BIBLIOMETRIC ANALYSIS OF THE 'INDIAN JOURNAL OF MEDICAL RESEARCH (IJMR)' (2011-2014)

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ABSTRACT: - *This study aims to present a bibliometric analysis of the Indian Journal of Medical Research (IJMR), the aim being to offer a summary of research activity in Medical science and characterize its most important aspects. The paper analyzes a bibliometric study of 578 articles were published during the period January 1, 2011 to December 31, 2014 in the Indian Journal of Medical Research (IJMR).The paper covers the bibliometric analyses of year-wise distribution of articles, category-wise classification of papers, subject-wise distribution of articles, authorship patterns, and institutions-wise distribution of contributions. Special issues of the Indian Journal of Medical Research (IJMR) brought out during 2011-2014, and prolific authors during 2011 to 2014 have been analyzed.*

KEYWORDS: Indian Journal of Medical Research (IJMR); Bibliometrics; Content analysis; Scientific journal, Medical Journal.

INTRODUCTION

Bibliometrics is a set of methods used to study or measure texts and information (Wikipedia, 2011). Bibliometric studies have been applied mainly to scientific fields and are based principally on various metadata elements like author, title, subject, citations, etc. related to scholarly publication within a discipline. This type of analysis provides useful indicators of scientific productivity, trends, the emphasis of research in various facets and researchers' preferences for publication (Jacobs, 2001). Sengupta has defined bibliometric as organization, classification and quantitative evaluation of publication pattern of macro-communication along with their authorships by mathematical and statistical calculations.

The term bibliometrics was first coined by Pritchard in 1969. An initiating example of a bibliometric study was statistical analysis of the

literature of comparative anatomy from 1543 to 1860, done by including book and journal titles, and grouping them by countries of origin and periods. According to Hulme (1923) entitled "*Statistical Analysis of the History of Science*". His investigation was based on the entries in the English International Catalogue of Scientific Literature. Another third study was the work of **Gross and Gross** reported in 1927. They counted and analyze the citations in articles from the *Journal of the American Chemical Society*, and produced a list of journals estimates important to chemical education. Zipf's law (1949) relates to the frequency of word occurrence. Zipf derived his law from the empirical law of least effort. He said that there is relationship between the rank of the word and its frequency of textual matter, if the words are arranged in their decreasing order of frequency of occurrence in a long text. This law indicates that, "in a long textual matter if the words are arranged in their decreasing order of frequency then the rank of any given word of the text will be inversely comparative to the frequency of occurrence of the words". Another important work was Bradford's 1934 article on the distribution of literature in lubrication research. It is an important part of the theoretical foundation of bibliometrics, "*Bradford's Law of Scattering*".

In 1948, the Father of Indian library scientist, Dr. S.R. Ranganathan, coined the term "*librametry*", which historically appeared first and was intended to modernize the services of librarianship. Bibliometrics is analogous to Ranganathan's librametrics, the Russian concept scientometrics, informetrics, and subdisciplines like econometrics, psychometrics, sociometrics, biometrics, technometrics, chemometrics, and climetrics, where mathematics and statistics are applied to study and solve problems in their respective fields. Scientometrics is now used for the application of quantitative methods to the history of science and overlaps with bibliometrics to a considerable extent (Thanuskodi, 2010a).

The *Indian* Journal of Medical Research (IJMR).

The Indian Journal of Medical Research (IJMR) [ISSN 0971-5916] is one of the oldest medical Journals not only in India, but probably in Asia, as it started in the year 1913. The Journal was started as a quarterly (4 issues/year) in 1913 and made bimonthly (6 issues/year) in 1958. It became monthly (12 issues/year) in the year 1964. The Journal is being indexed and abstracted by all major global current awareness and alerting services

The IJMR is published monthly, in two volumes and 12 issues per year. The IJMR publishes peer reviewed quality biomedical research in the form of original research articles, review articles, short papers, short notes. Research letters are also published in the corresponding section after peer review. Special issues and Supplements are published in addition to the regular issues.

CRITERIA FOR CONSIDERATION OF PAPERS - The papers should meet the following criteria – the material should be original, the methodology used should be standard and appropriate, results should be unambiguous supported with data/photographs, conclusions should be reasonable and based on the findings, the topic should be of biomedical interest and findings should have clinical significance. Papers involving human and animals should be ethically cleared by the local ethical committees.

MANUSCRIPT PREPARATION - Manuscript should be prepared in accordance with the Guidelines set by the International Committee of Medical Journal Editors (ICMJE) as uniform requirements for manuscripts submitted to biomedical journals and should be submitted online at http://www.journalonweb.com/ijmr . Abstract should be structured (of about 250 words) under the subheadings Background & objectives, Methods, Results, and Interpretation & conclusions.

RELATED STUDIES

This article reviews a few studies conducted abroad as well as in India on bibliometric study in chronological order.

