

Trends in Health Science Research as Reflected in IJMR (1945-2015): A Bibliometric Study

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ABSTRACT

Analytical research is used to provide a quantitative analysis of academic literature. It is also used in mapping the implication of research in the concerned field. It is useful to assess research quality and on the account of the assessment results, allocates the position of the academic institutions. This paper highlights the different publications of health science in India published in "Indian Journal of Medical Research" and indexed in SCOPUS database. Here is an attempt to discuss the research papers, authors affiliation to different academic and research organizations, authors contribution and preferably this paper highlights the author's geographical attachment.

Bibliometric indicators including total articles, independent articles, collaborative articles, first author articles, and corresponding author articles were analyzed to compare publications between different countries and organizations. All the data and information were retrieved from the SCOPUS database on 27 April 2016 for a period from 1945 to 2015. Indian researchers have their collaboration with other 77 countries and contributed 8331 research outputs to the health sector. There are only 12,177 papers published in this journal, where New Delhi is ahead among all the major cities in India with 1686 number of publications. The number can be more if proper encouragement and adequate infrastructure is provided to the health science researchers. More collaboration can be appreciated for the improvement of research activity.

KeyTerms: IJMR, Bibliometric, Health Science Research, SCOPUS, WHO

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INTRODUCTION

World Health Organization looks after the improvement of healthcare facility in the society¹. There is a change in techniques to serve the patients which is possible through day to day research. The concerned government should be open to co-operate the researchers in policy making and facilitation with different patterns and strategies of research^{2,3}. Health care facility is affected by poverty⁴ where Government is responsible for health care financing and promoting health insurance⁵ and financial incentives can enhance the maternal healthcare⁶. WHO always emphasizes to reduce the child mortality throughout society. It is mentioned that intervention strategies are required to reduce child died in different areas with the help of ranking system⁷.

Janani Suraksha Yojana in India is a milestone in the healthcare sector which includes healthcare costs, healthcare quality and performance motivation of

community health workers⁸. The national scheme for hearing loss is proposed in 12th five-year plan with a basic aim to expand this programme throughout India by March 2017. There are such government organizations or institutions which are satisfied to award research grants for different projects and patents⁷. Scientific research can guide health systems to improve and develop new ideas⁹. Sri Lanka govt. demand that they are internationally recognized for their good health indicators with low GDP (approx 2500) in their annual health bulletin, 2002⁹.

Hypothetically it is proved that many factors are responsible for safe delivery and reduce the number of neonatal death, such as focus on marginalized communities, high population coverage, acceptability, active recruitment of newly pregnant women into groups etc. There should not be any rumor to restrain people of taking tablets in Mass Drug Administration (MDA)

compliance¹⁰⁻¹³. It is necessary to highlight different factors on adverse reactions during health communication and social mobilization control¹⁴.

Analysis of research papers can accommodate three major components. These components can be discussed for (a) institutional research output, (b) influential research and (c) individual research productivity. This is to identify the declining trend of interest and evaluation of publications. The journal articles are the major form of publication in English language¹⁵ and there is some evidence that international uptake of the initiative continues to generate publications and create interest¹⁶. Collaborative research is always useful, the maximum number of the articles (85%) were published in collaboration with two or more authors¹⁷.

Priority interventions are co related with proper research outputs in low and middle-income countries. Significant research can also be done with the application of interventions in high-income countries¹⁸⁻²⁰. It has the high influence to contextual difference and again it is accountable in low and middle-income countries. 31% of USA researchers make them involve in HIV/AIDS research in Nigeria¹⁷.

The basic aim of this study is to find the year wise publication of documents, distribution of documents into major subjects, documents published in different types, the individual contribution of authors, author's affiliation to different countries, publications in major cities in India and distribution of documents into different organizations

The Indian Journal of Medical Research

It is a reputed journal of Indian Council of Medical Research and published by Medknow Publishers. It is a peer-reviewed journal and appreciated by the faculties, students, research scholars and also general practitioners in the health science sector. This journal publishes original issues related to biomedical research and evidence-based review articles.

