

Scientometric Analysis of Literature Output on Retina

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ABSTRACT

This study aims to focus on growth pattern as well as overall trend in literature output on retina during 2002-2007. Secondary data collection from a set of retrieved bibliographic records from the literature output in the field of retina from the CD-ROM sources of MEDLINE was studied. The results indicate variability in the authorship pattern, and English language as the major medium in literature output for retina. The contribution of the USA is higher in this subject also in comparison of other countries of the world. The paper also highlights the need of more research in retina-related research.

Keywords: Scientometrics, MEDLINE, retina, retina information sources, retina disorders, retina publication productivity, MEDLINE database

1. INTRODUCTION

The scientometric analysis gained momentum in the recent years due to proliferation in science literature¹. Scientometri is the measurement that helps in identifying the progress of a particular science subject². This paper highlights the growth pattern of literature on retina over a period of six years (2002-2007) to testify the current developments in the subject and to focus on its structure. Studies like this will be helpful to understand the complex nature of the research in a particular subject, and to provide adequate facilities and guidance in which direction the future research has to be carried out³.

2. THE RETINA

The retina forms a thin neural sheet at the back of the eye. It is approximately 100-200 μm thick and represents a triumph of miniaturisation⁴. Light coming into the eye passes through the clear cornea, lens, and vitreous gel before reaching the retina, which helps us to see things and living organisms. Diseases of the retina⁵ include many disorders affecting the body as a whole, and others limited only to the eye. Some of the common disorders of retina include:

- ✘ Diabetic retinopathy
- ✘ Retinal tears
- ✘ Age-related muscular degeneration

- ✘ Retinal detachment
- ✘ Posterior vitreous detachment
- ✘ Retinal vascular occlusions
- ✘ Vitreous hemorrhage
- ✘ Muscular Holes
- ✘ Retinitis pigments

3. OBJECTIVES OF THE STUDY

- ✘ To identify the authorship pattern of the literature
- ✘ To study the structures/forms such as monographs, journal articles, newsletters and other types of the literature
- ✘ To identify the journals and their countries of origin where the literature on retina has been published
- ✘ To study the language-wise distribution of the literature

4. RESEARCH METHODOLOGY

The MEDLARS database for 2002-2007 was analysed for this study. About 150 records on retina were downloaded from MEDLARS for the study. Though the database comprises about 36 fields, the following fields were downloaded for each record on retina literature:

(i) title; (ii) author; (iii) address; (iv) source and pages of occurrence; (v) year of publication; (vi) language; (vii) country of publication; and (viii) publication type.

5. DATA ANALYSIS AND INTERPRETATIONS

5.1 Authorship Pattern

The characteristics of any literature include not only the basic publishing patterns but also that of the authorship pattern⁶. Table 1 shows the authorship pattern on retina conducted during this study. The analysis reveals that authorship pattern on retina ranges from single (10 papers) to 17 authors (2 papers). Maximum numbers of papers (26) were authored by three persons.

Table 1 shows that the research on retina is being pursued as a group collaborative activity rather than the solo research activity.

5.2 Country-wise Distribution of Authors

The analysis of country-wise distribution of authors is an essential phenomenon to understand the progress of research on a particular field of study in a country^{7, 8}. Table 2 indicates that the United States ranked first with 33 records followed by China and Japan with 17 records each, and Germany and Australia with 15 and 13 records, respectively. India, England, and France have an equal output of 12 records each; Pakistan and Omen four; and Thailand seven records, respectively. Other countries like Philippines and Kuwait contributed three and one record, respectively.

5.3 Language-wise Distribution of the Literature

Table 3 presents language-wise distribution of the literature. It is clear from the Table 3 that the English is the

Table 1. Authorship pattern

S. No	Author	2007	2006	2005	2004	2003	2002	Total
1	One	0	2	2	2	3	1	10
2	Two	2	2	3	2	2	2	13
3	Three	8	3	4	8	3	0	26
4	Four	6	4	1	8	4	0	23
5	Five	6	3	2	7	2	0	20
6	Six	6	7	2	3	3	0	21
7	Seven	1	2	1	2	2	0	8
8	Eight	1	2	1	2	2	0	8
9	Nine	2	1	1	1	0	0	5
10	Ten	1	1	2	2	0	0	6
11	Eleven	1	0	1	0	1	0	3
12	Twelve	0	1	1	0	0	0	2
13	Thirteen	0	0	0	0	0	0	0
14	Fourteen	1	0	0	0	0	0	1
15	Fifteen	0	0	1	0	0	0	1
16	Sixteen	0	0	0	1	0	0	1
17	Seventeen	0	2	0	0	0	0	2
Total		35	30	22	38	22	3	150

Table 2. Country-wise distribution of authors

S. No	Country	2007	2006	2005	2004	2003	2002	Total
1	United States	9	7	3	6	8	0	33
2	China	3	2	3	4	4	1	17
3	Japan	5	2	4	2	2	2	17
4	Germany	2	1	2	3	6	1	15
5	Australia	4	3	2	2	1	1	13
6	England	4	2	0	3	3	0	12
7	France	3	2	4	1	1	1	12
8	India	4	0	2	1	2	3	12
9	Thailand	3	0	0	2	0	2	7
10	Pakistan	1	2	0	0	0	1	4
11	Omen	2	0	0	0	1	1	4
12	Philippines	1	2	0	0	0	0	3
13	Kuwait	1	0	0	0	0	0	1
Total		42	23	20	24	28	13	150

Table 3. Language-wise distribution of the literature

S. No	Language	2007	2006	2005	2004	2003	2002	Total
1	English	35	30	19	36	22	1	143
5	Chinese	0	0	0	1	0	2	3
2	French	0	0	1	0	0	0	1
3	Spanish	0	1	0	0	0	0	1
4	Japanese	0	0	1	0	0	0	1
6	German	0	0	0	1	0	0	1
Total		35	31	21	38	22	3	150

predominant medium for the authors for publishing their research. Chinese language found three records over the period of study followed by French, Japanese, Spanish, and German with single record. Contributions in languages from many tropical and sub-tropical regions were confusing by their absence.

