BIBLIOGRAPHIC DATA BASES AND USAGE AMONG MEDICAL PROFESSIONALS AT RAMAIAH MEDICAL COLLEGE: A STUDY

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Abstract

There are other important biomedical bibliographic and full-text information sources, published at international and national levels. Such as EMBASE, Cochrane Library, BIOSIS, CINHL and INDMED to quote a few. Some of these databases have some exclusive content like the EMBASE is specializing in Drugs and Pharmaceuticals, . Recently the MEDLINE opened a new era on public access to vast magnitude of its biomedical information resources and that resulted in PubMed. So there are some visible developments in the biomedical information provision and use. This paper highlights the importance of databases uses among medical professionals their frequency of use, purpose were studied.

Keywords: Bibliographic Databases, Biomedical Literature, EMBASE, PubMed, IndMed, user study

Introduction

The database concept an everlasting contribution from computer science and engineering has dramatically changed data and information organization and management. It has also benefitted the Library and Information Science (LIS) field dealing with data and information as the LIS has typically variable data and information structure than of any other subject. The database concept is a boon to the LIS activities in information management. The Internet and the World Wide Web has been solely dependent on databases for logical and systematic organization of vast magnitude of digital information, facilitating its quick retrieval. The software, database management systems (DBMS) influenced the information organization and management in libraries and made a beginning for the bibliographic databases. So in the first chapter a brief account on some notable landmarks about the genesis of the bibliographic databases and also on biomedical bibliographic databases is presented.

The Abstracting and Indexing (A & I) Periodical came in early 19th Century relieved the research community in a tedious task to search and locate the papers in the vast scatter of scientific literature. The A & I periodicals or services were later termed as "bibliographic

databases" with application of DBMS and made room for today's online bibliographic databases. The A & I periodicals are serving the information users and the librarians, since last two centuries, and so in the digital era.

Bibliographic Database Concept:

The first A & I periodical was recorded as the *Pharmacopeia of the United States (1820, English)*, and then the Chemisches Zantralblatt (1830, German). (Wiegand, and Davis, G.Jr., 1994). The Chemical Abstracts Service, by the American Chemical Society, in 1907 is the next mega service and now is available in the digital form on the Internet. Then came the Biological Abstracts in 1926 and later a host of Bibliographic databases in different subjects followed.

The concept of bibliographic database was designed to handle the variety of data-references, full text, numerical, images and others stored in separate files and integrated into one and managed by a application software DBMS to organize, search and retrieve. The databases for managing bibliographic data emerged in 1960s and the magnetic tape version of the Chemical Titles appeared in 1961 as an alerting service produced by the Chemical Abstracts Service (Sathyanarayana, 1985). The bibliographic databases hold the information sources such as, books, periodicals, periodical articles, patents, and report literature and so on. A few articles on machine-readable bibliographic databases began appearing in the *Annual Review* of *Information Science and Technology (ARIST)* early in the 1970s. The first chapter on "Use of Machine-Readable Databases"' appeared in the 1974 volume of ARIST (Rice, 1985). Tedd (1984) stated "since the late 1960s many organizations involved in producing abstracting and indexing periodicals have used computer systems in the production of printed bibliographic information sources and output was the bibliographic databases".

Biomedical Sciences:

According Wikipedia[1]; **"Biomedical sciences**, are a set of applied sciences applying portions of natural science or formal science, or both, to develop knowledge, interventions, or technology of use in healthcare or public health. The disciplines covered are medical microbiology, clinical virology, epidemiology, biomedical engineering and medical sciences.(Wikipedia)[1]

Biomedical Information:

The study of biological and biomedical sciences dates back to ancient times both in India and west. It dates back to 400-200 BC the time of Charak and Sixth BC when Sushrutha lived (Wikipedia)[2]. In the west it is related to the Hippocrates who lived between 460-370 BC. So the depth of biological and biomedical literature can be assessed from these historical evidences. This implies to the information overload in biomedical science and to organise this extensive scientific and research literature a number of medical bibliographic databases were generated. The primary Medical journals play a key role in providing access to the latest information in medicine and health sciences and bibliographic databases played important role in accessing and retrieving scientific

communication published in the primary journals.

