

**INFORMATION SEEKING BEHAVIOR: THE CASE OF SPECIALISTS,
RESIDENTS AND INTERNS AT HOSPITALS OF AHVAZ
UNIVERSITY OF MEDICAL SCIENCES**

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Abstract - This study attempts to investigate the information-seeking behavior of specialists, residents and interns at the hospitals of Ahvaz University of Medical Sciences, Iran. The data were collected through a questionnaire completed by 114 respondents. The research findings revealed that the three groups used informal channels (i.e. conferences) in order to obtain specific as well as general information to keep abreast with progress in medicine. Though specialists, residents and interns reported similar information seeking behaviors, their experiences vary significantly. Personal problems in keeping abreast with progress in medicine were related to time constraint and lack of familiarity with using information sources. Moreover, for all three groups, organizational or non-personal problems involved poor quality of collections and inadequate number of books as well as their out-of-dateness.

Keywords – Information Seeking Behavior, Physicians, Medical students, Ahvaz, Iran, Hospitals.

INTRODUCTION

Transmission of information from one generation to another enables man to discover facts and to overcome nature. The development of human society is indebted to information transmission as well as to fast and proper access to the latest scientific and technical information. Proper organization and diffusion of information help all sciences, including medicine, to flourish. Because medicine is closely related to human health and treatment of diseases, the transmission of medical information enjoys greater importance. It is hence vital for those engaged in the medical profession to acquire the necessary skills to retrieve the most recent information in this field.

LITERATURE REVIEW

Incredible volume of medical information, its ever-increasing nature, invention of new diagnostic methods, rejection of previous techniques and medicines all necessitate access to the most recent information in the field. The research findings conducted on information

seeking behavior of physicians show that the most important or the foremost channel of obtaining information is consultation with colleagues. [1, 2, 3, 4, 5] Furthermore, it is claimed that while medical specialists often use journal articles, residents and medical students mostly use books and monographs to meet their information needs. [12]

The results of an experimental study conducted in the United States revealed that “patient care and education were enhanced by the rapid access to recent information.” [16] In a study conducted at the University of Albany, New York, it was found that about 50 percent of physicians participated in courses that taught how to use the *Index Medicus*, and that they were interested in accessing current information and being up-to-date. [19] It is also claimed that medical students’ problem in accessing information is due to their inability or lack of personal skills in information retrieval. The author reported a significant relationship between students’ inability in learning information retrieval skills and their successful and effective use of the library. [14]

Research studies carried out in Iran show that medical researchers and authors, in general, use journal articles and books as their most referred information sources. [6] It is also reported that non-faculty physicians in Iran often use books rather than journals [11]; furthermore, medical students at different levels use textbooks more than any other information source and are not adequately up-to-date. Proficiency in English was reported as an important factor in retrieving relevant information. [11]

Moreover, as has been reported “It is imperative that surgeons acquire and maintain modern information retrieval skills as a means of remaining up-to-date in their profession.” [18] Rapid access to patient data reduces the time consumed for medical decision making and for improving the quality of the decisions. [22] Finally, it was found that organizational information was extremely important to the team members in their surgical intensive care unit. Thus, ready access to required information is of great importance to medical staff for diagnosis and patient management. [15]

The aim of the present study is to investigate how specialists, residents and interns at the hospitals of Ahvaz University of Medical Sciences obtain the information they require. The study also attempts to investigate the type of library resources that these groups use as well as the problems they face when seeking information.

METHODOLOGY

Before mentioning the hypotheses formulated for the present study, a definition of “information seeking behaviour” is required. In the present study, information seeking behaviour includes the totality of activities done by medical specialists, residents and interns to obtain the required information from different resources and through various channels. It is calculated and measured by adding the scores obtained by each respondent for being involved in using a variety of information sources and channels. Information

sources include monographs, periodicals, abstracts, indexes, theses, bibliographies, patents, and medical reports. On the other hand, information channels include both formal channels, i.e. the library, and informal channels, which include participation in seminars, conferences and symposiums at local, national and international levels. Informal channels also include consultation, discussion and correspondence with colleagues or other experts in the field.

Three hypotheses were formulated for this study:

Hypothesis 1: There is a significant difference between the information seeking behavior of medical specialists, residents and interns at the hospitals of Ahvaz University of Medical Sciences.

