

**INFORMATION SEEKING BEHAVIOUR OF THE PHYSICIANS AND SURGEONS****IN JAMMU & KASHMIR: AN EXPLORATORY STUDY**

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**Abstract**

A survey was conducted to explore the information seeking behaviour of physicians and surgeons of J&K working at primary, secondary and tertiary health care institutions by administering a questionnaire and employing stratified random sampling. The findings reveal that the main reasons of professionals for seeking information are keeping up-to-date with current developments in the respective medical field and diagnosis/treatment recommendations. The results also depict that the professionals prefer textbooks the most followed by reference books and journals and make less use of online databases. Several factors influence the use of information sources by physicians and surgeons like availability, timeliness, ease of searching, currency, relevance etc. Survey results also highlights areas in which improvements are needed, such as availability of Internet facilities at work place, establishment of libraries in every medical institution, conduct of frequent seminars, conferences, user awareness programmes etc. This study may encourage and foster further research for effectiveness and better performance of medical libraries in the State.

**KEYWORDS:** *Medical professionals, physicians, surgeons, medicos, doctors, information seeking behaviour, J & K.*

**INTRODUCTION**

The information universe is rapidly expanding in all disciplines of knowledge including medical sciences. The medical professionals cannot prescribe and practice high quality medicine without constantly updating their information which can help them in treating patients of specific and peculiar diseases.

In the medical field, the enormous growth of information in all branches of the profession necessitated assessment of the users' behaviour, their information seeking habits, their actual information needs and their interaction with information communication channels.

For decades, the patrons have been studied by the librarians with care and attention to achieve maximum user satisfaction. According to **Darling, Bishop and Colaianni (1983)**,

user studies were originally based on the premise that if general needs and preferences were identified, effective system could be designed to satisfy them. However, with changing times, these broad brush studies have given way in good measure to analysis of information gathering through specific channels.

Over the past three decades, increasing attention has been paid to the information needs and information seeking behaviour of clinicians, by researchers in the computer sciences, information sciences, and medical informatics, with much of the work focused on the clinical use of 'traditional' text-based information resources such as journal articles, textbooks, bibliographic databases and the paper-based medical record (**Woolf & Benson, 1989**), (**Smith, 1996**). However, no work is carried out in J & K which is geographically isolated for a long time but ICT revolution has made it a part of global community.

In J&K State, medical practitioners like other parts of the world, spend nearly all their time in patient care, teaching, administration or research. Different professional activities give rise to various information needs. Their information needs vary with their work role in their specialized fields like medicine/surgery, nursing, pharmacy, clinical laboratory technology etc.

To satisfy the different information needs, the professionals working in widely differing environments and engaged in a wide range of tasks, consult various information sources in different formats. Each specialized field has its own information seeking style, and the sources and types of literature sought are influenced by disciplinary culture. Further with the advent of the Internet and the rapid adaptation of Internet- accessible information resources, most notably the World Wide Web (WWW), has radically changed the landscape for both information need and information seeking behaviour.

The information seeking behaviour of these medical professionals need to be studied in detail and analyzed on the basis of relevant data. If, the lacunas in the present information services are identified and addressed, this helps in evolving a comprehensive, efficient and economical information services for the professionals in the field.

## Literature Review

A sizable number of studies have been carried out from time to time to study the information seeking behaviour of physicians. **Weinberg, Ullian, Richards and Cooper (1981)** report that colleague interaction occurs on a regular and frequent basis and is of considerable value to the physician seeking advice and information. **Gruppen, Wolf, Van, Voorhees and Stross (1987)** report that primary care internists have a greater preference for consulting the medical literature, while family physicians more often rely on colleagues and specialists as sources of information. **Woolf and Benson (1989)** conducted a survey at John Hopkins Hospital which reveals that the sources of reference information most commonly used by the faculty and house staff were textbooks and colleagues. However faculty reported greater use of MEDLINE. **Gruppen (1990)** carried a survey to identify the information seeking behaviour of physicians which reveals that physicians access Continuing Medical Education (CME) courses, mass media, patients, audiovisual programs, journals, textbooks, pharmaceutical representatives, colleagues, specialists and computerized databases, among others. **Ely, Burch and Vinson (1992)** report that colleagues and the Physician's Desk Reference were the most often used resources of family physicians. **Cheng and Lam (1996)** made a survey in 35 hospitals in Hong Kong and confirm that medical staff was most satisfied with the library collections and services. **Cullen (2002)** made a survey among family practitioners in New Zealand which reveals that 48.6% practitioners used the Internet to look for clinical information. MEDLINE was the most frequently accessed source. **De Groote and Dorch (2003)** made a survey at the Colleges of Medicine and Nursing at the Peoria Campus which reveals that a large percentage of faculty, residents and students prefer online resources to print. Convenience seems to play a major role in selecting resources, whether print or online.

