasad Centre for Ophthalmic Sciences (1326 papers) followed by Institute Rotary Cancer Hospital India (619 papers), Postgraduate Institute of Medical Education & Research, Chandigarh IARI (520 papers), Indian Institute of Technology Delhi (362) Indian Council of Medical Research (341). VMMC Safdarjang Hospital, University of Delhi, Sanjay Gandhi Postgraduate Institute of Medical Sciences Lucknow had published more than 200 papers in collaboration while Public Health Foundation of India and Centre for Biomedical Engineering had more than 100 papers.

On the other side it has been observed that AIIMS at International Level had highest collaboration with United States in publication of research output papers (1154) followed by UK (586 papers), Australia (353 papers) and Canada(329 papers). Germany, Italy, China, France, Spain Japan were other countries published more than 200 papers each in collaboration with the Institute.

Table 6 Top Ten Affiliations in terms of Publications

Sr. No.	Institutes	TP	% of Top N=12797	Country	TP	% of Top N=12797
Local Collaboration	All India Institute of Medical Sciences, New Delhi	12698	99.23	India	12772	99.80
1.	Dr. Rajendra Prasad Centre for Ophthalmic Sciences	1326	10.36	United States	1154	9.02
2.	Institute Rotary Cancer Hospital India	619	4.84	United Kingdom	586	4.58
3.	Postgraduate Institute of Medical Education & Research, Chandigarh	520	4.06	Australia	353	2.76
4.	Indian Institute of Technology Delhi	362	2.83	Canada	329	2.57

5.	Indian Council of Medical Research	341	2.66	Germany	281	2.20
6.	VMMC Safdarjang Hospital	248	1.94	Italy	258	2.02
7.	University of Delhi	240	1.88	China	226	1.77
8.	Sanjay Gandhi Postgraduate Institute of Medical Sciences Lucknow	226	1.77	France	223	1.74
9.	Public Health Foundation of India	192	1.50	Spain	205	1.60
10.	Centre for Biomedical Engineering	185	1.45	Japan	202	1.58
	Total	4259	33.28		3817	29.83

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