Hypothesis 2: There is a positive correlation between the English proficiency of medical specialists, residents and interns and the extent to which they use secondary information sources (i.e., abstracts and indexes) in English.

Hypothesis 3: There is a correlation between the information seeking behavior of medical specialists at the hospitals of Ahvaz University of Medical Sciences and their other activities such as the time they spend teaching, conducting research and working in private clinics.

RESEARCH QUESTIONS

In addition to the above hypotheses, the present study aims to answer the following questions:

1. To what extent, do medical specialists, residents and interns keep abreast with progress in medicine?
2. What information channels and sources do medical specialists, residents and interns use in order to keep abreast with new developments in medicine?
3. What barriers do medical specialists, residents and interns face in keeping abreast with progress in medicine?
4. How often do medical specialists, residents and interns use important medical indexes and abstract journals?

DATA COLLECTION

To collect data for the present study, a questionnaire, was designed based on Kumar's questionnaire administered in India. [9] Since the situation in Iran is different from that of India, Kumar's questionnaire could not be used in its original form. It was first translated into Persian and then the teaching staff and the graduate students in the field of library and information science at Chamran University were asked to comment on the draft. It was then pilot tested. To administer the pilot study, 30 copies of the questionnaire were

distributed among specialists, residents and interns serving at teaching hospitals in Isfahan. Examination of the returned questionnaires (28) revealed that the items listed were totally clear for the respondents. Nevertheless, comments suggested some minor corrections on some items of the questionnaire were required. Then, based on the findings of the pilot study, the questionnaire was further modified.

The cronbach coefficient (internal consistency) was .83 for the whole questionnaire, while the split-half and test-retest (with 3-week interval) coefficients were .81 and .64 respectively.

The final questionnaire consisted of 3 parts. The first part asked for personal information, the second part asked for the 'information seeking behavior' of the respondents and the last part asked about the problems and barriers the respondents faced in order to access the required information. In addition, one open-ended question at the end of each part asked respondents to write any comments they wished.

The questionnaires were distributed among subjects and then collected with the help of the secretaries of departments in each hospital.

SUBJECTS

The subjects of this study included medical specialists, residents and interns at one of the six hospitals of Ahvaz University of Medical Sciences, located in southwest Iran. These hospitals were Abuzar, Emam Khomeini, Golestan, Razi, Shafa, and Sina. The questionnaire was distributed among 200 specialists, residents, and interns, but only 130 were returned. Of these, 16 questionnaires were excluded due to incomplete or improper responses. Thus, the response rate for the study was 57%.

DATA ANALYSIS

To test the research hypotheses, analysis of variance (ANOVA), Tukey's test and test of correlation were applied. Data analysis was performed with the help of Windows '98 version of SPSS.

RESULTS

What follows is a descriptive statistics of the research together with the results of testing the hypotheses. Table 1 shows that almost one third of the subjects were female. This figure corresponds to the population of the University at the time of the study. Table 1 also shows that while the number of specialists is small, the majority of the respondents were interns.

Table 1: Distribution of Respondents by Gender and Group

Gender	Female			Male		
	Groups	No.	Percent: Within Group	Percent: Entire Population	No.	Percent: Within Group
Specialists	9	26.0	8.0	21	26.5	18.4
Residents	12	34.0	10.5	26	33.0	22.8
Interns	14	40.0	12.3	32	40.5	28.0
Total	35	100	30.8	79	100	69.2

Table 2 shows that the 26-30 year-age-group comprise the majority of respondents, followed by 31-35 year category.

Table 2: Distribution of Respondents by Age Groups in the Entire Population

Age group	20-25		26-30		31-35		Over 35	
	No.	%	No.	%	No.	%	No.	%
Specialists	-	-	-	-	8	7.0	22	19.2
Residents	-	-	14	12.2	19	16.6	4	3.5
Interns	14	12.2	25	22.0	6	5.2	2	1.7
Total	14	12.2	39	34.2	33	28.8	28	24.4

Tables 1 and 2 clearly show that the survey sample corresponds to the whole population of the three groups at the time of study.

TESTING THE HYPOTHESES

Among the six library hospitals under study, only three libraries located at Abuzar, Golestan, and Shafa hospitals have made available services based on modern electronic sources of information. While medical CD-ROMs are available at Golestan and Shafa hospitals, local and international online databases are accessible through Abuzar hospital only.

