

■ **Short Communication**

## **Some scientific publications of BPKIHS: a bibliometric study of articles listed in the Web of Science**

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### **Abstract**

Scientific productivity of any academic institution is expressed by the total number of publications generated by its academic faculties and the use of the publication by scientific community. Citation analysis is done to evaluate the use of the publications. Use of the publication can be studied with the help of bibliometric analysis. Counting publication, publications trends, authorship patterns and citation analysis are parts of bibliometric analysis. Web of Science is one of the best databases which allow the study in the use of the publications through citation analysis. In this article, scientific articles produced by the faculties and other international affiliated faculties of BP Koirala Institute of Health Sciences have been studied. Citation analysis of scientific publications of BP Koirala Institute of Health Sciences is done with the help of the Web of Science, a product of Thomson Reuters.

**Keywords:** bibliometrics, citation analysis, Web of Science, institutional productivity, BPKIHS, B.P. Koirala Institute of Health Sciences, Nepal

### **Background**

Research articles are always hard to trace in the developing or less developed countries like Nepal. Sometimes, articles published in local journals get lost. But, few years back national scientific journal took initiatives to get the articles listed in the database like PubMed and Web of Knowledge etc. Study of impact of scientific publications on institutional productivity is rarely done in developing nations. As there is a less possibility of the governments to provide fund for research in developing countries, institutions do not have incentives to study their productivity. Most of the time, national awards are awarded to the scholars without the knowledge of their scientific publications. So, authors themselves pay less attention to bibliometrics.

Bibliometrics try to measure the impact of scientific publications which are based on count of citations of

scientific papers. Bibliometric indicators have been widely used in national science and technology statistics publications to measure scientific capacity and they provide linkages to world of science from both developed and the developing countries.<sup>1</sup> In case of developing countries, scientific papers published in local journals are like sleeping beauties of science; they are rarely noticed by the world of science, waiting some Prince to get noticed and cited in their papers.<sup>2</sup>

In this article, the intellectual productivity of one of the best healthcare institutions of Nepal, BPKIHS, in terms of publications of articles was studied. BPKIHS is an abbreviation for BP Koirala (Name of a great democratic leader of Nepal) Institute of Health and Sciences. Author productivity, citation analysis and others relative scientific works of BPKIHS was studied with the help of Web of Science database. Web of Science, is a part of the Web of Knowledge product from Thomson ISI. It grew from the Science Citation Index which was created by Eugene Garfield in early 1960s.<sup>3</sup> It started

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as citation tracing product. A citation is a reference to a published or unpublished source. Citation analysis is the examination of frequency and patterns of references in an article of a journal or a chapter of a book.<sup>4</sup>

### About the BPKIHS

In this article, productivity of scientific research articles of BP Koirala Institute of Health Sciences (BPKIHS) was studied. B.P. Koirala Institute of Health Sciences was established on January 18, 1993 and subsequently upgraded as an autonomous health and sciences university on October 28, 1998 with a mandate to work towards developing socially responsible and competent health work force, providing health care and engaging in health research. The institute is located in Eastern Nepal. It has extended its continued health services through teaching from primary health care centers, district hospitals and zonal hospitals in six districts of the region.<sup>5</sup>

### Methods

The study was designed to explore the status of BPKIHS scientific publications in the Web of Science database by author, subject and annual productivity. The study would also assess the citations received by the publications of individual author of BPKIHS, and sources of study grants received from international /national institutions.

The primary data source of this paper was Web of Science, a citation database of Thomas Reuters. Search statement of the Web of Science database was used. First, abbreviation of BP Koirala Institute of Health Sciences, BP Koirala Inst Hlth Sci had been used in institutional address look up option in the database. Then BPKIHS abbreviation was used for extracting articles of this institution. During the month of August 2011, database was searched and the information downloaded for required analysis. All bibliometric analysis had been done with the help of the Web of Science analysis service. To analyze the downloaded table, Microsoft excel sheet was used.