5.4 Forms of Retina Literature

Table 4 presents the different forms of retina literature. Out of 150 records 118 were published in the form of Journal articles followed by report (25). Reviews and letter constituted a total of six and one items, respectively.

Table 4. Forms of retina literature

S. No	Type	2007	2006	2005	2004	2003	2002	Total
1	Journal articles	29	25	15	28	18	3	118
2	Reports	5	5	3	7	3	2	25
3	Reviews	1	1	0	2	1	1	6
4	Letters	0	0	0	1	0	0	1
Total		35	31	18	38	22	3	150

Table 5. Major sources for retina literature publications

S. No	Source	No. of records published
1.	<i>American Journal of Medicine Genetics</i>	12
2.	<i>Ophthalmologe</i>	12
3.	<i>Jpan J Ophthalmol</i>	8
4.	<i>Mol Vis</i>	8
5.	<i>Int Ophthalmol</i>	6
6.	<i>Br J Ophthalmol</i>	5
7.	<i>Graefes Arch Clin Exp Ophthalmol</i>	5
8.	<i>Indian J Ophthalmol</i>	5
9.	<i>J Glaucoma</i>	5
10.	<i>Eur J Ophthalmol</i>	4
11.	<i>Ophthalmic Epidemiol</i>	4
12.	<i>Retina</i>	4
13.	<i>Arch Ophthalmol</i>	3
14.	<i>Clin Experiment Ophthalmol</i>	3
15.	<i>Korean J Ophthalmol</i>	3
16.	<i>Zhonghua Yan Ke Za Zhi</i>	3
17.	<i>Eye</i>	2
18.	<i>J Fish Dis</i>	2
19.	<i>J Indian Med Assoc</i>	2
20.	<i>Kathmandu Univ Med J (KUMJ)</i>	2
21.	<i>Singapore Med J</i>	2
22.	<i>Zoolog Sci</i>	2
23.	<i>Acta Ophthalmol Scand</i>	1
24.	<i>Acta Paediatr</i>	1
25.	<i>Am J Hum Genet</i>	1
26.	<i>Ann Acad Med Singapore</i>	1
27.	<i>Arch Soc Esp Oftalmol.</i>	1
28.	<i>Biosystems</i>	1
29.	<i>Br J Dermatol</i>	1

S. No.	Source	No. of records published
30.	<i>Comput Med Imaging Graph</i>	1
31.	<i>Curr Opin Ophthalmol</i>	1
32.	<i>Diabetes Care</i>	1
33.	<i>Endocr Res</i>	1
34.	<i>Eur J Clin Nutr</i>	1
35.	<i>Hong Kong Med J.</i>	1
36.	<i>Hum Factors</i>	1
37.	<i>Hum Mutat</i>	1
38.	<i>Indian J Med Res</i>	1
39.	<i>Indian J Pediatr</i>	1
40.	<i>Int J Clin Oncol</i>	1
41.	<i>Int J Health Care Qual Assur Inc Leadersh Health Serv.</i>	1
42.	<i>Int J Mol Med</i>	1
43.	<i>Int J Qual Health Care</i>	1
44.	<i>J Ayub Med Coll Abbottabad</i>	1
45.	<i>J Diabetes Complications</i>	1
46.	<i>J Exp Biol</i>	1
47.	<i>J Formos Med Assoc</i>	1
48.	<i>J Hum Genet</i>	1
49.	<i>J Invertebr Pathol</i>	1
50.	<i>J Med Assoc Thai</i>	1
51.	<i>J Neurol Neurosurg Psychiatry</i>	1
52.	<i>J Neurol Sci</i>	1
53.	<i>J Pak Med Assoc</i>	1
54.	<i>J R Army Med Corps</i>	1
55.	<i>J Trop Pediatr</i>	1
56.	<i>J Vet Med Sci</i>	1
57.	<i>Med J Malaysia</i>	1

S. No.	Source	No. of records published
58.	<i>Med Mycol</i>	1
59.	<i>Mov Disord.</i>	1
60.	<i>Nephrol Dial Transplant</i>	1
61.	<i>Neurology</i>	1
62.	<i>Nippon Rinsho</i>	1
63.	<i>Ocul Immunol Inflamm.</i>	1
64.	<i>Ophthalmic Genet</i>	1
65.	<i>Ophthalmic Res</i>	1
66.	<i>Optom Vis Sci</i>	1
67.	<i>Physiol Chem Phys Med NMR</i>	1
68.	<i>Rev Neurol</i>	1
69.	<i>Telemed J E Health</i>	1
70.	<i>Travel Med Infect Dis</i>	1
Total		150

5.5 Major Sources for Retina Literature Publications

Table 5 presents major sources for retina literature output. *American J. Medicine* and *Ophthalmology* covered 12 articles each. Table 5 shows that only two Indian journals, *Indian J. Med. Res.* and *Indian J. Pediatr.* published one article each during the period under study.

6. CONCLUSION

It is to note that Indian research productivity on retina literature is less though UNESCO has identified India as the country which may have most retinal disorders. The reasons for low contributions by the Indian authors may be due to lack of well-developed laboratory environment in many hospitals for ophthalmology research. Study also found that according to major health database MEDLARS, over a period of six years only 150 records on

retina were published worldwide. This warrants more developments/research in this field.

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