

Brief communication

Vision science literature of Nepal in the database “Web of Science”

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Introduction: Vision Science is considered to be a quite developed discipline in Nepal, with much research currently in progress. Though the results of these endeavors are published in scientific journals, formal citation analyses have not been performed on works contributed by Nepalese vision scientists.

Objective: To study Nepal’s contribution to vision science literature in the database “Web of Science”.

Materials and methods: The primary data source of this paper was Web of Science, a citation database of Thomas Reuters. All bibliometric analyses were performed with the help of Web of Science analysis service.

Results: In the current database of vision science literature, Nepalese authors contributed 112 publications to Web of Science, 95 of which were original articles. Pokharel GP had the highest number of citations among contributing authors of Nepal. Hennig A contributed the highest number of article as a first author. The Nepal Eye Hospital contributed the highest number of articles as an institution to the field of Vision Science.

Conclusion: Currently, only two journals from Nepal including Journal of Nepal Medical Association (JAMA) are indexed in the Web of Science database (Sieving, 2012). To evaluate the total productivity of vision science literature from Nepal, total publication counts from national journals and articles indexed in other databases such as PubMed and Scopus must also be considered.

Keywords: Vision science literature; bibliometrics; citation analysis, Nepal

Introduction

It is estimated by the Global Forum for Health Research that less than 10% of the research economy is directed towards those diseases accounting for 90% of the global burden of disease (Lee, 2000). Mandal et al (2004) conducted a study reviewing the five highest scoring impact factor journals in ophthalmology over a 3-year-period to

compare the volume of ophthalmic literature from the developed and developing countries. It was found that the developing world contributed only 5.47% of the literature compared to 92.19% of contributions from the developed world. 2.33% of the literature was the result of the collaborative research from the two groups. However, developing nations such as India, China, South Africa, Mexico and Brazil bear the world’s burden of diseases. These countries need to direct available funding towards disease management, which leaves little for research endeavors. The developing countries

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account for 90.8% of world blindness, compared to 9.2% from the developed countries. Therefore, an inverse relationship exists between the burden of the world blindness and the contribution to the highest impact factor research (Mandal & Benson 2004). The top 10 countries in terms of total number of articles published in the ophthalmic literature were the United States, the United Kingdom, Japan, Germany, Canada, Australia, Italy, The Netherlands, Sweden and France. India ranked 13th position among vision science literature publications (Kumaragurupari, 2010).

There are approximately 210,000 blind persons in Nepal and one eye doctor (ophthalmologist) per 240,000 persons (BP Eye Foundation, 2009). Given this ratio, there are relatively few ophthalmologists in Nepal, and therefore, examining and treating patients is their first priority. Large numbers of patients, limited accesses to research facilities and poor data management are obstacles faced by vision science researchers in Nepal, where research endeavors are generally self-initiated. Even after research has been completed and the paper has been written, language barriers can remain which obstruct effective communication of the research to the international scientific community. However, in spite of these obstacles, research is still being conducted and articles are published in this country. Web of Science has indexed only one journal from Nepal, while Scopus (Sieving 2012) and PubMed have indexed five medical journals each (Pubmed 2012).

In order to evaluate scientific productivity, citation analyses need to be performed on research publications from a given country. "Citation analysis" is defined as counting the number of times a publication has been cited (University Library, University of Illinois, 2012). Therefore, one can gauge the importance of a publication within a discipline by counting the number of times it has been cited by other scholars in the field. If an article has a high number of citations, one may conclude that it has been the subject of discussion or criticism in its discipline. Additionally, finding the list of articles

that have cited a particular article is a bridge to more information about a research topic (University Library, University of Illinois 2012).

Web of Science, Scopus (Sciverse Scopus, 2011) and Google scholar (Harzing, 2008) are the tools to evaluate the citation analysis.

Web of Science is an online academic citation index provided by Thomson Reuters. It is designed to provide access to multiple databases, cross-disciplinary research, and in-depth exploration of specialized subfields within an academic or scientific discipline. As a citation index, any cited paper will lead to any other literature (book, academic journal, proceedings, etc.) which currently, or in the past, cites this work. In addition, literature which shows the greatest impact in a field covered by Web of Science, or more than one discipline, can be selectively obtained. For example, a paper's influence can be determined by linking to all the papers that have cited it. In this way, current trends, patterns, and emerging fields of research can be assessed. Web of Science has indexing coverage from the year 1900 to the present (Wikipedia, 2012).