A total of 380 publications of BP Koirala Institute of Health Sciences were extracted from the database with the help of first searching strategy (BP Koirala

Inst Hlth Sci). Among those, 253 articles were original articles and 3 of them were review articles. Another 35 articles were extracted with second searching strategy (BPKIHS). Among them, 25 articles were original articles. Original articles were analyzed for author productivity. While discussing about the productive interpretation of author as well as subject, reviews, meeting abstracts, letters, editorials, proceeding papers and news items were excluded

### Data analysis and interpretation

#### Bibliographic forms and year of distribution

In the following Table 1, bibliographic forms of publications of BPKIHS have been listed. As bibliographic forms has been studied, total no of original articles found were n= 253 with the help of first searching strategy (BP Koirala Inst Hlth Sci ) and total no of original articles found from the second searching strategy(BPKIHS) were n= 25. Overall, the total number of articles were n= 276.

**Table 1:** Bibliographic forms

Document Type	Record Count 1 <sup>st</sup> strategy	Record count 2 <sup>nd</sup> Strategy
ARTICLE	253	23
MEETING ABSTRACT	53	8
LETTER	50	3
EDITORIAL MATERIAL	11	
REVIEW	11	
PROCEEDINGS PAPERS	3	
NEWS ITEM	2	

#### Annual distribution of the publications

As evident from Table 2, most productive year of BPKIHS from first search strategy was 2008 when a total of n= 52 original articles were listed in the Web of Science database. The yield from second search strategy resulted in n=10 original articles. This table lists only top ten productive years of data.

Table 2: Annual distribution of publications

Publication Years	Record count 1 <sup>st</sup> Strategy	Original articles	Review articles	Record count 2 <sup>nd</sup> strategy	Original articles
2008	52	33	2	11	10
2009	43	28		8	3
2010	42	29	1	4	3
2006	39	24			3
2007	37	30	2	4	
2002	28	12	3	2	
2011	27	23	2	2	
2005	25	20			
2004	20	17	1		
1999	17	9			

### Author productivity, citation and h-index

Table 3 shows the pattern of citations received by the articles written by every individual author of BPKIHS. Citation analysis is done to evaluate the use of the published work. In citation analysis, author, co-author or both will get equal credibility.

It calculates the total citations received by the articles produced by the authors. In this article, Web of Science database is used for citation analysis. Total citations received by individual author are calculated by the number of citations received by article written by single author or joint authors where applicable. For example if Rijal S received total of 524 citations for his articles means, on those articles he may be a single or a joint author in citations received articles.

Rijal S is the number one author among the top ten productive authors of BPKIHS. His h-index is also highest among the authors. The h-index attempts to measure both the productivity and impact of the published work of a researcher or a scholar. The index was first proposed by Jorge E Hirsch and therefore it is also called the Hirsch Index. If Basudha Khanal has 9 h-index, she has written 9 papers receiving at least 9 citations. The scholar with higher h-index is considered to be more productive researcher in citation analysis study.

Only authors from BPKIHS are listed in table 3. Other prominent international authors who also contributed to the literature of BPKIHS are Boelaert M, Chappuis F, Dujardin JC, Picado Albert and Panda A.

Table 3: Author productivity

Author	out of 253 original articles from 1 <sup>st</sup> strategy	first author records	Sum of the total title cited	Sum of titles without self-citation	h-index	Out of 23 original articles from 2 <sup>nd</sup> strategy	First author record
Rijal S	51	5	627	524	15		
Khanal B	30	3	171	159	8		
Agrawal CS	26	1	57	55	4		
Pratap A	25	20	60	59	4	2	
Das ML	22	-	172	148	8		
Koirala S	22	11	346	27	11		
Singh R	19	11	222	214	7		
Agrawal S	16	8	71	71	5		
Agrawal A	15	2	24	24	3		
Agrawalla A	13	3	68	68	5		
Karki P	13	-	45	44	4	3	1
Sah SP	13	8	53	52	5		

### Analysis of journal

It's difficult to predict journal productivity for BPKIHS. Citations and number of publications are not the only criteria for a journal to predict its productivity. Additionally, one has to calculate Impact Factor (IF) of the journal to evaluate institution, author and subject productivity. I F of the journal was not considered for evaluation of any productivity in this article.

