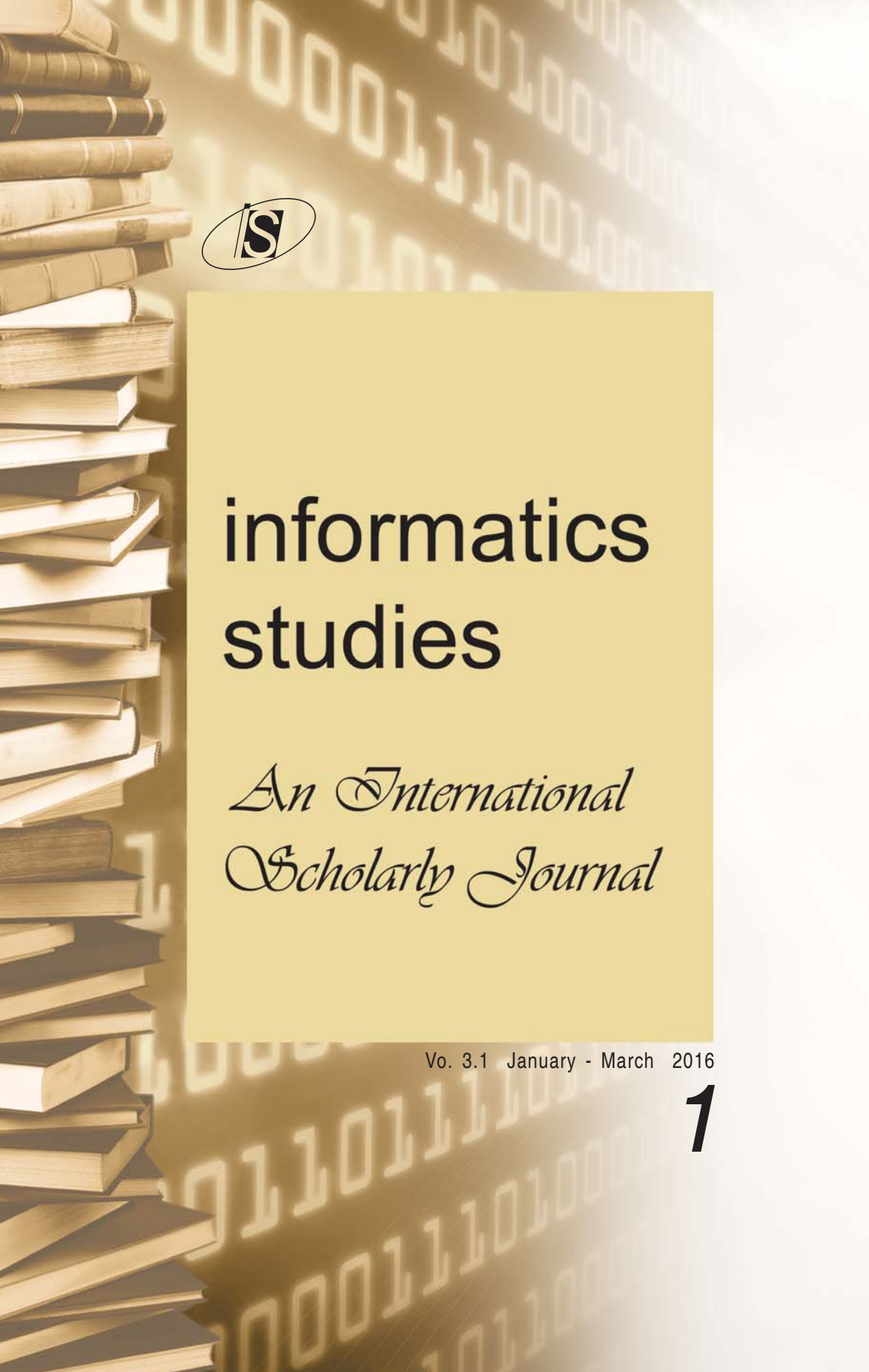

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Information-Seeking Behavior of Oncology Professionals

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Abstract

Cancer is a major public health problem in developing countries. The availability and accessibility of accurate and credible information is essential for the oncologists to make decisions on different aspects of cancer care. The expanding number of cancer journals, original research articles, review articles, books, and various types of online databases have resulted in exponential growth of multilingual literature in this discipline. Oncologists, confronted with information overload, have been drowning in the 'Tsunami' wave of information coming in their way. Therefore, a thorough knowledge about the information-seeking behavior and information use pattern of oncologists could play a vital role in satisfying their information needs effectively.