Antonio E. MENDES , Fernanda S. TONIN , Fernando FERNANDEZ-LLIMOS (2016),This analysis of the first decade of articles published in Pharmacy Practice serves as a valuable benchmark for enhancing the quality of the journal going forward. During this decade, Pharmacy Practice was admitted to major databases, resulting in increased growth in terms of both visibility and impact. The editorial process duration increased with the implementation of a more rigorous reviewer selection process. International collaboration among authors is low. Some of these patterns and trends deserve further analysis to identify potential tendencies in the field of pharmacy practice that may result in weaknesses for all journals in the field.

Thanuskodi (2010b) discussed the research output performance of social scientists on social science subjects. The analysis cover mainly the number of articles, authorship pattern, subject wise distribution of articles, average number of references per articles, forms of documents cited, year wise distribution of cited journals etc. Yeoh and Kaur (2008) analyses the publication output of Research in Higher Education for subject support in collection development in the light of growing interest in diversified domains of research in higher education. Consequently, analysis of 40 issues of publications revealed a diversified usage pattern of bibliographic reference sources by contributing researchers, with a cumulative total of citations being 8,374. A positive trend in research collaboration of contributing authors, and a steady growth in the use of reference sources, periodicals and web documents in the citations signify the trend of scholarly communication of research works in the electronic age. Similar to other disciplines of

research findings, journals and books were the most cited source materials for researchers thrash out.

Verma, Tamrakar and Sharma (2007) revealed that majority of the articles in the journal are two-authored and majority of the contributions are from New Delhi. Singh, Mittal and Ahmad (2006) conducted a bibliometric study of literature on digital libraries. The important findings are that most articles (61 percent) are single-authored; author productivity is not in agreement with Lotka's Law, except in one case where the number of articles is three; the maximum number of articles were published in 2003 with English being the most productive language; maximum articles were published in the journal *D-lib Magazine*; distribution of articles nearly follows Bradford's Law; and USA ranked first for maximum number of journals. Tiew (2000) found that 53% of articles contained journal self-citations, and a tendency is noticed for authors affiliated to the institution publishing the journal to cite the journal. Patra, Bhattacharya and Verma (2006) analyzed the growth pattern, core journals and authors' distribution in the field of bibliometric using data from *Library and Information Science Abstract* (LISA) and found that the growth of literature does not show any definite pattern. Dhiman (2000) has done ten year bibliometric study *Ethnobotany Journal* published during 1989-1998. In this paper examines year-wise, institution-wise, country-wise, authorship pattern, range of references cited and length of the articles.

OBJECTIVES AND METHODOLOGY

The objectives of the present study are:

- to study year-wise distribution of papers;
- to study categories-wise classification of papers;
- to study the authorship pattern of papers;
- to study institute-wise distribution of papers; and

The methodology applicable in the current study is bibliometric scrutiny, which is used to analyses in detail the bibliographic attributes of the articles published in the *Indian Journal of Medical Research(IJRM)* from 2011-2014. Eight volumes (Vol. 133 to 140) containing forty-eight issues of the *Indian Journal of Medical Research(IJRM)* have been taken up for the study. The authors have extracted the information from the *Indian Journal of Medical Research (IJRM)* journal website published by Indian Council of Medical Research (ICMR) Publishing and then used MS Excel to organize, tabulate and analyze the data for the study.

DATA ANALYSIS AND INTERPRETATION

The *Indian Journal of Medical Research (IJRM)*journal have extracted all the details such as author(s), title, year of publication, institutional

affiliation, etc. of all articles published from 2011 to 2014 were recorded for the following analysis.

YEAR-WISE DISTRIBUTION OF ARTICLES

During the period January 1, 2011 to December 31, 2014, 1158 articles were published. Table 1 show that the numbers differs from year to year and the number of articles from the year 2011 to 2014. Out of total 1158 articles, the maximum numbers of articles are in the year 2012 Vol.no.136 contributing 291 articles, which are 25.12% to the total publications. The minimum numbers of articles are in the year 2011 vol.no.134 with 118 articles, which are 10.18 % to the total publications.

Table 1. Year-wise Distribution of Articles

		No. of Articles Issue-wise							
Year	Vol. No.	1	2	3	4	5	6	No. of Articles	%
2011	133	19	17	21	16	27	19	119	10.27
2011	134	25	17	24	13	14	25	118	10.18
2012	135	25	23	31	22	31	19	151	13.03
2012	136	16	28	23	33	29	26	291	25.12
2013	137	37	24	21	29	25	27	163	14.07
2013	138	27	22	25	22	22	41	159	13.73
2014	139	24	25	23	26	23	34	155	13.38
2014	140	28	21	24	22	24	19	138	11.91
Total	8	201	177	192	183	195	210	1158	100

Category-wise classification of papers

Table 2 focuses that the category wise classification of the papers published during period from 2011 to 2014. The study reveals that the maximum number of articles published as under the category of original articles i.e. 616 (53.19%), whereas 223 (19.25%) articles published under the Correspondence category. There were a small numbers of articles published as under the Editorial category, i.e., 18 (7.16%). Thus, it clearly shows that 53.19% most of the articles published from category of original articles.

