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## ORIGINAL PAPER

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## THE EFFECT OF THE INTERNET ADDICTION ON THE INFORMATION-SEEKING BEHAVIOR OF THE POSTGRADUATE STUDENTS

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## ABSTRACT

**Introduction:** Internet addiction is a typical use of the internet that causes the psychological, social, educational, or occupational problems for the people. Students need the internet more than other people due to their educational or research needs. The rate and type of the internet use may affect their information-seeking behavior too. This study aims to investigate the effect of the internet addiction on the information-seeking behavior of the postgraduate students. **Methods:** This applied study that uses the correlation method. The research population composed of 1149 postgraduate students of Isfahan University of Medical Sciences, of which 284 were selected using the stratified random sampling as the sample. Yang's internet addiction questionnaire and the researcher-developed questionnaire of the information-seeking behavior were used as the data collection instruments. Instrument validity was confirmed by the specialists of librarianship and medical sciences and its reliability was confirmed using the Cronbach's alpha coefficient (0.86). Research data were analyzed using the descriptive statistics (mean and standard deviation) and inferential statistics (independent-t tests, Pearson correlation coefficient, and variance analysis). **Results:** Based on the findings, there was no sign of internet addiction among the 86.6% of the students. However, 13% of the students were exposed to the internet addiction and only 0.4% of internet addiction was observed among the students. There was no significant difference between the information-seeking behavior of the male and female respondents. There was no sign of the internet addiction in any dimension of the information-seeking behavior of the students. **Conclusion:** This study showed that there is no relationship between the information-seeking behavior of the students and the age and the rate of the internet use. Promoting the network infrastructures and increasing the internet speed as well as facilitating the use of electronic resources should be prioritized by the officials.

**Key words:** Internet Addiction, Information-Seeking Behavior, Students, Isfahan University of Medical Sciences.

## 1. INTRODUCTION

From the beginning of the human civilization, information and the ways people use it, has been one of the main issues in the societies. Nowadays, many intellectuals consider the information as a powerful source. Producing and disseminating the information in a wide variety of fields has been one of the main reasons for calling the contemporary era as the age of the information and therefore, knowledge has become as one of the most significant elements of human progress and civilization (1). Today, universities and higher education centre's play a crucial role in producing the information and students can be effective in developing the societies through their research activities or scientific products. They carry out a series of activities to find the resources or information channels in order to meet their

own information needs, including the information search, research methods, search problems, and its effective factors that totally is called information-seeking behavior (2). Information-seeking behavior is a process in which people try to change the knowledge position purposefully and nowadays, this kind of behavior should be considered by all human beings (3).

Information search may be carried out through one's interaction with the manual information systems (libraries) or with the computer-based (or electronic) systems (4). Over the recent years, using the electronic networks has been increased and the internet has changed into one of the main channels of obtaining the information in the universities and higher education centers (5). Internet helps a wide range of the researchers and the students to satisfy

their information needs with no physical presence in the libraries or other information centers (6).

The results of some studies demonstrate that students utilize the non-printed resources (information banks or web resources) more than printed resources (e.g. books, journals, etc.) in order to access their required information (4). Quick and easy access to the information is one of the main reasons that users prefer the electronic information resources to the printed information resources. Most of the people spend a lot of time on the non-purposeful search in the internet in the process of searching the scientific information that not only deviates them from their main aim of searching and developing the knowledge boundaries in the universities but also causes the internet addiction (7). An internet addiction phenomenon that has become prevalent coincidentally with the increasing the users' daily access to the continuous resources is similar to a real dependency such as the drug addiction; although, this kind of dependency is not associated with the physical problems of chemical addictions, its consequent social problems are similar to other kinds of addiction (8). Students use internet more than other people do in order to meet their educational needs. For this reason, they are more prone to the internet addiction. Based on the studies, the excessive use of the internet causes the dangers of the improper use of the internet, education problems, and the lack of participation in the curriculums for the students (9).

Continuous presence in cyberspace and using the internet notably with no professional or quasi-professional motivations have become common due to the wide range of the remarkable features of the internet and this may affect the different aspects of the users' lives. Internet addiction may have serious consequences such as changing the lifestyle in order to spend more time on the internet, ignoring the individual health and main activities, reducing the social relationships, ignoring the family and friends, and finally, financial, educational, and physical problems (10).

#### **Related work**

Increased excessive use of the internet has been associated with some problems for the users. Studies conducted on the students show that internet addiction has been accompanied by major problems such as the educational drop, reduced the curriculum study, anxiety, reduced interpersonal relationships, reduced physical activities, irregularity, and nutritional diseases (11-14).