Cancer is a major public health problem in developing countries and has emerged as one of the most common causes of death, second only to cardiovascular diseases. Cancer is responsible for about 20% deaths in the industrialized countries and 10% deaths in the developing countries. The epidemiological and demographical transition is likely to increase the cancer burden in developing countries including India[1]. Meeting the challenge is not simply a matter of providing appropriate equipments, but should involve the provision of right information too. In other words, availability and accessibility of information on different aspects of cancer has become extremely vital for patient management. The present information overload and emergence of new information handling technologies support cancer specialists in obtaining relevant authentic pinpointed information speedily for their routine works.

A medical professional who practices oncology is an *oncologist*. Oncology is a branch of medicine that deals with cancer[2]. The availability and accessibility of accurate and credible information is essential for the oncologists to make decisions on all aspects of cancer care including diagnosis, clinical decision making, cancer treatment and research, clinical trials, cancer prevention, rehabilitation, etc. The expanding number of cancer journals, original research articles, review articles, books, various types of online databases - both free and paid, and results of newer trends in cancer treatment and research focusing on particular forms of diagnosis, individual therapies or on specific cancers developed by national and international cancer treatment and research institutions and agencies had resulted in exponential growth of multilingual literature in this discipline. Oncologists, confronted

with information overload, have been drowning in the 'Tsunami' wave of information coming in their way. Catering timely filtered and accurate information services to satisfy their needs require efficient information management and dissemination system. Developing such systems that can effectively cater to information needs of oncologists require thorough knowledge on the information-seeking behavior and information use pattern of oncologists. This expertise can play a vital role in satisfying their information needs effectively.

A study was conducted among the oncology professionals in cancer treatment and research centers in Kerala through a self-administered questionnaire. The study was based on a cross sectional research design. A cross sectional design entails the collection of data on more than one case (usually quite a lot more than one) and at a single point in time in order to collect a body of quantitative or quantifiable data in correlation with two or more variables (usually many more than two), which are then examined to detect patterns of association[3]. Here a subset of an entire population was selected and data was collected from these individuals to help answer the questions under study. The information that is gathered through this research design represents what is going on at only one point in time.

Information-seeking Behavior

Information seeking is an activity to identify a message that satisfies a perceived need[4]. Oncology professionals require biomedical information mainly for diagnosis and treatment (patient care), research (clinical research and experimental research), teaching and raining (academic purpose), and planning and management. In order to collect information for all these purposes they may take various approaches to their libraries and information centers. Therefore, oncologists were approached for getting information on their modes of approaching libraries, modes of approach to information search and the extent to which they may remain in the libraries for their clinical and research related information-seeking activities. In this ICT era, oncologists are highly dependent on journals and databases for satisfying their day-to-day information needs. They are print and online sources. Therefore, data was also gathered to get an idea about the most favored reading format of journal articles and their modalities of searching online medical databases.

Ways of Approaching Library

Respondents were asked to record fill in multiple responses so as to indicate the most preferred mode of approach they take while in need of information for diagnosis, treatment, research or academic purposes. As given in table 1, 91.2% of the respondents opined that they 'physically go to the library' when in need of a requirement, and this was fond the highly preferred approach. It is followed by 'access the library's web page/ online catalogue' (rank 2/29%), 'send an assistant or student to the library' (rank 3/ 16.6%) and 'telephone the library staff' (rank 4/14.3%).

Table 1: Ranking of ways of approaching library

Ways of approaching Library	%	Rank
Physically go to the library	91.2	1
Access the library's web page/online catalogue	29.0	2
Send an assistant or student to the library	16.6	3
Telephone the library staff	14.3	4

The proportion of respondents who 'physically go to the library' is high and 'send an assistant to library' and 'telephone the library staff' are less among female gender. The proportion of respondents who 'physically go to the library' is less and 'access library's web page', 'send an assistant to library' and ' telephone the library staff' are high among professionals having more than 10 years of experience than those with less than 10 years of experience. Seniors used to adopt this approach as a time saving option.

Time spent per week in library for information seeking

It was found that (table 2) while 75.8% of the oncologists are using their libraries for finding information for clinical and academic activities, a lesser number i.e. 62.4% are using libraries for research and academic activities. While oncology professionals spent 3.4 hours per week as part of seeking information for diagnosis/treatment related activities, they spent 4.1 hours per week in the library for research and academic pursuits of time due to work load is cited as the main barrier which discourages these professional in spending more time in libraries. The study revealed that male professionals and experienced professionals are spending more time in the library than their counterparts.

1.3. Modes of Approach to Information Search and Retrieval

Five different modes of approaches to information search were placed before the respondents for getting their most preferred approach. They are 'subject' search, 'author' search, 'title' search, 'keyword' search and 'free text' search. Respondents were asked to fill in multiple responses to elicit the various approaches they employ during information retrieval.

