Serials use in post graduates' dissertations of pharmaceutical sciences: collection building by citation analysis

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Abstract

Purpose – This study aims to analyze the resources used in the citations of 156 postgraduate dissertations submitted to the Rajiv Gandhi University of Health Sciences (RGUHS) through the Acharya & BM Reddy College of Pharmacy (ABMRCP), and prepares the core journal list according to the Bradford's law of scattering. For any research and academic institutional libraries, books and journals are considered as key resources. As the resources are more and diverse, collection building is a tough task for librarians. Citation analysis is one of the best methods to list the most used resources by the users. The paper highlights the extent use of in-house resources and open access journals in the citations.

Design/methodology/approach – Citations of PG dissertations during 2010-2013 (four years) were compiled, the data about the resources cited in each were taken and the list of resources used in PG dissertations was prepared. The list of core journals obtained by citation analysis was matched with the list of online journals provided by Health Science Library & Information Network (HELINET) of RGUHS as well as print list of journals subscribed by ABMRCP Library, and evaluated the print and online consortia journals used by ABMRCP community. The list of core journals' ranking in the SCImago Journal & Country Rank (SJR) list-pharmaceutical sciences was identified to know the impact of the journals.

Findings – The study gives the list of different information resources cited in the pharmacy dissertations. The core list obtained by applying the Bradford's law of scattering in this study has 19 journals pertaining to pharmacy. After matching the core list with the Keogh's list, it is found that 31 journals can be considered very useful in the field of pharmacy. Twelve journals listed in the core list have different positions in the SJR ranking 2013. The results indicate that open-access journals with online journals subscribed through HELINET and print holdings have been cited more in the PG dissertations.

Originality/value – The topic of journal use in this case may be of greatest interest to those who purchase journals in the sciences and, very specifically, the pharmaceutical sciences.

Keywords Collection development, Citation analysis, Journals-pharmacy, Journals-selection, Collection building

Paper type Research paper

Introduction

Pharmacy is an interdisciplinary subject in medical sciences. Merriam-Webster online dictionary defines pharmacy as an art, practice, or profession of preparing, preserving, compounding, and dispensing medical drugs (www.merriam-webster.com/dictionary/pharmacy).The faculties and the students in pharmacy colleges need a variety of information resources for their research and academic activities. They mainly use resources such as monographs/books, journals, theses or dissertations, patents and societies or organization Web sites concerned with their discipline. The print and online journal resources have been deemed as the main tools to boost research and academic excellence. American Association of Colleges of Pharmacy prepared a core list of journals for libraries that serve schools and colleges of pharmacy. This list has approximately 300 journal titles pertaining to pharmacy field. Libraries supporting pharmacy programs will need to acquire materials selectively in the areas of chemistry, physiology, pharmacology and medical therapeutics (Flannery, 2001). The study (Gorraiz and Schloegl, 2008) on bibliometric analysis of pharmacology and pharmacy journals reveals that in 2005, Scopus covered top 100 Journal Citation Report (JCR) pharmacy journals, and the impact factor was higher for 82 and the immediacy index greater for 78 journals. A study of citation analysis of selected clinical pharmacology journals by Thompson (1991) reveals that the premier primary literature journal of clinical

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pharmacology was *Clinical Pharmacology and Therapeutics*, whereas the premier review journal was *Clinical Pharmacokinetics*. During 2012, Keogh studied the characteristics of the most used resources by the graduate students in the College of Pharmacy, and she identified the core list of frequently used titles – both journals and monographs.

Health Science Library & Information Network (HELINET) is a consortium established by Rajiv Gandhi University of Health Sciences (RGUHS) to provide the electronic resources at reasonable prices to the affiliated health science colleges. At the time of study conducted in HELINET, there were 46 journals from different publishers associated with the Pharmacy discipline. Acharya & BM Reddy College of Pharmacy (ABMRCP) is one of the colleges affiliated to RGUHS and has maintained a hybrid collection. It subscribes nearly 120 print journals with the HELINET resources. There are 56 pharmacy colleges benefitted by HELINET. The complete cost incurred to subscription of the e-resources by HELINET is borne by the member libraries. It is challenging to make a decision on the new journals to be added for consortia and print journal subscription. Most of the quality journals in pharmaceutical sciences are costly, as commercial publishers publish them. While the library budget is decreasing every year, the cost of the journals is on rise. Owing to this, libraries are not able to subscribe all the journals required, and they depend on the consortia for sharing of resources.