Studies carried out on the pupils and students showed that with the increasing the internet use, prevalence of the internet addiction increases (12, 15, 16). Few studies (9, 17, 18) have reported the higher rate of internet addiction in men compared the women. Moreover, the results show the relationship between the internet addiction and the field of the study (12, 19).

Accessing to the information resources and scientific findings, knowledge sharing, scientific relationships between scholars, online learning, accessing to the virtual libraries and so on using the internet increase the importance of the internet network more than expected. Nowadays, the internet is one of the main parts of students' daily lives for satisfying the academic, social, and recreational needs (20). Some Studies on information-seeking behavior indicated

that the most of the students use the internet for carrying out their research activities, finding the specialized information and obtaining the information that is not found in the printed resources (21-23).

Various remarkable features of the web and electronic resources such as high rate of production, easy access, low cost and so on compared with those of the printed resources are among the reasons that users now prefer the internet for satisfying their needs more than ever before (24). The results showed that the average use of the electronic resources by the students is more than the printed resources (4, 25, 26). The findings of some studies showed that the most important electronic information resources are full text databases, electronic journals, and electronic books (6, 21, 23). Besides, the results of few studies indicated that the books and periodicals had been the most significant printed resources for satisfying the information needs (27, 28).

For easy search and access to the web information, internet search tools were developed that have the new structure and content compared with those of the conventional databases. Internet search tools are categorized into three groups: search engines, super search engines, and subject directories (29). Findings showed that using the search engines has been the prevalent method for identifying the web resources (23, 25, 30, 31).

Students encounter a wide range of the problems in the information-seeking process and using the information resources. These problems may be the individual (e.g. the lack of the information-seeking skills), managerial or hardware and infrastructure problems. The results showed that network traffic, low speed of internet, improper quality and quantity of the hardware and software facilities and the lack of the access to the original documents have been the main problems of the students in using the internet (22, 23, 25). Findings showed that the lack of time, the lack of access to the resources and incomplete information resources have been the major problem of the students in searching the information in the libraries (21, 32).

Analysis of the conducted studies showed that most of the studies have considered the internet addiction and information-seeking behavior independently and from different aspects. However, no study has considered the importance of the relationship between these two variables. Therefore, this study aims to investigate the effect of the internet addiction on the information-seeking behavior of the students.

## **2. MATERIAL AND METHODS**

This applied study that uses the correlation method. The research population composed of all 1149 postgraduate students of Isfahan University of Medical Sciences in educational year of 2014-2015, of which 284 were selected using the stratified random sampling as the sample.

Yang's internet addiction questionnaire(33) was used as the data collection instrument. This questionnaire with 20 items was used for measuring the rate and severity of the internet addiction based on the clinical experiences. It was developed based on the Likert scale, the score range is 20-100. The interpretation index of the results includes 20-49 for lack of the internet addiction, 50-79 at the risk of the internet addiction, and 80-100 for internet addiction. This

questionnaire has the construct, convergent and discriminative validity and it is used for determining the rate of the internet addiction of the different clinical and normal populations (34). Nastiezaie (35) and Ghasemzadeh (36) have reported its reliability as 0.81 and 0.883, respectively. The instrument for the information-seeking behavior variable was the researcher-developed questionnaire that was prepared by studying the literature and subject related researches. This questionnaire with 55 items was based on the Likert scale and designed in five parts including the internet as the information source, motivation for using the internet, the rate of using the different kinds of information resources, using the search tools and information-seeking problems. Face and content validity of the questionnaire was confirmed by the librarianship and medical information specialists and its reliability was confirmed using the Cronbach alpha coefficient of 0.86. Data was collected by physical presence at faculties and was analyzed using the SPSS 20 in two levels of descriptive and inferential statistics. For descriptive statistics the frequency distribution indexes, mean and standard deviation and for inferential statistics, the independent-internet addiction test, Pearson correlation coefficient, and variance analysis were used based on the research questions.

### 3. RESULTS

Of 284 students who participated in the study, 28.2% (80 persons) were men and 71.8% (204) were women. 13.7% of the students were studying at School of Health, 25.7% at School of Nursing and Midwifery, 21.5% at Faculty of Medical Sciences, 7.7% at School of Nutrition and Food Sciences, 4.2% at Faculty of Pharmacy and Pharmaceutical Sciences, 9.5% at School of Rehabilitation Sciences, 3.2% at School of Modern Medical Technologies, 7.7% at Faculty of Management and Medical Information, and 6.7% at International Branch of the Isfahan University of Medical Sciences. Besides, findings showed that there was no sign of internet addiction among the 86.6% of the students. However, 13% of the students were at the risk of the internet addiction and only 0.4% of internet addiction was observed among the students.