METHODOLOGY

Periodicals can be treated as the main source of transmitting knowledge and literature growth is considered through these publications. Data on the published articles in IJMR are extracted from the electronic database SCOPUS which is the largest in the world. Simple mathematical formula is applied to this collected data to evaluate the relevant output. Only the term "Indian Journal of Medical Research" is put as source title to trace all the papers and other related data on this journal. The search is limited from the year 1945 to 2015.

DATA ANALYSIS

Year Wise Distribution of Publications

It is worthy to mention that the whole year of study is divided into three equal parts and all parts have 23 years of span. Because the year 1948 and 1949 are not included in the list as it is not seen in the SCOPUS database (Table 1a). It is understood that total 12177 papers were published through IJMR by December 2015. Approximately 50% of the total documents are published from 1970 to 1992 (Table 1, 1a, 1b, 1c).

Table 1: Year wise distribution of publications

Span of Year	Paper/Documents	%age
First span (Table 1 a), 1945 - 1969	1983	16.28
Second span (Table 1 b), 1970 - 1992	6047	49.66
Third span (Table 1 c), 1993 - 2015	4147	34.06
Grand Total, (1945 - 2015)	12177	100

Table 1a: Distribution of Documents from 1945 to 1969

Year	Document	%age	Cumulative %age
1945	37	1.87	--
1946	40	2.02	3.88
1947	12	0.61	4.49
1950	51	2.57	7.06
1951	53	2.67	9.73
1952	48	2.42	12.15
1953	44	2.22	14.37
1954	54	2.72	17.10
1955	65	3.28	20.37
1956	50	2.52	22.89
1957	74	3.73	26.63
1958	61	3.08	29.70
1959	65	3.28	32.98
1960	21	1.06	34.04
1961	27	1.36	35.40
1962	95	4.79	40.19
1963	117	5.90	46.09
1964	156	7.87	53.96
1965	128	6.45	60.41
1966	94	4.74	65.15
1967	176	8.88	74.03
1968	212	10.69	84.72
1969	303	15.28	100
Total	1983	100	--

Table 1b: Distribution of Documents from 1970 to 1992

Year	Document	%age	Cumulative %age
1970	243	4.02	--
1971	295	4.88	8.90
1972	273	4.51	13.41
1973	275	4.55	17.96
1974	272	4.50	22.46
1975	237	3.92	26.38
1976	256	4.23	30.61
1977	307	5.08	35.69
1978	332	5.49	41.18
1979	344	5.69	46.87
1980	327	5.41	52.27
1981	355	5.87	58.14
1982	325	5.37	63.52
1983	322	5.32	68.84
1984	271	4.48	73.33
1985	210	3.47	76.80
1986	244	4.04	80.83
1987	282	4.66	85.50
1988	217	3.59	89.09
1989	162	2.68	91.76
1990	191	3.16	94.92
1991	169	2.79	97.72
1992	138	2.28	100
Total	6047	100	--

Table 1c: Distribution of Documents from 1993 to 2015

Year	Document	%age	Cumulative %age
1993	117	2.82	--
1994	124	2.99	5.81
1995	106	2.56	8.37
1996	110	2.65	11.02
1997	114	2.75	13.77
1998	87	2.10	15.87
1999	78	1.88	17.75
2000	73	1.76	19.51
2001	73	1.76	21.27

2002	73	1.76	23.03
2003	72	1.74	24.76
2004	186	4.49	29.25
2005	194	4.68	33.93
2006	227	5.47	39.40
2007	219	5.28	44.68
2008	234	5.64	50.33
2009	262	6.32	56.64
2010	257	6.20	62.84
2011	259	6.25	69.09
2012	326	7.86	76.95
2013	345	8.32	85.27
2014	330	7.96	93.22
2015	281	6.78	100
Total	4147	100	--

○ Distributions of Documents Into Different Forms

Documents are being published in different forms. Those are essential for the information seekers to be habituated with the type of documents. Researchers, faculty members, general practitioners receive much-needed information through these documents and the undergraduate students also require these documents for their purpose. In this study, it is intimated that approximately 85% of documents are published as original articles and followed by review papers with 4.5%. Out of 12,177 documents, it is noticed during retrieval that 267 documents are not defined in any category. Only 3 documents are conference papers and 14 documents are listed in a short survey (Table 2).