The h-index is an index that attempts to measure both the productivity and impact of the published work of a scientist or a scholar. The h-index is based on the set of the scientists' most cited papers and the number of citations that they have received in other publications. This index can also be applied to the productivity and impact of a group of scientists such as a department or a university or a country. The index was suggested by Jorge E Hirsch (Wikipedia, 2012 Feb 26).

This paper intends to study the overall picture of vision science research, its publication and its use with the help of reliable tool "Web of Science".

Materials and methods

The primary data source of this paper was Web of Science, a citation database of Thomas Reuters. The search statement of the Web of Science database was used. The search word used was Nepal.

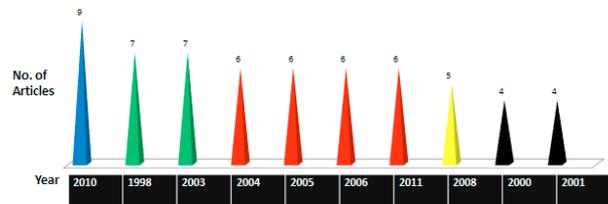
A total of 112 publications of vision science literature of Nepal were extracted from the database. Among those publications, 95 were original articles. Only original articles were used for author or subject productivity. Reviews, meeting abstracts, letters, editorials, proceeding papers and news items were excluded. Only purely ophthalmic literature was extracted, as defined by the database. For example, though the total literature contribution of Khatri SK in Web of Science was 112 publications, only 5 of his articles were evaluated. Articles evaluating nutrition and other related subjects were excluded. The publications of an individual institution were studied according to the database definition from the “address of institution” search option.

During September 2011, the database was searched and relevant information was downloaded for required analyses. All bibliometric analysis had

been done with the help of Web of Science analysis service. Some parts of the evaluation were performed with Microsoft Excel.

Results

Ten most productive years of vision science publications in Nepal



In the year 2010, Nepal contributed a total of 9 original vision science articles to the database “Web of Science”, making it the most productive year thus far. Only the ten most productive years are shown in the figure above.

Table 2

Authors from national institutions of Nepal with high h-indexes

Author	Total original articles	Sum of the times author cited	Sum of the times cited without self-citation	h-index	Articles as first author
Pokharel GP	19	1888	1832	14	3
Pokharel RP	18	1065	1048	13	1
Ruit S	18	180	168	8	5
Bhatta RC	7	155	144	6	-
Gurung R	10	76	69	5	1
Upadhya MP	12	193	183	5	6
Poudyal G	10	93	87	5	1
Shrestha JK	6	96	93	5	1
Koirala S	5	151	150	4	-
Kandel RP	9	71	59	4	2
Hennig A	9	66	60	4	9
Sapkota YD	7	57	53	4	3
Khatri SK	5	81	75	4	2
Badhu B	6	15	15	2	2

According to Table 2, articles written by GP Pokharel had the highest number of citations and his h-index was 14.

Table 3

Authors contributing to vision science literature of Nepal with high h-indexes from international institutions

Author	Total original article	Sums of the times cited	Sum of the times cited without self citation	h-index	First author
Brandt F	9	85	75	5	7
Panda A	9	49	48	5	8
Whitcher JP	8	208	197	5	-
Katz J	5	81	75	4	3
Ellwein B	9	554	533	7	-

Table 3 shows that Ellwein B had the highest h-index among international contributions to the vision science literature of Nepal.

Table 4

Productivity of national ophthalmic institutions of Nepal

Ophthalmic institution	Original article	Times cited	Without self -citation
BP Koirala Lions Centre for Ophthalmic Studies, Kathmandu	18	208	190
Nepal Eye Hospital, Kathmandu	22	231	219
Tilganga Institute of Ophthalmology, Kathmandu	20	148	137
Nepal Netra Jyoti Sangh, Kathmandu	20	571	558
Sagarmatha Chaudhary Eye Hospital, Lahan	11	122	110
BP Koirala Institute of Health Sciences, Dharan	8	46	45
Geta Eye Hospital, Dhangadhi	9	202	187

Table 4 shows Nepal Eye Hospital contributing the highest number of articles to the database Web of Science followed by Nepal Netra Jyoti Sangh and Tilganga Institute of Ophthalmology. Publications of Nepal Netra Jyoti Sangh were most cited in other worldwide ophthalmic literature.