Table 1 shows the results of the independent-t test for comparison of the information-seeking behavior of the male and female students. Based on the results, there is no significant difference between the two groups in terms of

Information seeking behavior	Female		Male		t	p-value
	M	SD	M	SD		
attitudes toward the web	3.9	0.37	3.94	0.39	0.80	0.41
use of printed resources	2.81	0.76	2.72	0.79	0.90	0.37
use of electronic resources	3.43	0.82	3.35	0.80	0.81	0.41
use of search engines	4.67	0.71	4.44	0.88	-2.07	0.04
use of meta search engines	2.74	1.35	3.2	1.34	2.61	0.009
use of subject directories	2.97	1.23	2.93	1.23	-0.25	0.79
use of data bases	3.86	1.21	3.64	1.12	-1.41	0.15

Table 1. Comparison of the information-seeking behavior of the male and female students

the attitudes toward the web. The mean score of the students' attitudes toward the web is more than medium rate, indicating that there are positive Attitudes toward the web. Additionally, the results of the independent- t test showed that although the rate of using the electronic information resources is more than that of the printed information resources, there is no significant difference between the male and female students in terms of using these kinds of the information resources. Concerning the rate of using the search tools, there was a higher rate of using the search tools by the female students compared to the male students. However, there was a higher rate of using the Meta search engines by the male students compared to the female students. There was no significant difference regarding the use rate of the subject directories and databases by the male and female students.

Table 2 shows the results of the variance analysis for comparison of the information-seeking behavior of the students in different faculties. Based on table 2, there is no significant difference between the information-seeking behaviors of the students in different faculties in all dimensions.

Table 3 shows the obstacles and problems that students encounter with in using the printed or internet information resources. Based on this table, time limitation in accessing to the non-updated library resources with mean of 3.86 is the most important problem of the students in obtaining

Information seeking behavior	Health	Nursery	Medicine	Nutrition	Pharmacy	Rehabilitation	Technology	Management	f	p-value
Attitudes toward the web	3.87±0.34	3.89±0.42	3.94±0.32	3.87±0.25	3.87±0.39	3.87±0.39	4.2±0.23	3.88±0.47	1.851	0.068
The use of print resources	2.87±0.79	2.97±0.75	2.6±0.6	2.56±0.75	2.63±0.96	2.9±0.89	3.2±0.61	2.7±0.92	1.867	0.065
The use of Electronic resources	3.5±0.9	3.47±0.78	3.22±0.65	3.23±0.86	3.54±0.78	3.22±0.94	3.95±0.8	3.44±0.76	1.69	0.101
The use of search engines	4.67±0.7	4.63±0.69	4.69±0.59	4.59±0.73	4.5±0.1.2	4.6±0.64	4.9±0.01	4.36±1.13	1.21	0.291
The use of meta search engines	3.05±1.4	2.9±1.2	2.97±1.4	2.9±1.41	2.58±1.68	2.74±1.19	2.89±1.9	2.55±1.34	0.457	0.885
The use of subject directories	3.1±1.2	3.06±1.03	2.9±1.23	3±1.41	2.58±1.5	2.81±1.24	2.67±1.32	2.73±1.16	0.588	0.788
The use of data bases	3.8±1.07	3.5±1.24	3.8±1.32	4.3±1.04	3.4±1.62	3.8±1.21	4.2±0.83	4±1.27	1.62	0.119

Table 2. Comparison of the information-seeking behavior of the students based on the faculties

Problems of using the printed resources	Mean & SD	Problems of using the internet resources	Mean & SD
time limitation in accessing to the library resources	3.86 ± 0.99	information overload (excessive information retrieval)	3.41±0.92
place limitation in accessing to the library resources	3.84 ± 1.02	false drop of information (retrieval the unrelated information)	3.62±0.94
lack of simultaneous use of one resources by few users	3.85 ± 0.96	lack of confidence about the accuracy of the retrieved information	3.41±0.94
lack of the facilities for searching and retrieval in the printed resources	3.70 ± 1.01	confusion in navigation and information search	3.28 ± 0.96
lack of updated printed resources	3.86 ± 0.92	inability in formulating the search request	3.12 ± 1.04
shortage of the information resources in the libraries	3.76 ± 0.97	network traffic and low speed of the internet	4.05 ± 0.99
lack of familiarity with using the libraries and printed resources	3.17 ± 1.23	lack of access to the original documents or full texts	3.78 ± 0.99
		Inefficient hardware equipment	3.01±1.10

Table 3. Problems and limitations of using the internet and printed resources

		attitudes toward the web	using the printed resources	using the internet resources
internet addiction	R	0/06	0/016	0/008
	P- value	0/316	0/79	0/89
	N	284	284	284

Table 4. Relationship between the internet addiction and information-seeking behavior

the information from the printed information resources. In the addition, the most significant limitations in using the internet resources were related to the network traffic and low speed of the internet with mean of 4.05 and the lack of access to the original documents or full texts with mean of 3.78 based on the respondents.