The study by **Ocheibi and Buba (2003)** reveals that the doctors in Maiduguri, Nigeria prefer the use of publishers catalogues as the most important source for new developments in their relevant fields. Many do not have access to local databases that are supposed to have remarkable impact on their information gathering behaviour. **Owen and Fang (2003)** made a survey at a health sciences campus in complementary and alternative medicine (CAM) which reveals that 82% of faculty rate MEDLINE as a useful resource, 46% personal contacts with colleagues, 46% the Web, 40% journals, and 20% textbooks. Books and databases most frequently cited as useful had information about herbs. **D'Alessandro**

(2004) conducted a survey which reveals that pediatricians used computers and digital libraries more to answer their questions and spent less time using them. **Davies (2011)** made a comparative study of information use of physicians of US, Canada and UK which reveals that US physicians used electronic resources for research more (US 51.3% all the time, Canada 47.5%, and UK 26.3%). Physicians utilized electronic resources for teaching in a similar pattern (US 55.0% all the time, Canada 32.5%, and UK 22.5%). Approximately 30% of physicians in all the 3 countries used electronic resources “all the time,” and more than 50% “sometimes” used electronic resources to update their knowledge and/or skills. MEDLINE/PubMed was the most frequently used resource for all physicians. US and Canadian physicians ranked electronic full-text journals first, whilst the UK physicians ranked these third. UK physicians preferred using colleagues to assist in their clinical decision making (which was ranked fourth by US and Canadian physicians).

#### **OBJECTIVES:**

The following objectives have been set forth:

1. To know the purpose for which information is sought.
2. To determine the types of resources physicians and surgeons use to find medical information and how they prefer to access this information.
3. To identify the factors affecting the choice for consultation of information sources.
4. To assess the impact of ICT on information seeking behaviour of physicians and surgeons.
5. To gauge the awareness of users about the online medical databases/resources and to assess the extent of their utility.

#### **SCOPE:**

The study attempts to explore the information seeking behaviour of physicians and surgeons working in J&K at primary, secondary and tertiary health care institutions, which encompass 3567 medical colleges/associations/ health institutions in public and 51 Registered Nursing Homes besides several solo practitioners in private sectors assembled under the following headings:

1. Sher-i-Kashmir Institute of Medical Sciences (SKIMS) and associated Medical College and Hospital, Srinagar.
2. Government Medical College (GMC) and associated hospitals/ Government Dental College (GDC) in Kashmir region.
3. Government Medical College (GMC) and associated hospitals/ Government Dental College (GDC) in Jammu region.
4. District, Sub-district Hospitals, Dispensaries and Health Centres in the State.
5. Ayurvedic cum Unani Hospitals and Dispensaries in the State.
6. Acharya Shri Chandra College of Medical Sciences (ASCOMS), Jammu, and
7. Private Nursing Homes/ Solo practitioners in the State.

SKIMS & associated Medical College, and ASCOMS are tertiary health care institutions. GMCs/ associated hospitals & GDCs are secondary health care institutions while District/ Sub-district hospitals/ dispensaries/ health centres, Ayurvedic cum Unani hospitals/ dispensaries and Private nursing homes are primary health care institutions.

#### **METHODOLOGY:**

A stratified random sample of 226 physicians and surgeons belonging to major medical fields and sub-fields was drawn by using the sample size determination formula. The professionals on the basis of their work roles were first divided into strata. The strata were selected from the seven main working environments as mentioned in the scope.