Table 5

Contribution to Vision Science literature of Nepal by international institutions

Institutions	No. of articles	Citations	Cited without self-citation
University of California, San Francisco	15	303	287
National Eye Institute , Bethesda	9	554	533
Foundation Eye Care Himalaya	5	450	442
Johns Hopkins University	5	89	84
Munich University	5	71	70
University of Tromso	5	68	65
World Health Organization	5	306	303
Seva Foundation, Berkley	8	195	194
Aravind Eye Hospital	4	68	66

University of California, San Francisco contributed the largest in number of articles as an international collaborator. Articles produced in collaboration with the National Eye Institute, Bethesda were cited more often than those with the other institutions (Table 5).

Table 6
Most cited ophthalmic articles of Nepal

Article	Author	Journal	Year, Vol., No	Total cited	Average citation per year
Refractive error study in children: result from Mechi Zone Nepal	Pokharel GP, Negrel AD, Munoz SR	American Journal of Ophthalmology	Year 2000, Vol 129, issue 4	119	9.42
Epidemiological characteristics , predisposing factors and etiologic diagnosis of corneal ulceration in Nepal	Upadhaya MP, Karmacharya PCK, Koirala S et al	American Journal of Ophthalmology	Year 1991, Vol 111 Issue 1	113	4.57
Refractive error study in children : sampling and measurement methods for a multi country survey	Negrel MD, Maul E, Pokharel GP	American Journal of Ophthalmology	Year 2000 vol 129 issue 4	84	4.4
Prevalence of blindness and cataract surgery in Nepal	Pokharel GP, Regmi G, Shrestha SK et al	British Journal of Ophthalmology	Year 1998 vol 82 issue 6	60	4.29
Visual functioning and quality of life outcomes among cataract operated and operated blind population in Nepal	Pokharel GP, Selvaraj S, Ellwein LB	British Journal of Ophthalmology	Year 1998 Vol 82 Issue 6	55	3.93

Source: Web of science

Table 6 shows that the most cited article was “Refractive error study in children: result from Mechi Zone, Nepal” by Pokharel GP et al. The use of this article was the highest among the articles on vision science from Nepal listed in Web of Science. Out of 5 articles, GP Pokharel contributed the 4 highest cited articles. Among those 5 articles, 3 articles were published in the American Journal of Ophthalmology.

Currently, the Journal of Nepal Health Research Council and that of the Nepal Medical Association are indexed in Web of Science (Website accessed on 10.06.2012).

Discussion

Researchers in less developed countries (United Nations, 2012) such as Nepal, rarely get budgetary allotments for research. However, simply the facts that there are a total of 112 articles in the database “Web of Science” contributed by the Nepalese researchers demonstrate their willingness to independently undertake research endeavors. Only one journal from Nepal is indexed in the database Web of Science (Sieving, 2012). India contributes the total number of 269 journals in the database (Nagaraja, 2011). When compared to other countries, Nepal contributes a relatively small number of scientific publications to the world of Vision Science literature. The year 2010 contributed the highest number of articles in this database.

The contributions of GP Pokharel, RP Pokharel, Hennig A and Upadhya M are quite high in numbers.

Nepal’s oldest ophthalmic institution, Nepal Eye Hospital contributed the relatively more vision science related literature.

The high h-index of an author or co-author does not always mean the actual productivity of the author or the co-author in the given field. It only tells about how many times the article is cited by other authors. The Scopus database has the possibility for calculating h-index by excluding “self-citation” and “all of co-authors”. But Web of Science does not have this facility. Scopus database is weaker than Web of Science in terms of time coverage (Dehghani, 2011). In the table no 2 it shows that Bhatta RC received 155 citations for his articles. All of the citations received by the author are from articles where he has contributed as a co-author in those articles. So h-index has some weakness.

Some authors (Dehghani, 2011) propose that co-author citation should not be considered for calculating h-index or highly cited research. In this article, it only intends to talk about the study of citation received by the scientific articles which were not initiated before in Nepal.

Limitations

The data used in this study was extracted only from the database "Web of Science". Web of Science only covers approximately 23,000 journals out of the total peer reviewed journals published in the world. Therefore, the present study was not based on the total scientific publication output of vision science literature of Nepal.

Conclusion

To evaluate the total productivity of vision science literature from Nepal, total publication counts from national journals and articles indexed in other databases like PubMed and Scopus must also be considered. We hope that the results of this study will inspire those in the field of vision science in developing countries to make further contributions to the growing body of literature in this discipline.

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