

# Determining the level of awareness of the physicians in using the variety of electronic information resources and the effecting factors

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## ABSTRACT

**Background:** Understanding of the medical society's from the types of information resources for quick and easy access to information is an imperative task in medical researches and management of the treatment. The present study was aimed to determine the level of awareness of the physicians in using various electronic information resources and the factors affecting it. **Materials and Methods:** This study was a descriptive survey. The data collection tool was a researcher-made questionnaire. The study population included all the physicians and specialty physicians of the teaching hospitals affiliated to Isfahan University of Medical Sciences and numbered 350. The sample size based on Morgan's formula was set at 180. The content validity of the tool was confirmed by the library and information professionals and the reliability was 95%. Descriptive statistics were used including the SPSS software version 19. **Results:** On reviewing the need of the physicians to obtain the information on several occasions, the need for information in conducting the researches was reported by the maximum number of physicians (91.9%) and the usage of information resources, especially the electronic resources, formed 65.4% as the highest rate with regard to meeting the information needs of the physicians. Among the electronic information databases, the maximum awareness was related to Medline with 86.5%. Among the various electronic information resources, the highest awareness (43.3%) was related to the E-journals. The highest usage (36%) was also from the same source. The studied physicians considered the most effective deterrent in the use of electronic information resources as being too busy and lack of time. **Conclusion:** Despite the importance of electronic information resources for the physician's community, there was no comprehensive knowledge of these resources. This can lead to less usage of these resources. Therefore, careful planning is necessary in the hospital libraries in order to introduce the facilities and full capabilities of the mentioned resources and methods of information retrieval.

**Key words:** Educational hospitals, electronic information resources, physicians

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Quick Response Code:



Website:  
[www.jehp.net](http://www.jehp.net)

DOI:  
10.4103/2277-9531.162316

## INTRODUCTION

In developing countries, including Iran, producing reliable information has reached its real position in recent years, but the necessary and useful application of this information has not found its place in various fields, including medicine. Physicians responsible for patient management are faced with many questions, which they respond by using sources of information such as magazines and books, the information in clinical records, or by a combination of information about a particular patient with their basic knowledge of medicine.<sup>[1]</sup>

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This article may be cited as: Papi A, Ghazavi R, Moradi S. Determining the level of awareness of the physicians in using the variety of electronic information resources and the effecting factors. *J Edu Health Promot* 2015;4:49.

Thus, providing treatment services to patients by the physicians requires more awareness about the updated information produced by researchers and medical professionals.<sup>[2]</sup> The updated information is regarded as a constant higher education for the physician as it tells about the experiences and recommendation of his/her professional colleagues. Due to the benefits of electronic information resources in comparison with published materials, such as quick release, ease of access, no time limitation, no restrictions in place and location, etc., the awareness of these resources provides further advantage for obtaining updated information.<sup>[3]</sup>

Based on the above-mentioned facts about the importance of timely use of medical information in the health and life of humans, and the characteristics of electronic information resources (speed and ease), adoption and use of these resources is very important. On the other hand, one of the most important criteria for evaluating the usefulness of a technology is the rate of its usage. In evaluating the awareness and use of library users of the various information resources and the obstacles in using them properly, there have been extensive researches in the universities of the country and abroad and treatment centers, but none of these researches have paid attention to the evaluation of awareness and the usage of these resources together and the causes or obstacles in using these resources. Among these studies, the following deserve mention. Hajebi showed that the usage of information databases by the medical researchers has been very limited and only 2% of the researchers have used the Embase database.<sup>[4]</sup> Etesami observed that 97.7% of the professionals used the medical library for solving their problems in the treatment of patients.<sup>[5]</sup> Baba Rezaei Kashani found in his study that 95.8% of the faculty members used the Internet networks. The reasons for using the Internet was to obtain updated information (55.6%) and for conducting researches (41%).<sup>[6]</sup> Salmani Nodoushan found in his study that ScienceDirect database has been used more than the other sites and the lowest rate was for Wiley database.<sup>[7]</sup>