To test the three hypotheses formulated for this study, ANOVA was used to compare the information-seeking behavior of the three groups, namely specialists, residents and interns. The result was ($F=6.35$, $P<0.002$, $DF=2$) which shows a significant difference. Tukey revealed that the specialists were significantly different from residents and interns in terms of the variable 'information seeking behavior'. This may be due to the fact that specialists reported to be more familiar with non-print medical resources and that over 90 percent of them reported to use *Medline*. Specialists are, therefore, more up-to-date. They also make more use of informal channels such as participating in seminars and conferences, and have more consultation with colleagues and other experts (Table 3).

Table 3: Familiarity with *Medline*

Familiar with <i>Medline</i>	YES			NO		
	No.	Percent: Within Group	Percent: Entire Population	No.	Percent: Within Group	Percent: Entire Population
Specialists	27	93.2	23.6	3	6.8	2.6
Residents	26	68.4	22.8	12	31.6	10.5
Interns	23	50.0	20	23	50.0	20
Total	76	66.7	66.4	38	33.3	33.1

To test Hypothesis 2, responses to questions regarding proficiency in English were correlated with those related to success in reading and understanding medical journals as well as retrieving information through secondary sources. The result of the Spearman test of correlation showed a moderate correlation coefficient ($r=28$, $P<.003$). It needs to be mentioned that English was the foreign language of almost all respondents.

Correlation was also used to determine the relationship between the information seeking behavior of specialists and their other activities (e.g. teaching, research and working in private clinics). The results showed no correlation ($r = -0.52$, $P<0.63$).

OTHER FINDINGS

The study also revealed that in order to be abreast with progress in the medical sciences, medical specialists who participated in the study mainly use medical journals ($M=2.79$; 3 indicates 'often use'). Residents and interns mainly use books and monographs for this purpose ($M=2.62$ for residents and 1.86 for interns). The findings also show that the three groups, in order to be up-to-date, generally use both informal channels and formal ones, respectively, to be up-to-date. However, 68.9% of specialists, 45.9% of residents and 53.3% of interns reported that their up-to-dateness with progress in medicine was 'average.' Furthermore, 32.4% of residents and 33.2% of interns found their up-to-dateness 'very little' or 'little.'

BEING UP-TO-DATE

The problems that people encounter when searching for information may affect their information seeking behavior. These problems may be divided into two categories: 1) personal problems such as a lack of personal knowledge and skills and inability to use library resources; 2) organizational problems, such as lack of proper library services, lack of adequate new books and journals, and lack of sufficient advanced information technology equipment available in the library.

Table 4 summarizes the data related to problems reported by subjects.

Table 4: Personal and Organizational Problems in being Up-to-Date (the Entire Population)

Problems	Personal Problems				Organizational Problems							
	Lack of Skills		Time Constraint		Improper Library Services		Inadequate Copy of Books		Inadequate New Books		Inadequate Journal Titles	
Groups	No	%	No	%	No	%	No	%	No	%	No	%
Specialists	18	15.7	24	21	21	18.4	26	22.8	23	20	26	22.8
Residents	17	14.9	32	28	17	14.9	25	21.9	24	21	23	20
Interns	26	22.8	36	31.5	21	18.4	32	28	35	30.7	22	19.2
Total	61	53.4	92	80.5	59	51.7	83	72.7	82	71.7	71	62

Table 4 shows that among personal problems, lack of time for 80.5% of respondents rank first (21% for specialists, 28% for residents and 31.5% for interns) and lack of personal skills for 53.4% (15.7% for specialists, 14.9% for residents and 22.8% for interns) ranks second, respectively.

Lack of personal skills may partly result from the absence of user education programs in these libraries, and partly from lack of knowledge about using new information technologies such as CD-ROMs and the Internet as well as lack of proficiency in English.

Table 4 also shows that for the whole population under study, inadequate copy of books and inadequate new books were the most serious organizational problems, 72.7% and 71.7%, respectively. On the other hand, the three groups considered individually reported that lack of sufficient titles of journals for 86.7% of specialists, inadequate copy of books for 65.8% of residents, and inadequate new books for 76.1% of interns ranked the most important organizational problems in being up-to-date.

These figures reveal that a considerable majority of library patrons are not satisfied with the richness and up-to-dateness of their library collections. It is also worthy to mention that a high percentage of the three groups find libraries unable to offer proper services.