Table 2. Category-wise Classification of Papers

Authorship patterns

The authorship pattern was analyzed to determine the percentage of single and multiple authorship. As Harsanyi (1993) has shown, different disciplines interpret the order of authorship differently. According to Terry (1996), there are no established norms for citation order in librarianship and information science. As indicated in Table 2, our author sample consists of 2153 authors for 975 articles.

Category	Year					
	2011	2012	2013	2014	No. of Articles	%
Editorial	18	24	23	18	83	7.16
Commentaries	20	25	25	28	98	8.46
Review Articles	44	28	24	42	138	11.91
Original Articles	128	169	162	157	616	53.19
Correspondence	33	65	55	70	223	19.25
Total	243	311	289	315	1158	1158 / 100

Table 4 reveals that during 2011-2014 the highest proportion of articles were by six authors (28.58%), followed by articles with 2 authors (17.61%), singe authors (16.23%), 3and 4 authors (13.47%) and 5 authors (10.62).The data point out that the large number of articles by 6 authors means that there are well-established research groups in the area and the subject is a new and emerging one.

Table 4. Authorship patterns

Authorship	Years					
	2011	2012	2013	2014	No. of Articles	% of Articles
Single	41	57	42	48	188	16.23
2 authors	49	41	52	62	204	17.61
3 authors	33	49	40	34	156	13.47
4 authors	32	43	45	36	156	13.47
5 authors	21	38	27	37	123	10.62
6 authors	67	83	83	98	331	28.58
Total articles	243	311	289	315	1158	100
Total authors	873	1146	1079	1191	--	--
Single %	4.69	4.97	3.89	4.03		
Joint %	95.3	95.02	96.10	94.79		

Degree of collaboration in the Indian *Journal of Medical Reserch(IJMR).*

To determine degree of collaboration in quantitative terms, the formula given by K. Subramanyam (1983) was used.

The formula is

$$C = \frac{NM}{NM + NS}$$

Where **C** = Degree of collaboration

NM = Number of multi authored

papers

NS = Number of single authored papers

$$C = \frac{188}{188 + 970}$$

In the present study the value of **C** is $C = 1.1623$

As a result, the degree of collaboration in the The *Indian Journal of Medical Research (IJRM)* is 1.1623, which clearly indicates it's no dominance upon single authors contribution.

Institutions-wise distribution of papers

Table 5 shows institution-wise distribution of papers published in the Indian *Journal of Medical Research (IJRM)* during the period under study. Authors from ICMR & Research Institutions contributed 605 (52.24%) papers followed by 333 (28.75%) from Institute of Medical Sciences, papers followed universities by 155 (13.38). Authors from others, i.e., private research institutions, information centers etc. and colleges comprised 5.61% respectively.

Table 5. Institutions-wise distribution of contributions

Institutions	Years						
	2011	2012	2013	2014	No. of Articles	%	
ICMR & Research Institutions	132	157	149	167	605	52.24	
Institute of Medical Sciences	74	93	87	79	333	28.75	
Universities	28	43	39	45	155	13.38	
Others	9	18	14	24	065	5.61	
Total	243	311	289	315	1158	1158	100

Special issues

Table 6 shows the details of special/thematic issues of the Indian *Journal of Medical Research (IJRM)*journal brought out during 2011-2014 under the Guest Editorship of eminent Medical professionals both from academia as well as research and development organizations/institutions. Out of 48 issues published during 2011-2014, only six special issues were brought out. There were no special issues were brought out during 2013 vol.137 and 2014 vol139.

Table 6. Special issues of *the Indian Journal of Medical Research (IJRM)* brought out during 2011-2014

Year	Volume & Issue No.	Theme/Title	Guest Editor(s)
2011	Vol. 134 No.4	Haemoglobinopathies	Dr. Dipika Mohanty
2012	Vol. 135 No.5	TB Diagnostics	Dr. Pawan Sharma
	Vol. 136 No. 5	Integrated Behvioural & Biological Assessment (IBBA) Survey Studies.	Dr. R.S.Paranjape
2013	Vol. 138 No. 3	Special Section Nutrition & Food Security	Dr. Prema Ramchandran
	Vol. 138 No. 4	Translational Immunology in Health & Disease	Dr. N.K.Mehra
2014	Vol. 140 No. 9	Reproductive Health & Strategies for family planning	Dr. R.S.Sharma

No special issues were brought out during vol.137,Vol.137 and Vol.139.

CONCLUSION

The publishing trend totally depends on the output of contributors, patterns of contributions and the quality of research. The year 2012 (25.12%) shows the maximum number of contributions to the *Indian Journal of Medical Research (IJRM)*.This study reveals that the categories of article distributions are remarkable in this original articles (53.19%). The majority of the articles were contributed by Six authors; and most authors were research field, faculty members or researchers with ICMR and research institutions. Out of 48 issues published during 2011-2012, only six special issues were brought out from eminent editors and guest editor of Medical professionals. The *Indian Journal of Medical Research (IJRM)* is notably a scholarly journal that stipulates or induces fruitful research for the Medical profession.

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