The rapid increase in medical information poses a challenge for keeping up with the latest developments in the field. Information searches can be difficult without a basic knowledge of the way information is organized and indexed. In preparing scientific studies and in making clinical decisions, the key issue is to effectively scrutinize previous literature. That is why familiarity with medical information sources and the ability to use them effectively is important. In a rapidly developing science, journals are an important channel for disseminating new information, and they are the primary publication medium for professional communication in medicine. Adequate training in information- searches leads to an increase in the development of more sophisticated electronic information resources. The explosion of information, the emergence of evidence-based care, new Internet-based technologies, rapid growth of bibliographic databases and shifts to electronic publication practices means that knowing how to conduct effective information searches is that much more urgent

Biomedical Bibliographic Databases:

Dr. John Shaw Billings was a pioneer in the creation of bibliography of biomedical sciences. He compiled bibliography of medical literature during his service, which later became base for the Index Medicus that began in 1879. From 1960 to 2004 the printed edition was published by the National Library of Medicine under the name *Index Medicus/Cumulated Index Medicus* (IM/CIM). This in brief is a history of this pioneering Biomedical "Database" in English language.

The Excerpta Medica published by Elsevier started in 1947 is another biomedical bibliographic database and one of the principal sources for biomedical literature. It covered over 3500 biomedical journals published throughout the world. The Excerpta Medica has also extensive coverage of drug and pharmaceutical literature. The Excerpta Medica Database became EMBASE from 1985 onwards (DIALOG, 1980, 1992).

The Biological Abstracts started in 1926 is another giant bibliographic database In 1964, it was changed to *BioSciences Information Service of Biological Abstracts (BIOSIS)*. The web version in now part of Thomson Reuters Web of Knowledge site. BIOSIS Previews consists of nearly 1.8 million records from 5000 Journals.

The digital technology transformed these bibliographic databases to provide full text of articles and some of them have wider international use, the MEDLINE/PubMed, EMBASE and some have a scope of national information content, like the IndMed.

Objectives of the Study:

The study institute, i.e. M.S. Ramaiah Medical College and Hospitals is now subscribing to several bibliographic databases in biomedical sciences for the use of faculty and students for study, teaching and research. So the study objectives would be on the specific objects of use and non-use and also the study of the cost – effectiveness, as the

organizations would be considering the factor of Return on Investment. Hence the study has considered the following objectives as important and relevant.

1. To study the knowledge and practices of using the Bibliographic databases in the field of Biomedical Sciences.
2. To identify the difficulties faced by the users – faculty and students for the utilization of bibliographic databases.
3. To identify the reasons for non-utilization of the four Bibliographic databases in the field of Biomedical Sciences.
4. To identify the criteria for the evaluation of bibliographic databases in Biomedical Sciences
5. To identify the means of enhancing the utilization of bibliographic databases and measure the cost – effectiveness
6. To undertake the comparative evaluation of the four databases on biomedical sciences considered for the study

Review of literature

A survey of Library and Information Science Abstracts (LISA) database showed a vast number of studies on evaluation of Biomedical Bibliographic Databases in different forms – Tape versions, CD-ROM databases and online databases on the web. The study would present extensive literature coverage on these aspects referring to the LISA.

The study of bibliographic databases is a first prerogative from several points of views as expressed in the preceding sections. However to substantiate the need for the study on the evaluation of online bibliographic databases can be succinctly referred to the statement made by Ma and Cole (2001) "As the number of electronic bibliographic databases available continues to increase, library users are confronted with the increasingly difficult challenge of trying to identify which of the available databases will be of most used in addressing a particular information need. Academic libraries are trying a variety of strategies to help end-users find the best bibliographic database(s) to use to meet specific information needs".