In the study of Tavassoli *et al.*, 11.1% of physicians were found to refer to Internet for updating their information and 42.9% of them sought the assistance of their colleagues, go to the library, and search in the CD-ROMs, in addition to using Internet.<sup>[8]</sup> The results of Mohammadi *et al.*, showed that regarding the use of electronic resources and the ways to access these resources, electronic journals had the highest usage compared to other resources.<sup>[9]</sup> Habibi *et al.*, observed the targets and used of the physicians to be in line with the development of new medications, observing the medical problems, determining the percentage of Ardabil physicians in using medical databases, formal and informal channels used for specialized information, and their comments in connection with the fresh advances in medicine.<sup>[10]</sup> Mohammadi and Abdolhoseinzadeh in their research concluded that among the 33 libraries, only 15 libraries in their reference department were using Internet information resources. The main reason for their usage was to answer the questions in relation to conducting extensive researches.<sup>[11]</sup>

The findings from the research of Abels *et al.*, showed that the studied faculty members used network services for teaching, research, be aware of the new contents, scientific and research communication, and paperwork. Based on this research, the ease of physical access and attending a training program aimed to become familiar in using the service are the key factors in the use of computer networks.<sup>[12]</sup> Hurd *et al.*, showed that on average, 86% of the medical faculty and faculties of nursing and pharmacy in the University of Illinois used Medline, but Medline was not enough to satisfy their information needs and they used printed and electronic resources too.<sup>[13]</sup> McKibbin and Douglas in their research came to the conclusion that due to poorly chosen resources, inappropriate searching strategy, and lack of sufficient time, the electronic resources were not providing the answers for medical questions. They stated that the librarians have an important role in the navigation of the users in the use of these resources.<sup>[14]</sup>

As observed, in all the studied researches, the importance of electronic information resources in the transfer of medical information is evident and has been proved for the users. But for various reasons, proper and expected use of these resources has not been performed (despite the efforts of the libraries and information centers to provide the resources). In the present study, attention has been paid to determine the awareness of the physicians of the hospitals of Isfahan University of Medical Sciences about the electronic resources and the factors influencing their usage or lack of use.

## MATERIALS AND METHODS

This research was a descriptive survey. The study population included all the 350 physicians and specialty physicians in the educational hospitals of Isfahan University of Medical Sciences (at the time of the study). By using the Morgan's formula, the required sample size was determined (180 physicians). The sample was selected by random cluster sampling method based on the hospitals. The tool for collecting the data was a researcher-made questionnaire. The content validity was confirmed by the librarian and information science experts. The reliability was confirmed as 95% by using Cronbach's alpha coefficient formula. The required information was collected by referring to the hospitals and clinics of the study population. The collected data were analyzed by SPSS software version 19 and using descriptive statistics and distribution and percentage frequency.

## RESULTS

Among the total distributed questionnaires, 104 questionnaires were completed. The findings derived from them were as follows.

Demographic survey showed that 33 physicians (31.7%) among the respondents were females and 71 of the respondents (68.3%) were males. The respondents were from different fields of medicine. The largest number ( $n = 9$ ) were experts in gynecology. Table 1 shows the various reasons of the physicians'

information requirements. In all the tables, the cases without response were not included in the frequency.

It should be noted that obtaining new and updated information, conducting researches, and article production were cited as the reasons by most of the physicians for information requirement (much and too much) and the need for everyday information was the least cited reason. Table 2 shows the distribution and percentage of frequency of the physicians' usages of a variety of data resources.

According to the data in the table, to obtain the needed information, the most used resource (much and too much) have been the printed and electronic information resources and lowest in the case has been the assistance to external experts.

Figure 1 shows the awareness of the physicians from different databases. As it is observed, regarding the medicine databases, Medline database was the best-known site among physicians and the lowest awareness has been associated with Blackwell database.

Table 3 shows the usage of electronic information resources by the physicians.

Regarding the types of electronic resources, the maximum awareness (much and too much) was related to electronic journals and the least level of awareness was related to offline relevant databases.

Table 4 shows the obstacles for the physicians in obtaining electronic information resources.