Citation analysis

Citation analysis is one of the methods to identify the key journals to be subscribed to in a particular subject. Garfield (1972) narrated that citation analysis can be used as a tool in journal evaluation. Gross and Gross (1927) stated that a collection development policy can be evaluated by citation analysis. They conducted a citation analysis study for eight years and concluded that many journals were cited only once or infrequently in the *Journal of the American Chemical Society*. Thomson and Carr (1987) said that the users' requirements could be identified by the analysis of the scientific literature usage of students, teachers and researchers. Nisonger (2007) summarized ten methods for creating lists of core journals and discussed the applications of core lists. LaBonte (2005) stated that citation analysis is a practical tool to evaluate how a library is meeting the needs of local users. According to Dickinson *et al.* (2009), citation analysis can be applied to select and deselect materials, as it provides insights into the materials that are selected by various user groups. Knowlton *et al.* (2014) stated that collection development is related to the earlier discussion of faculty as selectors. There are many factors that could affect the citation frequency. According to Garfield, citation frequency is a function of many variables such as author's reputation, subject's controversy, circulation, availability and extent of library holdings, reprint dissemination, coverage of secondary services, priority in the allocation of research funds and others. The validity of citation data as a tool for collection development in this era of cost-cutting was discussed by Line and Broadus (Line, 1985a, 1985b; Broadus, 1985). Hoffmann and Doucette (2012) systematically reviewed the citation analysis methodologies for collection management. The documents of Gordon and Breach case against Henry H. Barschall's studies (http://barschall.stanford.edu) and publishers present the issues surrounding applications of citation analysis. Smith (1981) thoroughly reviewed citation analysis in his paper "Citation Analysis" and concluded that no research method is without bias, so citation analysis should be supplemented by methods testing the same variables but having different methodological weaknesses. In bibliometric analysis, usually researchers use the Bradford's law of scattering to obtain the core list of journals in a specific subject. Bradford's law of scattering is one of the three important bibliometric laws and is often considered the best model or example of scientific research that is available within Library and Information Science (Hjørland and Nicolaisen, 2005). The other two bibliometric laws are Zips's law and Lotka's law. The Bradford's law states that documents on a given "subject" are distributed (scattered) according to a certain mathematical function, so that growth in papers on a subject requires a growth in the number of journals/information sources. The numbers of the groups of journals to produce nearly equal numbers of articles is roughly in proportion to 1: n: n^2 [. . .], where n is called the Bradford multiplier (Rao, 1998). A number of studies were carried out on application of the Brarford's law in different disciplines – Sengupta (1973) in biochemistry, Lawani (1973) in agriculture, Nweke (1991) in Zoology, Behrens and Luksch (2006) in crystallography, Sudhier (2010) in physics and Singh and Beb (2014) in social sciences.

Citations in pharmacy journal articles and theses/dissertations are important to identify the type of resources useful for faculties and students. In Indian higher education system, dissertations are the reports submitted by the post-graduate (PG) students to the concerned affiliated universities for the partial fulfillment of award of the degrees, whereas theses are nothing but reports of the research works carried out by the research scholars and submitted to the concerned universities for the award of PhD (Doctor of Philosophy) degrees. In the present study, we have analyzed to what extent the subscribed print and online journals are utilized by PG students in their dissertations and identified other resources used for their research activities by a citation analysis method of evidence. In this connection, the objectives raised for the evidence-based pharmacy librarianship are as follows:

- to identify different types of resources useful for pharmacy through citation analysis of PG students' dissertations;
- to identify the extensive use of electronic resources provided through consortium by the pharmacy students; and
- to list the more relevant journals required for pharmaceutical sciences by comparing the subscribed print journals, consortium journals and the core journal list by citation analysis.

Data analysis and result

It was observed that pharmacy PG students used five types of information resources: books/monographs, journal articles, theses/dissertations, patents and Web sites. Out of these, journal articles were cited more (67.23 per cent), followed by books/monographs (20.08 per cent). The percentage of URLs or Web address cited in the dissertations was 10.63 per cent.