Table 2: Distributions of Documents into Different Forms

Document	Number	%age
Article	10,320	84.75
Review	549	4.51
Letter	432	3.55
Note	326	2.68
Editorial	246	2.02
Erratum	20	0.16
Short Survey	14	0.11
Conference paper	3	0.02
Undefined	267	2.19
Total	12,177	100

○ Documents Contributed by Different Authors

Table 3 depicts that Prof. Nirmal K. Ganguly listed on the top with 117 papers, R. C. Mahajan is on the second top with 91 documents for his credit, P. K. Rajgopal is in the third position with 85 papers and 11 authors contributed 19 documents each as per the data retrieved from SCOPUS (Table 3).

Table 3: Documents Contributed by Different Authors

Sl no	Author	Documents	%age
1	Ganguly, N. K	117	2.26
2	Mahajan, R. C	91	1.76
3	Rajgopal, P.K	85	1.64
4	Banerjee, K	83	1.61
5	Bhatia, H	64	1.24
6	Bhattacharjee, S.K	60	1.16
7	Malviya, N	59	1.14
8	Sharma, K. B	58	1.12
9	Kumar, R	58	1.12
10	Chaturvedi, J.C	57	1.10
11	Aikat, B	57	1.10
12	Pal, S.C	55	1.06
13	Chakravarti, S.N	54	1.04
14	Bhujawala, W.A	52	1.01

15	Das, P.K	51	0.99
16	Vinayak, V.K	48	0.93
17	Sharma, P.L	47	0.91
18	Sehgal, S	45	0.87
19	Sharma, M	44	0.85
20	3 authors 46 documents each	138	2.67
21	4 authors 43 documents each	172	3.33
22	2 authors 42 documents each	84	1.62
23	5 authors 40 documents each	200	3.87
24	8 authors 39 documents each	312	6.03
25	4 authors 38 documents each	152	2.94
26	3 authors 37 documents each	111	2.15
27	2 authors 36 documents each	72	1.39
28	4 authors 35 documents each	140	2.71
29	4 authors 34 documents each	136	2.63
30	6 authors 33 documents each	198	3.83
31	4 authors 32 documents each	128	2.48
32	4 authors 30 documents each	120	2.32
33	3 authors 29 documents each	87	1.68
34	3 authors 28 documents each	84	1.62
35	2 authors 27 documents each	54	1.04
36	4 authors 26 documents each	104	2.01
37	11 authors 25 documents each	275	5.32
38	14 authors 24 documents each	336	6.50
39	7 authors 23 documents each	161	3.11
40	11 authors 22 documents each	242	4.68
41	10 authors 21 documents each	210	4.06
42	13 authors 20 documents each	260	5.03
43	11 authors 19 documents each	209	4.04
Total	161 authors	5170	100

○ Geographical Distribution of Documents

This study reveals that Indian researchers contribute more documents as compared to the other parts of the world. It can be noticed that the other parts of the globe have a good number of documents published in this journal. India is on the top with 7077 which is followed by the United States with 310 and United Kingdom with 101 documents respectively (Table 4).