DISCUSSION

Significant positive correlation between proficiency in English and information retrieval ($r = 0.28$, $p < 0.003$) may indicate that if library patrons improve their knowledge of English, more information will be at their disposal. This will enable them to have better recall and precision in their search. This conclusion concurs with Ellegan (1988) who in a study about information needs of physicians found that proficiency in foreign languages is an important factor in the proper use of information sources and documents by physicians [cited in 12]. In the present study, specialists and residents reported their English knowledge as "good," but interns reported as "average."

Collectively, 93 percent of all respondents never had formal training on the proper use of the library. While 90 percent of specialists did so, 89.5 percent of residents and 97.8 percent of interns did not participate in any user education programs. One reason for this may be that librarians working in teaching hospitals have never thought of "user

education programs” or may have difficulty in running such training programs. However, there is evidence that many medical librarians are not qualified for such training. At the time of the present study, only 2 out of 6 library directors held academic degrees in librarianship. It is interesting to point out that 100% of the specialists, 73.7% of residents and 81.8% of interns declared their willingness to participate in user education programs. User education programs are emphasized in some research [10, 2], while in a thesis on physicians it was found that there was no significant difference between the frequency of using medical libraries before and after participating in user education courses. [7] This was also true for using bibliographies and conducting research. As mentioned earlier, 68.9% of specialists, 45.9% of residents and 53.3% of interns reported their medical knowledge and up-to-dateness as “average.” Furthermore, 32.4% of residents and 33.2% of interns reported their up-to-dateness as “little” or “very little.”

Physicians’ lack of searching skills may partly be due to the lack of adequate searching facilities such as the Internet and *Medline* online available in hospitals. For example, in a study on the information-seeking behavior of physicians conducted in Bojnourd, a city in northwest of Iran, it was found that the physicians mostly used informal channels to meet their information needs and to keep pace with progress in medicine. [17] The findings of the present study also show that for the three groups surveyed, informal channel is the first means to acquire the needed information. These results, contradict the findings of a study in which the researcher [13] examined information seeking behavior of physicians in developing countries and discovered that physicians in such countries use library collections (formal channel) in the first instance, and then use communication with colleagues (informal channel).

Regarding the use of different sources of information, the findings of the present study are in line with the results obtained by research carried out in other countries [12, 20] in that specialists used more medical journals than textbooks and more textbooks than monographs, whereas medical students used textbooks and monographs as their primary source of information. The present study also revealed that while specialists use *Medline* (M=2.08) as a primary source, then *Index Medicus* (M=1.42) and finally *Excerpta Medica* (M=0.94), respectively, residents use *Index Medicus* (M=1.06), *Medline* (0.95) and *Biological Abstracts* (M=0.64). Interns first prefer *Medline* (M=0.48), *Index Medicus* (0.32) and then *Biological Abstracts* (0.31). Two studies conducted in Iran reported that for medical students, *Index Medicus* followed by *Medline* were the most popular secondary sources [11, 20].

CONCLUSION

It seems that the application of new information technologies in medical libraries in Iran has caused medical students to change their information-seeking behavior, and thus *Medline*

is now warmly received in Iranian libraries. However, the results of the present study show that a considerable majority of medical students are not familiar with printed medical abstracts and indexes.

Absence of user education and bibliographic instruction programs in the Iranian academic libraries is presumably responsible for such a situation.

SUGGESTIONS

The study of the information seeking behavior of specialists, residents and interns at Ahvaz University of Medical Sciences has shed some light on the points which demand serious attention in order to enable library patrons to meet their information needs. In this regard, one needs:

1. To increase the knowledge and skills of the present librarians working in medical schools and hospitals;
2. To establish user education programs;
3. To instruct library patrons how to use basic medical references such as indexes and abstracts;
4. To modify collection development procedures and consider it as a continuous function of the library;
5. To distribute publishers' catalogs regularly among departments and to inform patrons about new and forthcoming publications;
6. To provide a union catalog of all hospital libraries' collections to offer resource sharing services via establishing an intranet.
7. To provide hospital libraries with work stations to search medical databases that connect to the Internet on a regular basis.