Among 665 Web site addresses, there were 275 Web addresses linked to commercial intent (.com), and 274 Web addresses associated to organizations (.org). Students cited 28 government Web addresses (.gov), followed by 25 network technologies Web site addresses (.net). There were a fewer number (eight) of Web citations pertaining to academic and education (.ac and .edu). Other than these categories, 55 Web addresses were classified as miscellaneous. In the top ten titles of books and monographs cited, eight titles were written by foreign authors. The remaining two titles, "*Indian Pharmacopoeia*" and "*Essentials of Medical Pharmacology*", were considered as Indian books. A small number of patents were cited (1.26 per cent), and the least number in the category of resources cited was theses/dissertations with 0.0047 per cent. The results of the types of resources used in the citations of dissertations are shown in Table I. The top ten ranked titles of books/monographs are included in Table II.

Distributions of journals in three zones are shown in Table III. Three equal zones have been made according to the Bradford's law of scattering. The first zone has 19 core journals with 33.51 per cent of total citations. The second zone has 110 journals with a cumulative percentage of 66.67, and the third zone contains 818 journals.

Table I Type of resources used in the citations of dissertations

Type of resources	No. of citations	(%)	Cumulative %
Journal articles	4,204	67.23	67.23
Books/monographs	1,302	20.08	87.31
Web sites	665	10.63	97.94
Patents	79	1.26	99.20
Theses	3	0.047	99.70≈100
Total		6,253	

Table III Distribution of journals' citations in three zones

Zone	No. of journals	Cumulative %
First zone	19	33.51
Second zone	110	66.67
Third zone	818	100

Table IV shows 19 journals in the first zone, and they are considered as core journals in the discipline of pharmacy. These 19 journals are compared with the ABMRCP print journal list, HELINET holdings and SJR (SCImago Journal & Country Rank) list in the discipline of pharmaceutical sciences. It is found that 12 core journals are listed in the SJR rank list.

Table V shows that the core list of journals in pharmacy has only six journals of HELINET with 31.57 per cent, and the three print journals subscribed by the ABMRCP library are included in the core list with 15.78 per cent. This reveals that students prefer open-access journals (42.10 per cent) to print journals and consortia journals. Nearly 10.55 per cent of core journals cited in the dissertations are not subscribed by both ABMRCP and HELINET. The list of journals unique in the Keogh's core list are mentioned in Table VI.

Discussion

In this study, we observed that journal articles were cited more in the pharmacy PG dissertations. Journals play an important role in the scholarly communication among the scientific community. They provide established scientific data and boost the researcher to create new ideas or thoughts. Schafner (1994) studied the role of journals in scientific and scholarly communities and the impact of new technology on these journals. Nowadays, because of the advent of the Internet, scientific online journal articles reach the research community

Table II Top ten ranked titles of books/monographs cited

Serial no.	Author/editor	Title	Place	Publisher	No. of citations
1	Raymond C. Rowe; Paul J. Sheskey; Walter G. Cook and Marian E. Fenton	Handbook of pharmaceutical excipients	UK	Pharmaceutical Press	152
2	Government of India, Ministry of Health & Family Welfare	Indian Pharmacopoeia	New Delhi	Indian Pharmacopoeia Commission	70
3	Swarbrick James (Ed.)	Encyclopedia of pharmaceutical technology	New York	Informa Healthcare	42
4	Roop K. Khar; S.P. Vyas; Farhan J. Ahmad; and Gaurav K. Jain	Lachman/Lieberman's theory and practice of industrial pharmacy	New Delhi	CBS Publishers & Distributors Pvt. Ltd.	42
5	Sean C. Sweetman (Ed.)	Martindale: complete drug reference	London	Pharmaceutical Press	41
6	Edith Mathiowitz (Ed.)	Encyclopedia of controlled drug delivery	New York	John Wiley & Sons Inc	38
7	Laurence L. Brunton; Bruce A. Chabner and Bjorn C. Knollmann	Goodman & Gilman's the pharmacological basis of therapeutics	New York	Mc-Graw Hill Inc	37
8	Tripathi, K.D.	Essentials of medical pharmacology	New Delhi	Jaypee Brothers Medical Publishers Pvt. Ltd.	27
9	Rang H.P.; Dale M.M.; Ritter J.M.; Flower R.J. and Henderson G.	Rang and Dale's Pharmacology	Mumbai	Elsevier Churchill Livingstone	24
10	Gilbert S. Banker and Christopher T. Rhodes	Modern Pharmaceutics	New York	Informa Healthcare	23