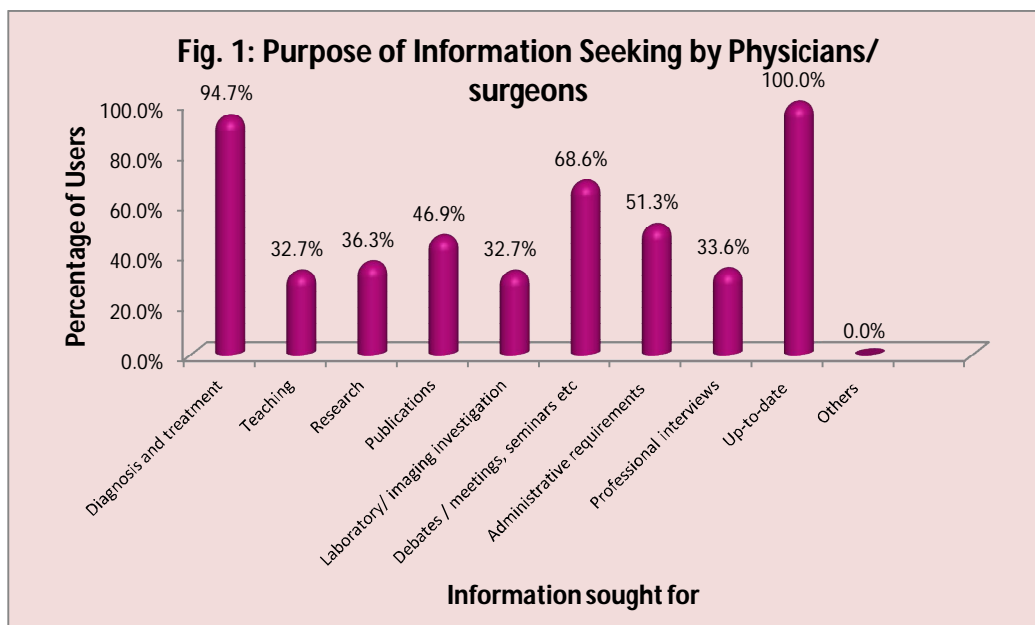
Questionnaires were distributed and collected personally among professionals. The survey was previously piloted among several groups of physicians and surgeons.

#### **FINDINGS AND DISCUSSION:**

##### **1. PURPOSE OF INFORMATION SEEKING**

Physicians and surgeons search for job specific information to keep themselves abreast with latest available information and developments in their respective fields. Majority of them 95% search for information regarding diagnosis and treatment of specific diseases or disorders. Most of them 69% seek information to prepare for debates, meetings, seminars, conferences etc. About 52% of professionals acquire information regarding administrative issues such as procedures and protocols relevant and applicable in a particular health care organization or settings.

Besides, the professionals 47% and 36% explore information to prepare for publications and resolve research issues respectively. About 34% of practitioners seek information to prepare for professional interviews while 33% look for information for teaching purposes and performing lab/imaging investigations. (Fig 1)



## 2. RANKING OF INFORMATION SOURCES

Medical professionals seek information from an endless number of sources. Knowledge of various information sources whether a colleague, an online database, or a book and the perceptions formed about the process or about the information retrieval plays a crucial role in the information-seeking process. The professional's preferences for these sources and their access method can be conceptualized in terms of information seeking strategies, that they first access the most preferred source, followed by secondary sources when the problem remains unresolved.

The preference given to various sources of information by physicians/surgeons while seeking information depicts that they prefer textbooks in the first place over other sources followed by Reference books and Journals at the 2<sup>nd</sup> and 3<sup>rd</sup> rank respectively. Physicians/surgeons place online databases (e.g., MEDLINE) at 4th rank. Other preferences of sources of information are provided in the Table 1.



**Table 1: Ranking of Sources of Information by Physicians/surgeons (N=226)**

Source of information	Response (N)	Preference of information source													Av. T/ Response	Av. Rank Orders	Rank Order
		1	2	3	4	5	6	7	8	9	10	11	12	13			
Text Books	151	63	82	36	13	2	-	-	2	3	-	-	-	-	1774	11.7	1
Journals	190	58	52	46	1	18	-	15	-	-	-	-	-	-	2161	11.3	3
Reference Books	209	55	60	30	61	2	1	-	-	-	-	-	-	-	2401	11.4	2
Online databases	99	-	-	21	23	34	5	2	6	-	4	4	-	-	1116	11.2	4
CME Lectures	86	5	6	15	20	8	13	2	1	-	-	1	4	-	709	8.2	9
Cl. Guidelines	87	2	22	27	14	15	3	3	1	-	-	-	-	-	913	10.4	5
Hospital Rounds	90	1	6	5	43	13	11	5	2	3	1	-	-	-	841	9.3	8
Pharmaceutical Representatives	121	1	18	27	20	18	8	10	6	8	3	-	2	-	1220	10	6
Audio Visual Materials	52	5	-	-	4	17	9	9	1	3	3	1	-	-	429	8.2	9
Mass Media	55	-	-	4	3	8	13	13	2	3	5	4	-	-	400	7.2	10
Colleagues / medical Specialists	180	36	30	15	11	20	19	15	21	7	4	1	1	-	1722	9.5	7
Librarians	23	-	-	-	-	-	3	5	3	2	2	3	3	2	112	4.8	12
Library Catalogue	17	-	-	-	3	1	3	1	-	-	2	-	6	2	92	5.4	11