Table 4: Geographical Distribution of Documents

Sl. No	Country	Documents
1	India	7077
2	United States	310
3	United Kingdom	101
4	Turkey	79
5	China	66
6	Australia	41
7	Italy	41
8	Iran	41
9	Japan	35
10	Canada	35
11	Switzerland	32
12	Germany	28
13	Bangladesh	27
14	France	26
15	Malaysia	24
16	South Korea	24
17	Taiwan	23
18	Brazil	21
19	Sri Lanka	19
20	Spain	17
21	Netherlands	15
22	Nigeria	15
23	Sweden	15

24	Thailand	14
25	South Africa	13
26	Yugoslavia	12
27	Belgium	11
28	2 countries having 8 documents each	16
29	5 countries having 7 documents each	35
30	4 countries having 6 documents each	24
31	5 countries having 5 documents each	25
32	7 countries having 4 documents each	28
33	3 countries having 3 documents each	9
34	7 countries having 2 documents each	14
35	18 countries having 1 document each	18
Total	78 countries	8331

○ Documents Contributed by Different Institutions

Authors are associated with different organizations and accordingly, the documents are also categorized under institutions. All India Institute of Medical Sciences, Post Graduate Institute of Medical Education & Research and Christian Medical College, Vellore have placed in top three positions with 921, 740 and 290 documents respectively. Indian Council of Medical Research (ICMR) is placed in 5th position with 187 documents. The University of Kerala has contributed 19 documents where 3 countries have contributed 7 documents each during the period of study (Table 5).

Table 5: Documents Contributed by Different Institutions

Sl. No	Institute	Documents
1	All India Institute of Medical Sciences	921
2	Post Graduate Institute of Medical Education & Research	740
3	Christian Medical College, Vellore	290
4	Central Drug Research Institute India	197
5	Indian Council of Medical Research	187
6	Vector Control Research Centre India	178
7	Banaras Hindu University Institute of Medical Sciences	169
8	Chhatrapati Shahuji Maharaj Medical University	161
9	National Institute of Virology India	158
10	National Institute of Nutrition India	157
11	Maulana Azad Medical College	127
12	National Institute of Cholera and Enteric Disease India	125
13	Sanjaya Gandhi Postgraduate Institute of Medical Sciences, Lucknow	114
14	Jawaharlal Institute of Postgraduate Medical Education & Research India	100
15	National Institute of Communicable Diseases India	84
16	Virus research centre Pune	83
17	National Institute of Mental Health and Neurosciences	82
18	Pandit Bhagawat Dayal Sharma Postgraduate Institute of Medical Sciences	75
19	Lady Harding Medical College	74
20	Tuberculosis Research Centre India	73
21	Tata Memorial Hospital	72
22	Seth Gordhandas Sunderdas Medical College	71
23	Punjab University	68
24	University College of Medical Sciences	68
25	Verdaman Mahavir Medical College & Safdurjang Hospita	65
26	Kasturaba Medical College Manipal	53
27	Regional Medical Research Centre, BBSR	50
28	University of Calcutta	48
29	University of Madras	47
30	Calcutta School of Tropical Medicine	46
31	National AIDS Research Institute, India	45
32	St.John's Medical College	44
33	Organisation Mandile de la Sante	44

34	King Edward Memorial Hospital India	42
35	Institute for Research in Reproduction India	41
36	Jawaharlal Nehru Medical College, Aligarh	41
37	Osmania University	38
38	Haffkine Institute for Training, Research & Testing India	35
39	Shri Chitra Tirunal Institute of Medical Science & Technology	35
40	Defence Institute of Physiology and Allied Sciences	34
41	Institute of Postgraduate Medical College & Research, Kolkata	34
42	Motialla Nehru Medical College, Allahabad	33
43	Government Medical College, Nagpur	33
44	National Jalma Institute of Leprosy and other mycobacterial diseases, India	31
45	National Institute of Malaria Research, India	31
46	National Institute Immunology India	30
47	Mysore Medical College	29
48	2 institutes contributed 26 documents each	52
49	5 institutes contributed 25 documents each	125
50	Indian Veterinary Research Institute	24
51	3 institutes contributed 23 documents each	69
52	4 institutes contributed 22 documents each	88
53	4 institutes contributed 21 documents each	84
54	3 institutes contributed 20 documents each	60
55	University of Kerala	19
56	6 institutes contributed 18 documents each	108
57	6 institutes contributed 17 documents each	102
58	5 institutes contributed 16 documents each	80
59	8 institutes contributed 15 documents each	120
60	9 institutes contributed 14 documents each	126
61	6 institutes contributed 13 documents each	78
62	5 institutes contributed 12 documents each	60
63	4 institutes contributed 11 documents each	44
64	11 institutes contributed 10 documents each	110
65	13 institutes contributed 9 documents each	117
66	15 institutes contributed 8 documents each	120
67	3 institutes contributed 7 documents each	21