Table 4 shows the results of the Pearson's correlation coefficient for determining the relationship between the internet addiction and k of the students. Based on this table, there is no significant difference between the variables of internet addiction and information-seeking behavior with regard to the obtained significance level. This indicates that the information-seeking behavior of the students is not affected by the internet addiction in all dimensions of the attitudes toward the web as an information source and the rate of using the printed or internet information resources.

#### 4. DISCUSSION

Internet as one of the most important tool for information transfer plays a key role in disseminating and developing the knowledge boundaries (37). The importance of internet technology in the process of education and research cannot be ignored, although, the excessive use of the internet may lead to the virtual addiction or internet addiction that has the behavioral and psychological effects on the users. This study aimed to determine the relationship between the internet addiction and information-seeking behavior of the postgraduate students of the Isfahan University of Medical Sciences.

Findings of the study show that students have positive attitudes toward the web as an information source so that

most of them consider the internet information more available than the printed resources. They believe that searching and retrieval of the information in the internet is easier than those in the printed resources and internet information is more various than printed information. This is consistent with the findings of the Razavieh (38) and Vaezi and Noorafroz (26).

Findings showed that the main use of the internet information by the students is more than printed information. This is consistent with the results of the studies conducted by Zeinali Kermani (4), Wales (25), and Vaezi and Noorafroz (26). Availability of the electronic resources, easy search and information retrieval, update high speed, simultaneous use, easy replication and transfer, and low cost are the main reasons that users prefer the internet resources to the printed resources. Although, the printed resources are still one of the fundamental resources in providing the information for the students, using the internet and electronic resources increases more and more. Thus, libraries and information canters should provide the information resources based on the needs and tendencies of the users.

Findings showed that the search engines are the most important tools for searching the electronic information of the students. This is consistent with the findings of the studies conducted by Islami (23), Vaezi and Noorafroz (26), Radad (30), and Hsieh-Yee (31). Problems associated with using the search engines for information retrieval such as their index structures (that necessitates the users' ability to use the proper keywords and accurate formulation for the searching), false drop and lack of the information retrieval of the information in the so-called hidden web cause the professional users utilize other search tools. Although, based on the research findings, there is a low rate of using these tools despite the high efficiency of the Meta search engines and subject directories. It seems that the lack of students' familiarity with these useful tools may cause these the capabilities of these tools remain unknown and consequently, they are not used by the students

Results showed that students encounter the problems and obstacles in using the printed and electronic information resources for obtaining the information. Regarding the electronic resources, there are problems such as network traffic, low speed of the internet and lack of the available full text documents. This is consistent with the results of the Vaezi and Noorafroz(26), Islami(23), and Norouzi(6). Since the access to the information banks is associated with the high costs, low speed of the internet limits the use rate of these valuable information resources and this is one of the major problems that should be considered. Moreover, the other main problems of the resources in obtaining the information from the printed resources include the time limitation in accessing to the library resources. This is consistent with the results of the studies conducted by Asemi et al. (21) and Mokhtarpour (32).

Results show that there is no relationship between the internet addiction and attitudes toward the web. In other words, the rate of using the internet or even the excessive use has no effect on the information-seeking behavior of the students, although all the students have a positive attitude toward the internet for obtaining the information apart from



their sex or faculty. This positive attitude may result from the easy access to the information, easy retrieval of the information, diverse information resources, updated information, and in some cases free internet services. Therefore, these reasons can contribute to the higher rate of the electronic resources compared to the printed resources.

## 5. CONCLUSION

Findings show that due to the users' preference for using the electronic information resources rather than the printed information resources, it is necessary for the libraries and information center's to devote a part of their budget for providing this kind of information resources. In addition, increasing the working systems and bandwidth of the internet can facilitate the quick access to the electronic information resources and their use. Because there is lower rate of using the Meta search engines and subject directories among the students due to their non-familiarity with the remarkable features of this kind of search tools, it is necessary to consider the training workshops for introducing the advanced search tools in universities by the librarianship and medical information specialists. In addition, it is proposed to devote a part of a research curriculum to this field.

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