The obtained data show that being busy and lack of time (61.5%) has been reported as the most important obstacle in using electronic information resources and

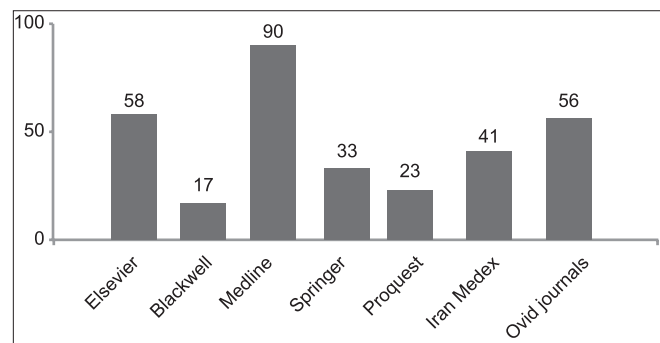


Figure 1: Distribution of the physicians' awareness about different databases

Reasons of information requirements Scale	Patients' treatment		Conducting researches		Teaching		Preparing articles		Obtaining new and updated information		Everyday usage	
	Frequency	Percentage of frequency	Frequency	Percentage of frequency	Frequency	Percentage of frequency	Frequency	Percentage of frequency	Frequency	Percentage of frequency	Frequency	Percentage of frequency
Very high	36	35.6	39	37.5	37	35.9	49	48	52	50	18	17.3
High	43	42.6	56	53.8	41	39.8	43	42.2	41	39.4	45	43.3
Medium	19	18.8	7	6.7	17	16.5	7	6.9	10	9.6	38	36.5
Low	2	2	2	1.9	4	3.9	3	2.9	1	1	3	2.9
Very low	1	1	0	0	4	3.9	0	0	0	0	0	0
Total	101	100	104	100	103	100	102	100	104	100	104	100

Data resources Scale	Printed information resources		Expert collaborators within the country		Foreign expert collaborators		Electronic information resources	
	Frequency	Percentage of frequency	Frequency	Percentage of frequency	Frequency	Percentage of frequency	Frequency	Percentage of frequency
Very high	21	20.2	3	2.9	2	1.9	24	23.1
High	47	45.2	22	21.2	14	13.6	44	42.3
Medium	33	31.7	51	49	24	23.3	28	26.9
Low	3	2.9	28	26.9	47	45.6	6	5.8
Very low	0	0	0	0	16	15.5	2	1.9
Total	104	100	104	100	103	100	104	100

**Table 3: Distribution and frequency percentage of the physicians' awareness and usage of various electronic information resources**

Electronic information resources Scale	Online databases				Offline databases				E-books				E-journals			
	Awareness		Usages		Awareness		Usages		Awareness		Usages		Awareness		Usages	
	Frequency	Percentage of frequency	Frequency	Percentage of frequency	Frequency	Percentage of frequency	Frequency	Percentage of frequency	Frequency	Percentage of frequency	Frequency	Percentage of frequency	Frequency	Percentage of frequency	Frequency	Percentage of frequency
Very high	8	7.8	8	7.7	2	2	2	2	7	6.8	3	3	13	12.5	12	11.7
High	29	18.4	31	29.8	12	11.8	10	10.2	10	9.7	7	6.9	32	30.8	25	24.3
Medium	43	42.2	35	33.7	28	27.5	27	27.6	30	29.1	31	30.7	30	28.8	33	32
Low	21	20.6	24	23.1	49	48	44	44.9	43	41.7	44	43.6	22	21.2	23	22.3
Very low	1	1	6	5.8	11	10.8	15	15.3	13	12.6	16	15.8	7	6.7	9	8.4
Total	102	100	104	100	102	100	98	100	103	100	101	100	104	100	102	100

**Table 4: Distribution and frequency percentage of the obstacles for the physicians in obtaining electronic information resources**

Obstacles	Frequency	Percentage of frequency
Busy and lack of time	64	61.5
Lack of sufficient awareness of electronic resources	49	47.1
Not being familiar with the electronic resources retrieval methods	43	41.3
Lack of adequate electronic resources in the hospital library	33	31.7
Electronic resources shortage	23	22.1
Difficulty of Translation for foreign electronic information resources	3	2.9
Lack of useful content resources	1	1
Others	5	4.8

lack of useful content resources was the least important obstacle.