○ Contribution of Major Cities in India

It is interestingly observed from this study that the Indian researchers from each corner of the Indian states contribute their research papers. The authors decided to list the number of publications from the major Indian cities. The study reveals that New Delhi is placed on the top position with 1686 publications (Table 6).

Table 6: Contribution of Major Cities

Andhra Pradesh	Gujarat	Jharkhand	Maharashtra		
Chittoor	11 Ahmedabad	71 Bokaro	1 Mumbai	235	
Eluru	2 Anand	199 Dhanbad	6 Nagpur	94	
Guntur	2 Gandhinagr	6 Jamshedpur	4 Nashik	3	
Kurnoo	18 Jamnagar	5 Ranchi	5 Navi mumbai	24	
Tirupati	40 Surat	21 Karnataka	Pune	364	
Visakhapatnam	15 vadodara	7 Bangalore	300 Thane	4	
Assam	Haryana	Belgaum	14 Manipur		
dibrugarh	37 Faridabad	5 Bellary	7 Bishnupur	2	
guwahati	18 Gurgaon	20 Dharwad	5 Chandel	18	
silchar	5 Karnal	12 Gulbarga	8 Churachand pur	3	
tezpur	14 Panchkula	8 Mysore	61 Imphal	9	
Bihar	Rewari	10 Kerala	Meghalaya		
Aurangabad	31 Rohtak	83 Kochi	34 Shillong	3	
Bhagalpur	2 H. Pradesh	Kollam	2 Soh	2	
Gaya	2 Kangra	17 Kozhikode	4 Nagaland		
Munger	1 Mandi	9 Thiruvananthapuram	68 Dimapur	3	
Muzaffarpur	4 Shimla	27 Thrissur	5 Kohima	1	

Patna	47	Solan	2	Madhya Pradesh		wokha	2
Chhattisgarh		Una	9	Bhopal	33	Mizoram	
Bilaspur	3	J. kashmir		Gwalior	38	Aizawl	3
Jagdalpur	2	Anantnag	1	Indore	23	New delhi	1686
Raipur	13	Baramulla	1	Jabalpur	33	Odisha	
Rajnandgaon	1	Jammu	29	Sagar	33	Berhampur	7
Punjab		Pulwama	1	Ujjain	4	Bhubaneswar	28
Amritsar	18	Srinagar	20	Telangana		Cuttack	7
Jalandhar	1	W. Bengal		Hyderabad	287	Rourkela	16
Ludhiana	58	Asansol	4	Karimnagar	3	Sambalpur	3
Patiala	5	CoochBehar	2	Khammam	2	Tripura	
Uttar Pradesh		Darjeeling	10	Nalgonda	1	Agartala	1
Agra	62	Howrah	3	Nizamabad	1	Mohanpur	1
Aligarh	47	Jalpaiguri	2	Secunderabad	5	Udaipur	24
Allahabad	45	Kalyani	6	Warangal	8	Uttarakhand	
Bareilly	15	Kolkata	181	Tamilnadu		Dehradun	6
Ghaziabad	6	Malda	5	Chennai	352	Haldwani	2
Gorakhpur	12	Medinipur	2	Coimbatore	14	Haridwar	1
Jhansi	22	Shiliguri	7	Madurai	58	Rishikesh	2
Kanpur	34	Rajasthan		Salem	24		
Lucknow	508	Ajmer	20	Thanjavur	12		
Meerut	22	Jaipur	59	Tirunelveli	8		
Varanasi	210	Jodhpur	22	Vellore	371		

CONCLUSION

Service to the human society is a noble job and it is well written that "Service to mankind is service to God". It should be the prior motive of the health science professionals. There should be an encouragement for the health science researchers from the concerned government as well as the institutional authorities. Indian researchers have their collaboration with other 77 countries and contributed 8331 research outputs to the health sector. There are only 12,177 papers published in this journal, but the number can be more if proper encouragement and adequate infrastructure is provided to the health science researchers. More collaboration can be appreciated for the improvement of research activity.