Table IV List of core journals indentified in the first zone (33.33% of total citations)

Serial no.	Name of the journal with ISSN	No. of citations	% of no. of citations	Cumulative %	SJR (2013)	Print subscription by ABMRCP	HELINET holdings
1	*International Journal of Pharmaceutics* – 0378-5173	313	7.45	7.45	17	–	✓
2	*Indian Journal of Pharmaceutical Sciences*[a] – 0250-474X	168	4.00	11.44	91	✓	–
3	*AAPS PharmSciTech* – 1530-9932	138	3.28	14.72	39	–	–
4	*European Journal of Pharmaceutics and Biopharmaceutics* – 0939-6411	101	2.40	17.13	08	–	✓
5	*Journal of Pharmaceutical Sciences* – 0022-3549	72	1.71	18.84	18	–	–
6	*Journal of Ethnopharmacology* – 0378-8741	68	1.62	20.46	–	–	✓
7	*Journal of Pharmaceutical and Biomedical Analysis* – 0731-7085	56	1.33	21.79	19	–	✓
8	*Journal of Controlled Release* – 0168-3659	54	1.28	23.07	03	–	–
9	*Indian Journal of Pharmaceutical*[a] – 0253-7613	46	1.09	24.17	–	✓	–
10	*Indian Drugs*[b] – 0019-462X	44	1.05	25.21	150	✓	–
11	*International Journal of PharmTech Research*[a] – 0974-4304	44	1.05	26.26	80	–	–
12	*International Journal of ChemTech Research*[a] – 0974-4290	43	1.02	27.28	–	–	–
13	*European Journal of Pharmaceutical Sciences* – 0928-0987	42	1.00	28.28	24	–	✓
14	*Indian Journal of Chemistry-Section B*[a] – 0376-4699	40	0.95	29.23	–	✓	–
15	*Asian Journal of Pharmaceutical Sciences*[a] – 0973-8398	37	0.88	30.11	–	✓	–
16	*Bioorganic & Medicinal Chemistry* – 0968-0896	36	0.86	30.97	23	–	✓
17	*Drug Development and Industrial Pharmacy* – 0363-9045	36	0.86	31.83	–	✓	–
18	*Indian Journal of Pharmaceutical Education and Research*[a] – 0019-5464	36	0.86	32.68	–	✓	–
19	*International Journal of Pharmacy and Pharmaceutical Sciences*[a] – 0975-1491	35	0.83	33.52≈33.33	63	–	–

Notes: [a]Indian open-access journals; [b]Indian Journal

Table V Comparison of core journals with ABMRCP print holdings and HELINET subscription

Type of journals	No. of journals cited	(%)	Cumulative %
Open access	08	42.10	42.10
HELINET – journals	06	31.57	73.67
Print journals subscribed by ABMRCP	03	15.78	89.45
Total core journals		19	

in a wider and faster way. The flexibility and efficiency of communicating via the Internet has made it feasible to experiment with a variety of different models of peer review (Solomaon, 2007). Therefore, it is expected that journal articles will be cited more in the theses and dissertations. It is found that Web addresses of commercial intent and organizations have been cited more in the dissertations. Probably, these might be cited from the Web sites of commercial journals, drug research and manufacturing companies. Generally, organizations' Web sites are maintained by the government or public funds and are classified as non-profit type. They provide accurate and reliable data to the researchers. As a result, students might have accessed these Web sites and cited them in their dissertations. The authenticity of the Web sites cited in the PG dissertations has not been checked in the present study. In the books/monographs category of resources, eight titles have been cited with more than 25 number of citations, and these titles can be considered as good reference materials for any

Table VI List of journals unique in Keogh's core list

Serial no.	Journal name and ISSN
1	*Pharmaceutical Research* – 0724-8741
2	*Journal of Biological Chemistry* – 0021-9258
3	*Cancer Research* – 0008-5472
4	*Journal of Pharmacology and Experimental Therapeutics* – 0022-3565
5	*PNAS: Proceedings of the National Academy of Sciences* – 0027-8424
6	*Science* – 0036-8075
7	*Chemical & Pharmaceutical Bulletin* – 0009-2363
8	*Biochimica et BiophysicaActa (BBA – General Subjects)* – 0304-4165
9	*Nature (London)* – 0028-0836
10	*Biochemical Pharmacology* – 0006-2952
11	*Journal of Medicinal Chemistry* – 0022-2623

pharmacy libraries. Brown (2006) and Bonger and Giovenale (2012), in their articles, highlighted good reference materials useful for pharmacy libraries, and some titles listed in their articles have been positioned in the present rank list of books/monographs.