### 3. CHOICE OF SELECTION OF AN INFORMATION SOURCE

Once an information need is identified, the medical professionals conduct the information search which depends on a number of factors. The professionals make a decision on whether to pursue an information query; they reach a compromise between a number of conflicting factors including the need for the information and the associated costs of locating the information such as the time, effort, and financial costs involved in information seeking.

The physicians/surgeons report availability, relevance, understandability and currency of information as very important factors affecting their choice for selection of an information source. Majority of them report comprehensiveness (81%) and reliability of information (75%) as major factors. The professionals state timeliness to search and extract the information (40%), ease of searching (38%) and travelling time to reach the information source (38%) as somewhat significant factors. However, 15% and 12% of professionals does not take travelling time and ease of searching into consideration. (Table 2)

**Table 2: Factors Affecting the Choice of an Information Source by Physicians/surgeons (N=226)**

Nature of choice	Very important	Somewhat important	Not important
Availability	226 (100.0)	- -	- -
Travelling time	108 (47.8)	85 (37.6)	33 (14.6)
Timeliness	136 (60.2)	90 (39.8)	- -
Ease of searching	113 (50.0)	86 (38.1)	27 (11.9)
Relevance	226 (100.0)	- -	- -
Financial costs	158 (69.9)	68 (30.1)	- -
Understandability	226 (100.0)	- -	- -
Reliability	169 (74.8)	57 (25.2)	- -
Currency	226 (100.0)	- -	- -
Comprehensiveness	184 (81.4)	42 (18.6)	- -

**4. INFORMATION SOURCES: USE FOR GENERAL INFORMATION RETRIEVAL**

With expanding role of medical professionals, evaluation and retrieval of medical information has become essential requirement for the profession. Medical practitioners construct a search strategy using appropriate commands for the information access tool selected e.g., Boolean operators, truncation, and proximity operators for databases/ search engines; internal organizers such as indexes for books.

The Physicians/surgeons (54%) use the Primary Sources frequently (a few times a week) while as 26.5% use sometimes (once a week). The professionals especially involved in research, policy development, and other activities often require comprehensive retrieval, an exhaustive search of the literature, and in-depth sources of information requirement to devote more time to locate information. Professionals in clinical practice follow the 'current' approach i.e. they do not peruse everything that is written on a given topic, but gather information enough to answer a clinical problem. Colleagues, journals and reference books are the information resources that the professionals first turn to with an information query. Professional colleagues and librarians play a pivotal role in channelizing the communication informally. They refer the professionals to different information sources to get the relevant



information. Perhaps, the busy schedule of the practitioners has made them to depend on these resources.

Majority of them (80%) use the Secondary Sources regularly while as 11% use occasionally. They believe in browsing library collection or surfing through Internet and getting the information by chance. They also use science databases and indexes in any format e.g., Index Medicus or MEDLINE, Current Contents, Science Citation Index, Biological Abstracts, Chemical Abstracts etc. About 7% and 33% of professionals do not report the use of Secondary Sources and Tertiary Sources respectively. 30.5% and 20% use the Tertiary Sources at times and occasionally (once every few months) likewise. (Table 3)

**Table 3: Use of Various Information Sources for General Information Retrieval**

Professionals	Response (N)	Sources of information	Use frequently	Use sometimes	Use occasionally	Never use
Physicians/surgeons	226	Primary Sources	122 (54.0)	60 (26.5)	10 (4.4)	34 (15.0)
		Secondary Sources	181 (80.1)	25 (11.1)	4 (1.8)	16 (7.1)
		Tertiary Sources	36 (15.9)	69 (30.5)	46 (20.4)	75 (33.2)