REFERENCES

1. https://en.wikipedia.org/wiki/World_Health_Organization
2. Koseoglu, M.A., et al. (2015). A bibliometric analysis of strategic management articles in healthcare management literature: Past, present, and future. *International Journal of Healthcare Management*, 8(27), 33.
3. Jimenez, S. E. et al. (2013). The investment case for improving maternal and child health: Results from four countries. *BMC Public Health*, 13(601).
4. Ladusingh, L. & Pandey, A. (2013). Health expenditure and impoverishment in India. *Journal of Health Management*. 15, 57-74.
5. Sahoo, A.K. & Madheswaran, S. (2014). Socio-economic disparities in health care seeking behaviour, Health expenditure and its source of financing in Orissa:

Evidence from NSSO 2004–05. *Journal of Health Management*, 16, 397-414.

6. Gopalan, S.S. & Durairaj, V. (2012). Addressing maternal health care through demand-side financial incentives: Experience of Janani Suraksha Yojana program in India. *BMC Health Services Research*, 12, 319.
7. Rath, S., et al. (2010). Explaining the impact of a women's group led community mobilization intervention on maternal and newborn health outcomes: The Ekjut trial process evaluation. *BMC International Health and Human Rights*, 10(25).
8. In Health Research (1990). Essential link to equity in development. Edited by: Commission on health research for development. New York: Oxford University Press.
9. Annual Health Bulletin (2002). Edited by: Sri Lanka department of health service. Colombo: Ministry of Health.
10. Lopez, A.D., et al. (2006). The Global and regional burden of disease and risk factors: Systematic analysis of population health data. *Lancet*, 367, 1747-57.
11. Maher, D. & Sekajugo, J. (2011). Research on health transition in Africa: Time for action. *Health Res Policy Syst*, 9, 5-8.
12. Mathers, C.D. & Loncar, D. (2006). Projections of global mortality and burden of disease from 2002 to 2030. *PLoS Medicine*, 3, 2011-30.
13. Abrahams, Z., Mchiza, Z. & Steyn, N.P. (2011). Diet and mortality rates in Sub-Saharan Africa: Stages in the nutrition transition. *BMC Public Health*, 11, 801.
14. Babu, B.V. (2010). A qualitative study on the adverse reactions of mass treatment for lymphatic filariasis in Orissa, India. *Asian Pacific Journal of Tropical Medicine*, 3, 55-58.
15. Tsay Ming-yueh & Yang Yen-hsu (2005). Bibliometric analysis of the literature of randomized controlled trials. *Journal of Medical Library Association*, 93, 450-458.
16. White, M., Wells, J.S.G. & Butterworth, T. (2014). The transition of a large-scale quality improvement initiative: A bibliometric analysis of the productive ward: Releasing Time to Care Programmer. *Journal of Clinical Nursing*, 23, 2410-2423.
17. Uthman, O.A. (2008). HIV/AIDS in Nigeria: A bibliometric analysis. *BMC Infectious Diseases*, 8, 19.
18. Miranda, J., et al. (2008). Non communicable diseases in low-and-middle-income countries: Context, determinants and health policy. *Trop Med Int Health*, 13, 1225-34.
19. Ebrahim, S. & Smith, G.D. (2001). Exporting failure? Coronary heart disease and stroke in developing countries. *Int J Epidemiology*, 30, 201-5.
20. Miranda, J.J. & Zaman, M.J. (2010). Exporting "failure": Why research from rich countries may not benefit the developing world. *Rev Saude Publica*, 44, 185-9.