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## Original Article

# Students' Awareness, Use of and Satisfaction with Scientific Databases and Their Related Factors at Mazandaran University of Medical Sciences (2016-2017)

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## Abstract

**Introduction:** Scientific databases are one of the most important information resources in academic communities and can largely affect different aims and goals of students. This study was aimed to determine the use and awareness of and satisfaction with scientific databases among students at Mazandaran University of Medical Sciences (MazUMS).

**Methods:** This cross-sectional study was conducted during the academic period 2016-2017. A researcher-made questionnaire based on the review of internal and external resources about the subject (in 6 sections) with approved reliability and validity was distributed among 238 students at MazUMS (M.Sc., Ph.D., M.D., and residents). Data were analyzed by SPSS.16 software using descriptive and inferential statistics.

**Results:** The findings showed that most of the students used scientific databases because of clinical activities (mean= 4.27). Also, most students had an average knowledge about ISI databases (4.43) and they used PubMed more than other databases (4.30). Further, the highest satisfaction with databases was found for ISI (4.28). Moreover, unfamiliarity with English language was the most important barrier to using scientific databases.

**Conclusion:** The use and awareness of and satisfaction with scientific databases among students at MazUMS were more than average and close to high level. MazUMS can provide better conditions for students to use scientific databases by planning and adopting suitable policy and eliminating the barriers and challenges, thereby promoting their scientific and professional developments.

**Keywords:** Information resources, Scientific, Database, Students, Medical

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## Introduction

The rapid appearance and development of information and communication technologies have resulted in huge accessibility and gain of knowledge by people, changing it from a traditional form (stamp information resources) to a modern one (electronic information resources) (1). Novel technologies have caused increasing expansion of electronic information resources which have influenced different aspects of people's life and caused growth and development of academic environments in different societies of the current age (2). Moreover, in industrial and developed countries around the world, information resources based on novel technologies are vastly and saliently being used, and experts and specialists of the field have confirmed its importance and necessity (3, 4). Coherent knowledge databases are one of the most commonly and most frequently used information resources that researchers and academic communities and scientists in different countries are strongly interested in and have considered its vast usage as the requirement for development of their scientific studies.

Knowledge databases have developed in the last decades and in all aspects, storing scientific information resources in different formats and enabling quick search and retrieval of information through access to internet and sharing these databases for the scientific society and researchers (5). The use of databases has removed spatial and temporal accessibility problems and has given researchers the opportunity to search scientific information among thousands of journals and articles and different information resources using services available in databases (6). Quantitative and qualitative expansion of online knowledge databases and resources, in addition to positive features and potential capabilities in satisfying the information needs of experts and researchers of different fields, requires precise considerations for detection of the best resources and searching approaches as well as access to information and information needs. Moreover, if people do not know what system and what methods to use to access the information in these databases and generally do not have full understanding of these knowledge databases, they will have problems while accessing proper and precise data (7).

Knowledge databases also have different types in terms of subjectivity (public, special subject area), access type (free or not free), presenting information (full text, abstract), resources (book, article, etc.) and many other aspects. In Iran, these databases are mostly used by the academic community (researchers, experts, scholars, students and etc.) (8, 9). The databases related to the medical field, which are closely related to the health and

hygiene and are used by universities of medical sciences in Iran, are specially important. These databases include millions of documents and valid scientific resources that are sometimes purchased with a high price by the universities of medical sciences, which requires periodic investigation and evaluation of usage and convenience level by the managers and officials of universities of medical sciences.

Additionally, scientific resources and articles of credible knowledge databases are highly important for every academic group especially students, and higher level students can use these databases for educational activities, doing treatment, editing thesis and increasing their awareness and knowledge in various fields (10). Also, students have to be familiarized with credible knowledge databases and proper use of databases based on the searching skills and proper information retrieval techniques. Moreover, former studies have indicated that being familiar with English language and sufficient computer knowledge can play a significant role in their use of knowledge databases (11, 12). Higher level of students' familiarization with knowledge databases and understanding the advantages of using these rich banks with respect to the large volume of information help students save their time and money, allowing them to be creative in enhancing the education quality (reviewing the students' awareness of computer software and use of these databases) (13, 14). Several studies performed in this field have indicated that generally students' awareness of knowledge databases and information banks is not very high and students are not familiar with the searching methods and approaches in these databases (15, 16). According to the presented contents and importance of knowledge databases as well as the fact that there has been no research so far about investigating the student's use and awareness of and satisfaction with knowledge databases and exploring the barriers to using the information resources of scientific databases, the current study was conducted to investigate the students' use and awareness of and satisfaction with knowledge databases and associated factors at Mazandaran University of Medical Sciences (MazUMS).