As shown in table 3, among the five modes of approaches, 'subject' approach to information search and retrieval received the first rank (65.9%), followed by 'keyword' approach (rank 2/62.7%), 'title' approach (rank 3/47.5%), 'author' approach (rank 4/35%) and 'free text' search approach (rank 5/33.6%). This shows that generally oncologists prefer to search using 'subject' terms during information searches.

Most Preferred Reading Format of Journal Articles

Journal articles are available in different formats for the users to read. The respondents were asked to select most preferred format among formats such as 'original print version', 'photocopy of the print version', 'electronic (web) version on

Table 2: Comparison of time spent per week in the library

Activity	Proportion using library	Time spent per week
Clinical diagnosis and treatment	75.8%	3.4 hrs
Research and academics	62.4%	4.1 hrs

Table 3: Ranking of preferred approach to information search and retrieval

Type of approach preferred	%	Rank
Subject	65.9	1
Keyword	62.7	2
Title	47.5	3
Author	35.0	4
Free text	33.6	5

the screen' and 'print out of the electronic (web) version'.

Data revealed that (table 4) 58.8% of respondents prefer to read original print version, 21.4% the print out of the electronic version', 11.1% photocopy of the print version and 8.7% electronic version on the screen. It can be seen that more than 91% of the professionals preferred to read the print format. This clearly reveals the dominance of print format over the 'electronic' format even in the ICT era. Among 'electronic formats', users prefer to read the print out of the electronic version more when compared to reading directly on the screen; i.e. out of over 30% of respondents who uses web version, 21.4% prefer to read the 'print out of the web version'.

Modes of searching Online Medical Databases

Online databases are one of the most sought after information sources among oncologists. None of the aspects of cancer diagnosis, treatment and research, will become complete without sending a search to such databases. Majority of these databases provide only peer-reviewed information on topics they cover. A list of national and international databases such as Medline-PubMed, IndMed, MedInd, ScienceDirect, NCI-PDQ, NCCN Clinical Practice Guidelines, Cochrane Library on evidence based literature, MD Consult, Medscape, NCI-Clinical Trials, etc. were placed before the sample under study for getting a feed back of their use, modes of searching and also the non-use if any.

The respondents were asked to state the methods adopted by them for online search and asked to fill in one of the following three options: 'Personally' or 'Both personally and through a library staff' or 'Not personally, but through a library staff'. If they are not using online databases, they were asked to state the reasons for not using the online databases.

It can be observed from the table 5 that 92.8% respondents search online databases through various ways. Out of this, 57.3% search 'personally', 28.6% search 'both personally and with the help of a library staff', and 7% search 'not personally, but through a library staff'. The remaining, 7.2% 'do not search online databases' due to various reasons as cited in *figure* 1. It can be seen that majority of the professionals search online databases by themselves. Most

Table 4: Most preferred reading format of journals articles

Reading format	% of respondents	Rank
Original print version	58.8	1
Print out of the web version	21.4	2
Photocopy of the print version	11.1	3
Web version on the screen	8.7	4

Table 5: Modes of searching and non-use of online medical databases

Modes of search	% of respondents
Personally	57.3
Both personally & through a library staff	28.6
Not personally, but through a library staff	7.0
Do not search online databases	7.2

respondents cold not understand the role of library professionals in imparting to them the methods and techniques for effective information retrieval. It can be observed from the responses that this has affected the use of databases by oncology professionals and their extracting maximum utility of the facilities and resources available.

Major Reasons for Non-use of Online Medical Databases

The survey revealed that 7.2% of the professionals are not using medical databases. Respondents who are not using online databases were asked to state the reasons for not using/searching online databases and the cited reasons are shown in the *figure* 1. Out of the six different reasons, 'no online access at home/department/ library' was cited as the primary reason (94.7%), followed by 'online databases not needed' and 'no help available from library staff', all of which received the second rank (73.7%) and reasons such as 'do not know to search databases', 'no time to search online databases due to workload' and 'not aware of useful databases' received the 3rd rank (68.4%).

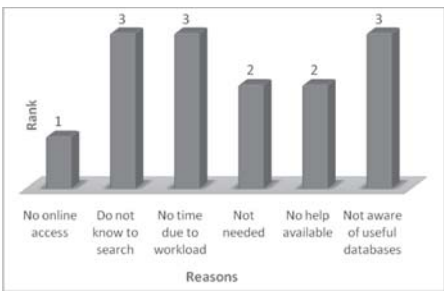

Fig. 1: Ranking of major reasons for non-use of online medical databases

It is seen that, majority of the oncology professionals who are not using online databases do not have convenient access to a computer connected to internet either at home or workplace or even at library. This is the first reason cited for not searching or using online databases, which is a strong indicator of the existing infrastructure. At the same time, proper user education on and awareness of the importance of various online databases, how to search them for finding answers to various problems faced during treatment and research and a support from the library staff would helped to overcome the situation reflected in the faced due to the second and third ranked reasons.