In this study, the Bradford's (1934) law of scattering was applied to obtain the core journals which were in the first zone. The number of journals in the second zone and the third zone did not match with the Bradford's law of scattering. A previous citation study by Keogh (2012) identified 17 core journals useful for pharmacy students. Keogh offers an unusual interpretation of Bradford's distribution (1: n: n^2: n^3).The data presented in Table III accurately matche Bradford's original formulation. The top journal represents 7 per cent. The next two (4 + 3) approximate to 7, so $n = 2$. The n^2 is 4, and the next 4 in Table III also total approximately 7 per cent of the citations. The most ranked lists break away from Bradford's distribution at that point, but the data still track it quite closely for n^3 – the next eight titles account for just a bit more than 7 per cent of citations. The core list identified by Keogh was compared with the core list of the present study, and it was found that six journals were listed in both lists. They were *International Journal of Pharmaceutics, Journal of Pharmaceutical Sciences, Journal of Controlled Release, European Journal of Pharmaceutics and Biopharmaceutics, European Journal of Pharmaceutical Sciences* and *Advanced Drug Delivery Reviews*. This comparison conferred that 30 journals (6 journals listed in both lists, plus 11 journals unique in the Keogh's study plus 13 journals unique in the present study) can be considered as very useful while selecting the journals for the pharmacy library. The differences in the core list of the present study and Keogh's study might be due to these reasons: dissimilarity in the titles and different number of journals subscribed to by the universities and variation in the in-house citing of the journal articles by the native students. In-house citing is one of the most basic problems in citation analysis, and 10-30 per cent of all citations fall into this category (MacRoberts and MacRoberts, 1987; Tagliacozzo, 1977). The ABMRCP is offering similar courses like degree, Pharm D, PG and doctoral programs as offered at Arnold & Marie Schwartz College of Pharmacy and Health Sciences, where Keogh conducted her research. HELINET is subscribing to only a limited number of journals in the field of pharmacy, whereas in a developed country like the USA, most of the consortia were purchasing huge number of journals of the commercial publishers (Bergstrom *et al.*, 2014). If a consortium offers more journals, there will be more opportunity for consortium journals to be cited (Karasözen *et al.*, 2007).

In the present study, many Indian journals are ranked in the core list. This agrees with the findings of the Keogh's study, which states that the dependency of Indian journals in the field of pharmacology is increasing. It is questionable why more Indian journals are listed in the core list. The answer is intuitive that Indian researchers might have preferred Indian journals. Compared to other subjects, there is more research going on in the field of pharmacy in India (Mrinalini *et al.*, 2013). In the core list, nine Indian journals are there, in which four journals, namely, "*Indian Journal of Pharmaceutical Sciences*", "*Indian Journal of Pharmacology*", "*Indian Drugs*" and "*Indian Journal of Pharmaceutical Education and Research*" belong to professional societies. They are being published in the open-access system, except "*Indian Drugs*". The journal "*Indian Journal of Chemistry-B*" is being published in the open-access system by the National Institute of Science Communication and Information Resources, an Indian Government-initiated body. This journal is not specific to pharmacy, but publishes chemistry-allied pharmacy articles. The remaining four journals are considered as fee-based open-access journals. Usually, a professional society journal publishes more quality articles than the local commercial publishers. This study proves that professional society journals are cited more in the PG dissertations. Murphy (2007) says that "costs of acquiring less used titles through publisher portfolios must be balanced with the need to purchase more frequently used content published by professional societies and non-profit associations". In the Keogh's core list, some of the journals like "*Nature*", "*Science*" and "*Cancer Research*" are positioned. In these, "*Nature*" and "*Science*" journals are not specific journals pertaining to pharmacy field. Even though their quality and impact is not questionable, its subject coverage in the field of pharmacy is uncertain. In addition to this, the journal "*Cancer Research*" is a very specific journal linked to oncology. The occurrence of these journals in the core list shows the diversity and interdisciplinary nature of the subject. Sengupta (1974) identified that the pharmacology researchers frequently use many scientific journals connected to physiology, biochemistry, chemistry and medicine. The differences in usage of journals depend on the degree of the research activity and different research areas of the college (Karasözen *et al.*, 2007). The identification of the use of old issues of some journals by the researchers is very complex. Many journals' old issues are cited thus far and get positions in the rankings. Black (2012) described the methods for correlating ranked lists over time with the example of communication disorders journals.