It is now after more than 50 years and the amount of information sources added to the MEDLINE database could be mined bogging with a figure of nearly 22 million records and more than 10,000 journals being indexed. So the user is in the ocean of information from where he has to locate the information source that he needs. From the available evidences it was observed that the present utilization of the available bibliographic databases is not up to the mark and affect in terms of its cost-benefit measurement. The study organization is subscribing to four important and well known bibliographic databases on biomedical sciences viz. PubMed, EMBASE, IndMed and Cochrane Library. They are put into use in the library of M.S. Ramaiah Medical College and Hospital, Bangalore.

The study was measure the cost-benefit on the use of these databases as so far no such evaluation of the databases has been undertaken. The findings of the study would help in doing break-even analysis on the amount spent on subscription to these databases. It would be a pointer to other medical college libraries in general and to all academic libraries in general which are now subscribing to vast number of e-resources through

consortia arrangement. Hence the present study ***"Bibliographic databases in the field of Biomedical Sciences: A User Evaluative study"*** is undertaken and that would attempt to identify the utilization patron and difficulties faced by faculty and student users of the M.S.Ramaiah Medical College and Hospitals, at Bangalore.

Data Analysis

The data collected from the students and faculty is presented in the tables below (Tables 1-11) The important data on the Knowledge and Skills on accessing Bibliographic databases, the use and search capabilities on using Biomedical Bibliographic Databases for the purpose of user evaluation was collected.

Table 1 The knowledge and skills in accessing the Bibliographic databases among the study subjects.

Skills	Frequency	Percentage
20-39%	18	11.9
40-59%	56	37.1
60-79%	64	42.4
80-100%	10	6.6
Below 20%	3	2.0
Total	**151**	**100.0**

Table 2 Familiarity with the Biomedical Bibliographic (BB) databases among the respondents.

Familiarity BB	frequency	Percentage
Attending orientation	38	25.5
Colleagues have helped me	45	30.2
Developed skills on my own	51	34.2
Library staff helped me	15	10.1
Total	**151**	**100.0**

Now the cross tabulation of the data is presented in the following Tables. This shows an inference with various parameters of study with gender-wise distribution.

Cross Table 3.Knowledge in accessing Bibliographic databases.

Gender	20-39%	40-59%	60-79%	80-100%	Total
Male	12(15.0%)	25(31.3%)	36(45.0%)	7(8.8%)	80(100%)
Female	9(12.7%)	31(43.7%)	28(39.4%)	3(4.2%)	71(100%)
Total	21(13.9%)	56(37.1%)	64(42.4%)	10(6.6%)	151(100%)

Chi-square=3.146,P=0.370.

Cross table 4.Knowledge in accessing Bibliographic databases

Department	20-39%	40-59%	60-79%	80-100%	Total
Non clinical	14(17.3%)	35(43.2%)	29(35.8%)	3(3.7%)	81(100%)
Clinical	7(10.0%)	21(30.0%)	35(50.0%)	7(10.0%)	70(100%)
Total	21(13.9%)	56(37.1%)	64(42.4%)	10(6.6%)	151(100%)

Chi-square=7.233,p=0.065

Cross Table 5.Knowledge in accessing Bibliographic databases

Designation	20-39%	40-59%	60-79%	80-100%	Total
PG Student	7(16.7%)	17(40.5%)	16(38.1%)	2(4.8%)	42(100%)
Teaching faculty	14(12.8%)	39(35.8%)	48(44.0%)	8(7.3%)	109(100%)
Total	21(13.9%)	56(37.1%)	64(42.4%)	10(6.6%)	151(100%)

Chi-square=1.056,p=0.788

Cross Table 6.Familiar with Bibliographic databases

Gender	Attending orientation	Colleagues have helped me	Developed skills on my own	Library staff helped me	Total
Male	20(25%)	23(28.8%)	30(37.5%)	7(8.8%)	80(100%)
Female	18(26.1%)	22(31.9%)	21(30.4%)	8(11.6%)	69(100%)
Total	38(25.5%)	45(30.2%)	51(34.2%)	15(10.1%)	149(100%)

Chi-square=.976,P=.807.