ENDNOTE

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REFERENCES

- [1] Baradaran Lailabadi, Mahsoori. *A Survey of Information Needs of Cardiovascular and Respiratory System Specialists in Tabriz*. Tehran: Iran Medical Sciences University, School of Management and Medical Librarianship [Unpublished MLS thesis], 1993.
- [2] Cheng, G. Y. and Lam L. M. C. "Information-Seeking Behaviour of Health Profession in Hong Kong: a Survey of Thirty-Seven Hospitals," *The Bulletin of*

- Medical Library Association*, 84(1), 32-40, 1996.
- [3] Farmer, J. and Gullaumin. "Information Needs of Clinicians: Observations from a Clinicl Medical Librarian," *The Bulletin of Medical Library Association*, 67(1), 53-54, 1979.
- [4] Friedlander, Janet. "Clinicians Search for Information," *Journal of American Society for Information Science*, 24, 65-69, 1973.
- [5] Gravois, S. L.; Fisher, W.; and Patrick S. C. "Information-Seeking Practices of Dental Hygienists," *The Bulletin of Medical Library Association*, 83(4), 446-452, 1995.
- [6] Hajebi, Rabe-e. *The Extent of the Iranian Medical Researchers about Information Resources*. Tehran: Iran Medical Sciences University, School of Management and Medical Librarianship [Unpublished MLS thesis], 1992.
- [7] Issari, Fereshteh. *The Effects of Retraining Courses on the Use of Medical Libraries*. Tehran: Iran Medical Sciences University, School of Management and Medical Information Science [Unpublished MLS thesis], 1994.
- [8] Kough, W. "Are Hospital Libraries Meeting Physicians' Information Needs?" *Special Libraries*, 64, 222-227, 1973.
- [9] Kumar, Krishan. *Research Methods in Library and Information Science*. Translated by Fatemeh Rahadoost and Fariborz Khosravi. Tehran: National Library of Iran, 1992.
- [10] Lalitha, M. "Information Seeking Behaviour of Medical and Engineering Personnel: a Comparative Study with Reference to their Library Use," *Library Science with a Slant to Documentation and Information Studies*. 32(2), 65-74, 1995.
- [11] Nazeri, Shapur. *A Survey of Information Needs of Medical Students at Medical University of Iran*. Tehran: Iran Medical Sciences University, School of Management and Medical Librarianship [Unpublished MLS thesis], 1994.
- [12] Osiobe, Stephen A. "A Study of the use of Information Source by Medical Faculty Staff in Nigerian Universities." *Journal of Information Science*, 12(4): 177-183, 1986.
- [13] Permsmith, L. "The Information Needs of Academic Medical Scientists at Chulanko Qkoirn," *The Bulletin of Medical Library Association*, 7, 383-387, 1998.
- [14] Rankin, Jocelyn A. "Problem-Based Medical Education: Effect on Library Use," *The Bulletin of Medical Library Association*. 80(1), 36-43, 1992.
- [15] Reddy, Madhu C. and et. al. "Asking Questions: Information Needs in a Surgical Intensive Care Unit," *American Medical Informatics Association. Fall Symposium (AMIA' 02)*, San Antonio, TX, Nov. 9-13, 2002.
- [16] Roach, A.A. and Addington, W.W. "The Effects of an Information Specialist on Patient care and Medical Education," *Journal of Medical Education*, 50(2), 176-

80, 1975.

- [17] Samanyan, Mosayyeb. "Analysis of Information Seeking Behaviour of Physicians in Bojnoord," *Faslname-Ketab*, 10(2), 89-100, 1999.
- [18] Shelstad, K. R. and F. W. Clevenger "Information Retrieval Patterns and Needs Among Practicing General Surgeons: a Statewide Experience," *The Bulletin of the Medical Library Association*. 84(4), 490-7, 1996.
- [19] Strasser, Theresa C. "The Information Needs of Practicing Physicians in Northeastern New York State," *The Bulletin of Medical Library Association*, 66(2), 200-209, 1978.
- [20] Talachi, Homa. *Use of Index and Abstract Journals Available at Iran, Tehran and Beheshti Medical Universities by Students, Faculty Members and Researchers*. Tehran: Iran Medical Sciences University, School of Management and Medical Information Science [Unpublished MLS thesis], 1987.
- [21] Verhoeven, Anita. "Use of Informtion Sources by Family Physicians: a Literature Survey," *The Bulletin of Medical Library Association*, 83(1), 85-90, 1995.
- [22] Zeng, Qing and Cimino James J. "Providing Multiple Views to Meet Physician's Information Needs," *Proceedings of the 33rd Hawaii International Conference on System Sciences*, 2000.