The present study reveals that 17 (89.45 per cent) core journals are available to access from ABMRCP print holdings along with HELINET subscription, and open-access systems. Of this, nine journals (47.36 per cent) are available to access through ABMRCP print holdings with HELINET subscription, and eight (42.10 per cent) journals are open-access journals. The remaining two (10.52 per cent) journals might be from other sources like document delivery services. A study by De Groote and Barrett (2010) revealed that "pharmacy researchers continued to cite articles from titles available to them only in print. Citation of print-only articles increased over time for the articles produced by the pharmacy researchers". There are many factors such as policy on library systems and services established for national importance, and open-access systems influence the library users for getting the required information. Indian Medlars Centre (http://indmed.nic.in/trng/uniondata.pdf) has compiled a database of the serial holdings of medical libraries in India. For document delivery service, it is a very useful database to search and get the articles from the medical libraries. In the field of pharmacy, the library of the premier national research institute "National Institute of Pharmaceutical Education and Research", is providing Inter-Library Loan and photocopy services to its members and individuals, respectively. In some cases, students may contact the original authors directly through e-mail to get the journal articles. In the present digital and Internet age, it is quite natural that open-access journals are cited more in research articles. In India, many research institutions are encouraging open-access systems to preserve the pre-print and post-print of articles published by the authors. The result of the study (Roy *et al.*, 2012) reveals that there are 60 institutional repositories (IRs) in India to publish/preserve the articles in open-access systems. Indian scientific agencies such as Department of Science and Technology and Department of Biotechnology have enforced the Open-Access Policy (OCP) on to their funded research. The policy clearly states that while giving the copyright to the publishers, authors must have to bring to the notice of the publisher that according to the OCP, it is their obligation that research articles should be deposited in IRs. Medindia (www.medindia.net/medical-journals/) has listed nearly 2,252 open-access journals across the globe, in which, 21 journals are on pharmacy, and 45 belong to therapeutics and pharmacology. Eysenbach (2006) conducted a bibliometric study of Proceedings of the National Academy of Sciences and found strong evidence that, even in a journal that is widely available in research libraries, open-access articles are more immediately recognized and cited by peers than non-open-access articles published in the same journal. Pharmacy college libraries in India should encourage the open-access systems and services. It is their responsibility to support the authors to deposit the research articles in IRs. In health sciences, especially in pharmacy, there are many open-access journals having good impact factors available to access. As many of Indian open-access journals are being positioned in the core list, instead of acquiring costly pharmacy journals, libraries can reallocate the budget to subscribe the journals allied to organic chemistry, medicinal chemistry, biochemistry, pharmacology, physiology and biotechnology, etc. This type of collection development policy definitely satisfies the different users' needs where the articles of the main domain are scattered in other branches of sciences.

The result of this study clearly shows that there is a huge impact of Indian open-access journals on the PG students' citation pattern. PG students have used more open-access journals than the consortia and print journals. Even though the consortium has subscribed to some of the highest impact journals, they could not be positioned in the core list. This indicates that the most needs of the local students are being fulfilled by the open-access journals. Among eight open-access journals in the core list, five are being published by pharmacy professional societies. The results of this study indicate that print holdings with online journals subscribed through HELINET and open-access journals have been cited more in the PG dissertations.

Conclusion

The study shows that there is a massive impact of consortia and open-access articles in the citations of PG dissertations. It is obvious that users cite the available in-house resources more than the non-subscribed resources. More analysis is required to make a decision for cancellation of print subscription. Librarians should take care while selecting the journals for the working institutions. The HELINET consortium can purchase some non-subscribed journals listed in the first zone as well as unique in the Keogh's core list of journals. Any library or consortia can use the Google Scholar's h-index, JCRs and SJR list for selection of journals. Libraries should periodically conduct the user studies to identify their needs and perform more user orientation programs, which enhance the usage of print and consortia journals.

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