## 5. PURPOSE OF ATTENDING SCIENTIFIC MEETINGS/ SEMINARS/ CONFERENCES/CME LECTURES

The state-of-the-art of medicine is ever expanding and ever changing. Having current medical knowledge and skills is very important in providing high-quality healthcare to patients and education to students. It is important for medical professionals to recognize this fact so that up-to-date treatment/care can be provided to patients, and education to students at all times. It is well known that medical knowledge acquired becomes obsolete over a period of five to ten years from the time of completion of studies, which ultimately affects patient care. Therefore, participating in continuing medical education (CME) programmes, scientific meetings, seminars, conferences, congresses, etc update the knowledge base of professionals by sharing information about new cutting-edge medical treatments and techniques with other medical professionals.

It is observed that in J & K, 174 (78%) Physicians/surgeons attend scientific meetings, seminars, conferences, congresses, CME lectures etc. Majority of them (84%) find seminars, conferences etc very useful which provide new ideas and directions to them. They find out the current trends of diagnosis, management, prevention and control of conditions in

the health practice. Most of them (70%) find seminars, meetings, conferences etc very supportive, which acquaint them with the work done by others, while as about 20% of the physicians/surgeons them useful. They imbibe new methods and techniques and put them into practice. However, few physicians/surgeons (3%) consider them not much useful.

Physicians/surgeons (38.5%) agree that scientific meetings, seminars, workshops etc. are very effective, which enable them to share their work or experiences with others. Majority of them (58%) find them practical. They get opportunity to share problems and ideas with others. However, only 3% of physicians/surgeons view these sources less useful. About 49% agree on attending meetings, seminars, conferences etc. being very effective, which enable them to establish new contacts, while as about 46% of the physicians/surgeons accept them beneficial. They get chance to network with peers to share and exchange information. However, merely 5% of the practitioners not term these more useful.

Physicians/surgeons (24%) refer seminars, demonstrations, and lectures etc. very useful, which provide them information not available from other sources. Most of the practitioners (74%) find them informative, believing them to be excellent informal source of knowledge with ease of time. However, few physicians/surgeons (2%) do not term them more useful. About (45%) consider scientific meetings, seminars etc very useful which provide them opportunity to discuss, while as about 55% of the physicians/surgeons find them useful for the same purpose. (Table 4)

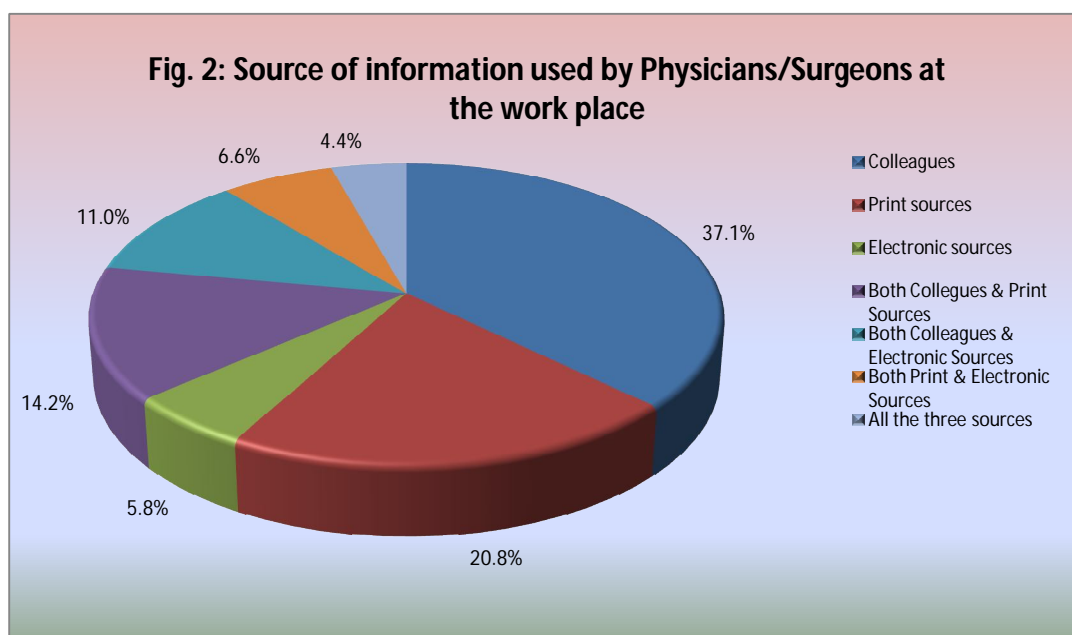
**Table 4: Purpose of Attending Scientific Meetings/Seminars/Conferences/CME Lectures etc by Physicians/surgeons (N = 174)**