Use Pattern

Use Pattern refers to the preference indicated by the users of information to documents or sources in respect of their bibliographic standards, language and country of origin, age, etc. and information services either through citations in their own works or through requests or demands made to various information systems and services[5]. Oncology professionals depend heavily on journals and databases for their routine decision making process. They depend on journals for information current developments in their field as well as for data on reviews, retrospective and comprehensive knowledge on a disease condition and also they use it as a tool. Majority of the professionals use databases for getting comprehensive information on a disease condition and also as a tool for reaching or finding journals that carries primary information on a topic. A database brings together all the information on all the works on a particular topic published in different sources under one roof.

Modes of Access to Journals Available in the Library

Journals can be subscribed as 'print only' version, 'online only' version and 'print and online' version. Libraries subscribe some journals as 'print only' version, some journals as 'online only' version and some titles as both 'print and online' version. This varies from library to library as per the subscription policy, usage statistics and user demand.

As shown in *figure* 2, while 86.6% of the subscribed journals are available in print +

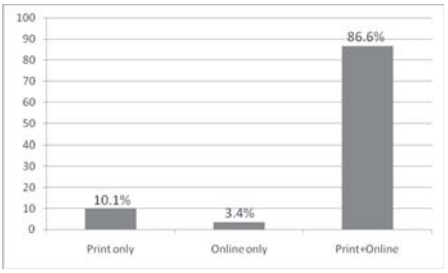

Fig.2: Modes of access to subscribed journals in the library

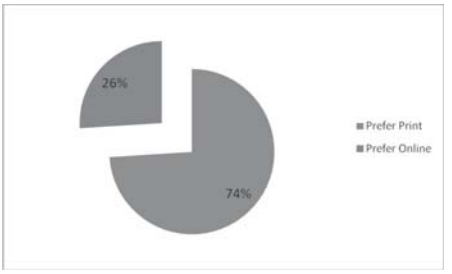

Fig.3: Preference to Print or Online Version of Journals

online format, 10.1% are available in print only format and 3.4% are available in online only format. Altogether print format is available for 96.2% of the journals. This clearly shows that oncologists prefer reading journals in print format to online format and the same is reflected in the subscription policy of the libraries.

Preference to Print and Online Versions of Journals

Figure 3 shows the preference shown by oncology professionals towards print and online versions of journals. Overall 74% of the total respondents prefer to read print version of articles and only 26% prefer online version, when both 'print and 'online' versions are available for the same journal.

1.3. Most Preferred Online Medical Databases

Oncology professionals use/search various online databases such as PubMed maintained by National Library of Medicine, USA, NCI-PDQ (Patient Data Query-databases maintained by National Cancer Institute, USA, National Comprehensive Cancer Network (NCCN) clinical practice guidelines, Cochrane Library on evidence based literature, Elsevier's ScienceDirect, MD Consult, Medscape, IndMed, MedInd, and NCI-Clinical Trials. These professionals were approached to understand how frequently they use these databases for their clinical and academic activities.

Data in table 6 shows that, first six most frequently consulted/searched/used online databases are PubMed, ScienceDirect, NCCN databases, NCI-PDQ, Medscape and MD Consult. The study revealed that PubMed is the most frequently sought after online medical database by oncologists. It is being searched either 'daily' or 'weekly' or 'monthly' by 94% of the professionals. At the same time, while ScienceDirect is used more on a 'daily' basis, NCCN is used more on a 'weekly' basis.

Table 6: Most frequently consulted online databases

Database	Frequency (%)			Total
	Daily	Weekly	Monthly	
PubMed	31.8	47.0	15.2	94.0
ScienceDirect	09.6	16.2	08.1	33.9
NCCN Guidelines	02.0	20.2	12.1	34.3
NCI-Patient Data Query	01.0	14.1	12.6	27.7
Medscape	04.5	13.1	09.6	27.2
MD Consult	03.0	12.1	06.1	21.2

Conclusion

The study revealed that even among the scientists and doctors coming under the highly elite group in society computers and Internet have not still infiltrated into a majority. This will surely affect their uptodateness, efficiency and contribution to society. Providing specialized information systems and connectivity for health sector as well as creating awareness about medical information sources and service facilitates for information exchange, discussion forms etc among or medical practitioners is very important to improve the efficiency of the medical services. An introductory paper on medical informatics can be introduced for all UG courses in medicine. Periodical workshops on medical informatics can be conducted by the information systems in every hospital and medical education and research institute.

The study found that there was no serious research or survey on the information-seeking behavior and use pattern and of professionals entirely devoted to the field of oncology. The present study could gather some vital information on the information world of these busy professionals. Libraries can use these results for re-orienting their collections and facilities to attune to the needs of the user community as well as for planning some ser awareness programs.

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