I F is a measure of the frequency with which the "average article" in a journal has been cited in a given period of time.

Journal Citation Report (JCR), a product of Thomson ISI (Institute for Scientific Information) provides

quantitative tools for evaluating journals. The impact factor is a measure of the frequency with which the 'average article' in a journal has been cited in a given period of time.

The IF for a journal is calculated based on citations received in two preceding years. The IF for 2011 for a journal is calculated as follows:

A = the number of times articles published in 2009-2010 were cited in indexed journals during 2011.

B = the number of articles, reviews, proceedings or notes published in 2009-2010.

Impact Factor 2011 = A/B.<sup>6</sup>

**Table 4:** Journal productivity

Field: Source Titles	Record Count with 1 <sup>st</sup> strategy	Record count with 2 <sup>nd</sup> strategy
Tropical Doctor	20	2
Journal of Nepal Medical Association	15	10
Tropical Medicine International Health	12	
American Journal of Tropical Medicine and Hygiene	10	
Journal of Dermatology	9	
International Journal Of Dermatology	8	
Transactions of the Royal Society of Tropical Medicine and Hygiene	8	
Journal of Pediatric Surgery	7	
Surgery Today	6	
Indian Journal of Pediatrics	5	

According to the above table, Tropical Doctor is the journal in which researchers first prefer to publish their findings in BPKIHS. Journal of Nepal Medical

Association stands second choice of the researchers of BPKIHS.

## Subject wise distribution

**Table 5:** Subject productivity

Field: Subject areas	Record Count original article from 1 <sup>st</sup> strategy	Sum of the times cited	Sum of the times cited without self-citation	Record count of original articles from 2 <sup>nd</sup> strategy	Sum of the times cited	Sum of times cited without self-citation
Public Environmental Occupational Health	77	496	454	13	14	14
Tropical Medicine	69	524	472	2	10	10
Pediatrics	33	109	107			
Surgery	29	61	61	2	-	-
General Internal Medicine	24	69	62	13	15	15
Infectious Diseases	21	124	117			
Dermatology	18	72	72			
Parasitology	14	64	57			
Neurosciences Neurology	12	19	19			
Pathology	11	25	25			

Observing table 5, public environmental occupational health is the highest productive subject in terms for literature publication. Only ten productive subjects have been listed in the table in terms of citation analysis. Citation analysis was done for observing the use of the subject

### Funding agency

Among the researches listed in Web of Science, only 7% of the research in BPKIHS was funded. European Union was the top most funder among the funding agencies.

**Table 6:** Funding agencies

Record Count	No. of articles	% of 380
European Union	9	3.409 %
Eu	7	2.652 %
European Commission	4	1.515 %
Ec	3	1.136 %
Agency For Innovation	2	0.758 %
Baillet Latour Foundation	2	0.758 %
Canadian Institutes Of Health Research	2	0.758 %
Fwo Flanders	2	0.758 %
Indian Council Of Medical Research	2	0.758 %
Kalanet	2	0.758 %

### Limitation

The main limitation of this study was limited primary data source; extraction of data was done only from Web of Science database. Web of Science covers approximately 23,000 peer reviewed journals published in the world. The article is not based on the total scientific output of BP Koirala Institute of Health Sciences.

### Conclusion

The database Web of Science does not provide total scientific productivity of any institution or of an author but it provides message about the use of their scientific publication. It is one of the best databases which allow the study in the use of the publications through citation analysis. By illustrating the publications of BPKIHS, this article only attempts to make researchers aware of the citation analysis and its availability in the database Web of Science.

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