## DISCUSSION

The present study shows that the studied physicians used information resources for reasons such as conducting researches, preparing articles, obtaining new and updated information, management of patients' treatment, teaching, and finally, everyday usage. This indicates the continuous need of the physicians to obtain information for diagnosis and treatment of new cases. This issue is in agreement with the result of Habibi *et al.* It has been reported in that study that the general practitioners' aim for obtaining the latest information was to update their information for solving the health issues.<sup>[10]</sup>

Conducting researches and preparing books and articles are inseparable components of medical science. Availability and usage of information in any format is essential. As the findings of this study also revealed, the majority of surveyed physicians used different data resources to conduct researches. This finding is in line with the study result of Rasool Abadi. It has

been demonstrated in that research that more than half of the study population used computer and Internet for scientific and research activities.<sup>[15]</sup> In the study of Mohammadi *et al.*, it was observed that the main reason for the use of Internet resources was to conduct researches.<sup>[11]</sup> Many physicians considered that the need for information is necessary in the context of teaching, which also confirms the importance of information in this case. According to the results of the study of Torabi, among the reasons for using electronic medical resources, educational tasks formed 72.4%.<sup>[3]</sup>

The physicians make use of different data resources such as taking help of the expert collaborators within the country and the assistance of foreign experts to meet their information needs. This finding is in contrast to the research findings of Habibi *et al.* They reported that the physicians use more of formal channels such as medical books and magazines for finding answers for clinical questions. Among the informal channels of obtaining information, they received the required information by participating in continuing education courses, conferences, and informational congresses. Only 30.5% consulted with their colleagues.<sup>[10]</sup>

Among the various resources of obtaining information, electronic information resources are mostly used by the physician community. Among the available databases, the awareness of the studied society in decreasing order was for the following: Medline, Elsevier, Ovid journals, Iran Medex, Springer, Proquest, and Blackwell. This is also consistent with the findings of Rasool Abadi. He reported that 29.6% of the studied population had awareness about the coverage of Blackwell and Ovid databases (clinical sciences) and 41.9% of the population had mostly used Elsevier's database.<sup>[15]</sup>

Regarding the usage of various electronic information resources, the rate of awareness about online and offline databases, indicated that despite of their usefulness and easy access, these resources were not known. Electronic books (E-books) had a similar situation with the online and offline databases. The studied physicians just had a relatively higher level of awareness in the case of electronic journals (E-journal). This increased

level of awareness was due to different reasons. The main reason may be cited as the availability of this in comparison with others resources. On the other hand, due to the limited shelf life of information in the medical field, and thus, the feature of information in the articles, and the sooner possibility to publish the journal compared to some other formats, this type of publication will be of most interest. Other researchers had reported similar results as well.<sup>[3,9,11]</sup>

There are several obstacles for the physicians in accessing and using the information they need and these obstacles lead to unavailability of timely and comprehensive information. The most important of these obstacles in the studied physicians was reported as being busy and lack of time, which has been also reported by other researches in this regard.<sup>[8,10]</sup> According to the present study results, lack of sufficient awareness of electronic resources and not being familiar with the electronic resources retrieval methods are the other important obstacles. This finding is also consistent with the findings of other similar studies.<sup>[9,10,15]</sup>

In the studied population, there were a few physicians who mentioned about electronic resources shortage and lack of adequate electronic resources in the hospital library. Therefore, despite the presence of a good collection in these libraries, more efforts need to be taken for the availability of the required resources. In contrary to these findings, Mohammadi *et al.*, in their research, had concluded that lack of hardware and software facilities is the main reason for not using the Internet.<sup>[9]</sup> Salmani Nodoushan had reported that insufficient resources (quantity) and lack of Internet access were of secondary importance.<sup>[7]</sup>

## CONCLUSION

In the present era, more attention needs to be paid by the data centers on the information needs of the users and the informational community by considering the circumstances and technological progress in providing the best resources and training. Due to the importance of electronic information resources for the medical community, and considering the fact that lack of awareness of these resources leads to less use of them, it requires careful planning by the library trustees and information centers of the hospitals in order to introduce the facilities and capabilities of the resources, especially the electronic resources.

## Suggestions

Based on the obtained results, the following suggestions are offered:

- It is necessary that the libraries of the studied hospitals consider providing the needed technology and ways to facilitate the use of electronic resources more, and the managers should allocate more funds to increase the annual budget for electronic resources compared to printed resources
- It is necessary that the reference librarians and information centers in hospitals, by providing different communication styles, be always available for the

physicians and respond to their immediate information needs during the treatment period with speed and ease

- It is necessary that training courses on the use of electronic resources be conducted as a part of the physicians' retraining programs by medical librarians
- Due to lack of time of the physicians, it is recommended to use methods such as selective dissemination of information alert or RSS by medical librarians to provide the physicians with the necessary information.

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**Source of Support:** This article is derived from a research project, supported by Isfahan University of Medical Sciences, **Conflict of Interest:** None declared