Purpose	Usefulness			
	Very useful	Useful	Not so useful	Not useful
Get new ideas/directions	146 (83.9)	28 (16.1)	- -	- -
Get information about what work others are doing	134 (77.0)	35 (20.1)	5 (2.8)	- -
Enable you to tell others about your work or experiences	67 (38.5)	101 (58.0)	6 (3.4)	- -
Enable you to establish new contacts	86 (49.4)	80 (46.0)	8 (4.6)	- -
Get information not received from other sources	42 (24.1)	129 (74.1)	3 (1.7)	- -

Allow discussion	78 (44.8)	96 (55.2)	-	-
Any other	-	-	-	-

**6. SOURCES OF INFORMATION: USE AT PROFESSIONAL LOCATION**

The physicians/surgeons (37%) report that they consult their professional colleagues having more experience and expertise at work place to get answers to clinical and research questions. About 21% search for information through print sources while 14% get information both through discussion with colleagues and print sources. Practitioners in the focus group report that the rapid telephone consultations are highly useful. In addition, many practitioners rate colleagues as their most valued source of information. To adopt a clinical advance, they discuss an issue with a colleague and conduct a literature search to obtain more information. Only 11% consult both colleagues and electronic sources, 7% use both print and electronic sources, and 6% make use of only electronic sources to obtain information at work which shows limited use of electronic sources at the practice sites. (Fig 2)



## 7. ONLINE DATABASE SEARCHING FREQUENCY

The Internet is increasingly an important resource of medical information for the medical professionals. Majority of the physicians/surgeons 132 (58%) use Internet to seek medical information.

Physicians/surgeons (34%) and (22%) access MEDLINE weekly and daily respectively, while as (17%) and (11%) access it on monthly and yearly basis. Also, MEDLINE has an impressive coverage of biomedical research findings with abstracts and in some cases free full-text articles from PubMed Central, Biomed Central, Bioline International, Directory of Open Access Journals (DOAJ) and other digital archives. Many of the professionals who search MEDLINE/PubMed are confident of getting relevant medical information that will serve their needs. That is why many of the professionals search this database. Another important reason MEDLINE/PubMed is used more instead of other databases is that most of the other databases such as EMBASE require a subscription before they can be accessed. PubMed is popular because it is free on the Internet. Also, the availability of online books through PubMed is the reason why many of the respondents rely on this database for needed medical information. The database has a broad coverage of the biomedical and allied health literature making it an attractive option for many medical professionals.

Further, majority of the physicians/surgeons (64-96%) do not use other online databases. However, the professionals (7-23.5%) use the MD consult, Current Contents, International Pharmaceutical Abstracts, Evidence Based Medicine, EMBASE and IndMED weekly, while as 8-20.5% and 4-13% use them monthly and yearly in that order. (Table 5)