The access to bibliographic database and priorities by the respondents is assessed in the following Tables.

Table 7: Data on place of access to Bibliographic databases among the study subjects.

Place	Frequency	Percentage
Home	69	45.6
College Library	56	37.0
Department	109	72.0
Cyber cafe	3	2.0

Cross Table 8 : Gender-wise data on place of access Bibliographic Databases.

Gender	College library	Department	home	Cyber café
Male	52(65%)	23(28.8%)	40(50%)	77(96.3)
Female	43(60.6%)	19(26.8%)	42(59.2%)	71(100%)
Total	95(62.9%)	42(27.8%)	82(54.3%)	148(98%)

Table 9 Distribution of familiarity with in a scale of five point databases search normally on the Internet?

Priority of usage of database	Frequency	Percentage
Pub med	142	94.0
Cochrane Library	5	3.3
Embase	4	3.6
Total	**151**	**100.0**

Cross Table 10:.Gender-wise degree of familiarity with five point databases.

Gender	PUBMED	COCHRANE LIBRARY	EMBASE	Total
Male	73(91.3%)	3(3.8%)	4(5.0%)	80(100%)
Female	69(97.2%)	2(2.8%)	0(0%)	71(100%)
Total	142(94.0%)	5(3.3%)	4(2.6%)	151(100%)

Chi-square=3.790,P=.150.

Table 11 Distribution of Purpose of searching Bibliographic databases among the study subjects**.**

Purpose	Frequency	Percentage
Planning of Research	34	22.5
Other	3	2.0
Preparing publications	68	45.0
Reference related to patient care	9	6.0
Updating of knowledge	24	15.9
Teaching preparation	13	8.6

Chi-square=3.029,P=.220.

Statistical Analysis:

The application of statistical analysis is carried out into five discrete stages as follows:

- Tabulate and graphical presentation of the data to be analyzed.
- Compare the databases under study
- Explore the relation of the data to the underlying population.
- Prove (or disprove) the validity of the hypotheses formulated in the study.
- Employ to understand the scenarios of user evaluation of databases under study.

Descriptive statistics of utilization of Biological Science Bibliographic databases in will be analyzed and presented here. Chi square test would be used to compare the utilization between different databases and also between faculty and students. Logistic regression analysis would be used to find the reasons for utilization and non-utilization of Biomedical Bibliographic databases.

Findings of the Study

The study has made an in depth analysis of the data collected and interpretation. From the probably findings the following would be the expected outcome of this study.

1. Knowledge and practices of use of the four bibliographic databases viz. PubMed, EMBASE, IndMed and Cochrane Library among faculties and students
2. Difficulties faced by the users in the lack of computer skills, search strategies in utilization of bibliographic databases.

3. The   need for the user education and information literacy programmes to familiarize with the structure and organization of the databases
4. Reasons for non-utilization of bibliographic databases like lack of awareness database
5. The cost factor and use of the databases has implications on the future funding for the procurement of the resources

Conclusion

The bibliographic databases have become part and parcel of every subject of universe of knowledge and are found in every disciple in the service of the library user community. The technological convergence has in many ways key to their developments and responsible for their growth since 1980s. The their presence in World Wide Web and Internet can be of highly preemptive.
1. The MEDLINE (PubMed), EMBASE, BIOSIS, Cochrane Library, PsychInfo are some of the highly valued biomedical bibliographic databases in the service of biomedical scientists since 19th Century.
2. The new technologies, CD ROM, Online and the World Wide Web have been chiefly responsible for undertaking their evaluation of performance, effectiveness and cost-benefit analysis of their services to the scientific community.

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