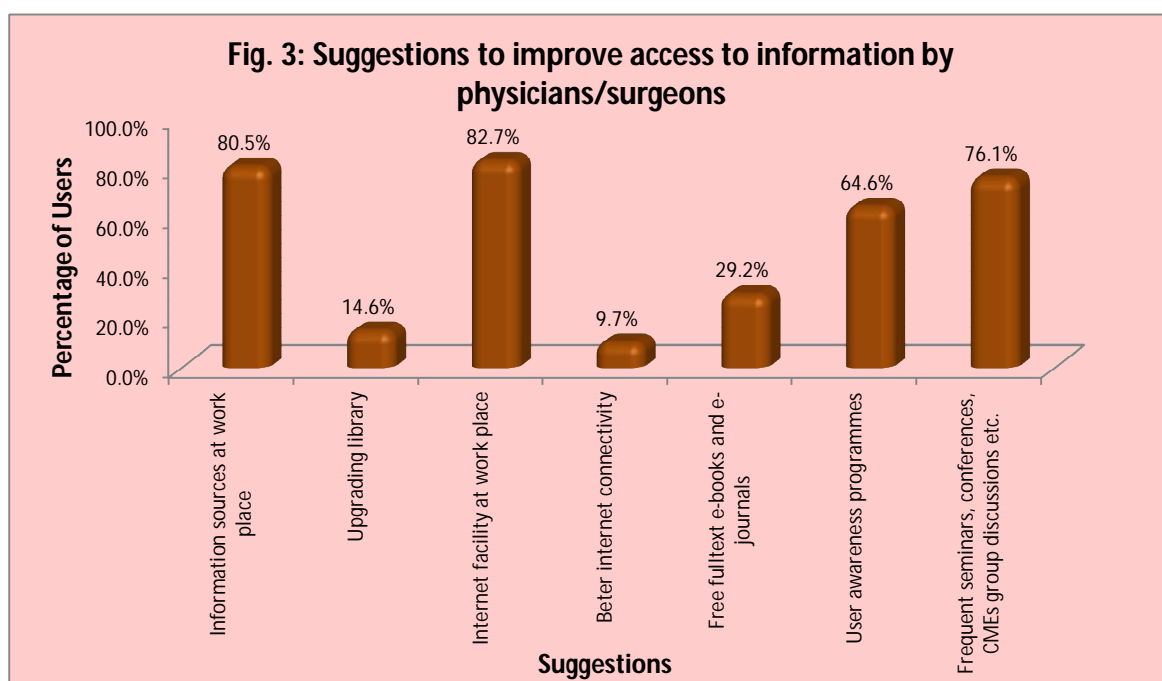
**Table 5: Online Database Searching Frequency of Physicians/surgeons (N=132)**

Database	Daily	Weekly	Monthly	Yearly	Never
<b>MEDLINE : Pub Med, IGM or Ovid</b>	29 (22.0)	45 (34.1)	22 (16.7)	14 (10.6)	22 (16.7)
<b>MD Consult</b>	4 (3.0)	25 (18.9)	12 (9.1)	7 (5.3)	84 (63.6)
<b>Current Contents</b>	-	14 (10.6)	27 (20.5)	5 (3.8)	86 (65.2)
<b>Psyc INFO</b>	3 (2.3)	6 (4.5)	10 (7.6)	7 (5.3)	106 (80.3)
<b>Web of science</b>	-	9 (6.8)	12 (9.1)	5 (3.8)	106 (80.3)
<b>International Pharmaceutical Abstracts</b>	2 (1.5)	12 (9.1)	11 (8.3)	12 (9.1)	95 (72.0)
<b>Evidence Based Medicine</b>	3 (2.3)	31 (23.5)	18 (13.6)	17 (12.9)	63 (47.7)

EMBASE	1 (0.8)	17 (12.9)	10 (7.6)	13 (9.8)	91 (68.9)
IndMED	1 (0.8)	9 (6.8)	-	9 (6.8)	113 (85.6)
WHOSIS	-	-	-	5 (3.8)	127 (96.2)
Any other	-	-	-	-	132 (100)

## 8. SUGGESTIONS FOR IMPROVING ACCESS TO INFORMATION

Majority of the physicians/surgeons (83%) suggest availability of Internet facilities at work place to save their time. About 80.5% and 76% recommend for establishment of libraries in every medical institution and conduct of frequent seminars, conferences, CMEs, group discussions etc respectively while as 65% of the professionals propose organization of user awareness programmes so as to know about available information sources in print and electronic formats. Most practitioners believe that they need to upgrade their computer skills. Medical databases and Internet searching skills are identified as those in greatest need of improvement for the purposes of improving practice effectiveness. 29% suggest availability of free of cost full text e-books/e-journals. However, only 15% and 10% suggest up-gradation of libraries and convenience of better Internet connectivity respectively. (Fig 3)



## Conclusion

Physicians and surgeons in Jammu & Kashmir mainly use books & journals as information sources to keep themselves up with new developments and techniques in their respective fields. Practitioners use colleagues frequently at the work place, and that accessibility is an important factor influencing the use of information sources. In addition to accessibility other factors like relevance, currency, understandability, comprehensiveness of information source are clearly important in the process of information-gathering.

Some of the practitioners use Internet especially the World Wide Web to find and exchange medical information. Some of them frequently use online bibliographic databases. Majority of the practitioners suggest for availability of Internet facilities at work place and establishment of libraries in every medical institution a compulsory component. The knowledge of how to use and customize online services should be developed by special training programmes. Library and bibliographic instruction would enlarge the practitioner's familiarity with information sources; familiarity would enhance perceptions of an information source as being accessible.

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