## Methods

This cross-sectional study was conducted during the academic period 2016-2017. The study population included all students at MazUMS in the academic year 2016. A total of 260 of students (M.Sc., Ph.D., M.D., and residents) were chosen randomly based on Morgan sample size table. Morgan sampling table can be used for the known or limited statistical population, and we can

determine the error rate of sampling. Generally, the error rate is assumed to be 0.05 (17), population parameter is assumed as 0.50, and in this study the statistical sample was calculated to be 260 students according to the statistical population (N=800 and Error Rate=0.05). Information about the students' use of knowledge databases, reasons and motivations, information resources, convenience level as well as challenges ahead of students was surveyed through the use of a questionnaire. The survey above was prepared based on an analysis of the literature and internal and external backgrounds in relation to knowledge databases, and it was designed in the form of 42 questions in 6 sections. The first section was about demographic information of students. The second section, which included 7 questions, was about the goals and reasons of students using knowledge databases. The third section was dedicated to the use, awareness and convenience of students regarding 10 valid and frequently used knowledge databases. Sections fourth and fifth, each containing 7 questions, were about the information resources used and students' satisfaction with university's databases, respectively. The sixth section of the survey, which consisted of 11 questions, was on the barriers and challenges of using knowledge databases. The visual flux of survey was confirmed on the basis of the opinion of experts in information and knowledge and health information technology, and Cronbach's alpha was used to determine the reliability of the questionnaire, which was equal to 0.83. The questionnaires were distributed randomly among the study samples, out of which 238 questionnaires (91.5 %) which were properly filled were investigated and evaluated. Data were analyzed by SPSS.16 using descriptive (frequency, percentage, mean and standard deviation) and inferential statistics (t-test, Friedman test and ANOVA).

## Results

Demographic and background characteristics of students were as follows: 92 students were male (38.7 %) and 146 were female (61.3 %). The mean age of the studied students was  $27.3 \pm SD$ . Their age ranges were 20 years (12.2 %) among 29 students, 21-30 years (47.5 %) among 113 students, 31-40 years (32.8 %) among 78 students and more than 40 years (7.6 %) among 18 students. Also, 42 students (17.6 %) were studying in the Health School, 31 of them in the Nursing School (13 %), 54 of them in the Medical School (22.7 %), 52 of them in the Paramedical School (21.8 %), 26 of them in the Pharmacy School (10.9 %) and 33 of them in Dental School (13.9 %). Further, 84 students had master degrees (35.3 %), 49 of them had Ph.Ds. (20.6 %), 92 of them had M.Ds. (38.7 %) and 13 of them were residents (5.5 %). Moreover, 178 of the students (74.8 %) had personal computers or laptops. The places where students used a computer were home (133 students or 55.9 %), university (53 students or 22.3 %), dormitory (34 students or 14.3 %) and café and other places (18 students or 7.6 %). The students' computer use per day was up to one hour (26 students, equal to 10.9 %), one to two hours (74 students, equal to 31.1 %), two to five hours (108 students, equal to 45.4 %) and more than five hours (30 students, equal to 12.6 %). Additionally, 24 students had a low level of English language proficiency (10.1 %), 140 of them had average level (58.8 %) and 74 of the students had a good level (31.1 %). The students' knowledge of computer and working with it was weak among 14 students (5.9 %), average among 80 students (33.6 %) and good among 144 students (60.5 %). The most important reason for MazUMS students in using the scientific databases was "familiarization and performing clinical activities" and the least important one was "educational activities" (Table 1). The results of Friedman test indicated a significant difference between the reasons and motivations of students for using scientific information ( $P < 0.001$ ).

**Table 1. Students' purposes for using the scientific databases of university**

Goals of using databases	Very low N (%)	Low N (%)	Average N (%)	High N (%)	Very high N (%)	Mean $\pm$ SD
<b>Familiarization and performing clinical activities</b>	7 (2.9%)	7 (2.9%)	27 (11.3%)	70 (29.4%)	127 (53.4%)	4.27 $\pm$ 0.98
<b>Editing article and thesis</b>	13 (5.5%)	10 (4.2%)	36 (15.1%)	39 (16.4%)	140 (58.8%)	4.19 $\pm$ 1.01
<b>Authoring and translating books and articles</b>	12 (5%)	12 (5%)	35 (14.7%)	62 (26.1%)	117 (49.2%)	4.09 $\pm$ 1.14
<b>Performing research plans and innovations</b>	16 (6.7%)	15 (6.3%)	32 (13.4%)	115 (48.3%)	60 (25.2%)	3.79 $\pm$ 1.10
<b>Educational activities</b>	15 (6.3%)	24 (10.1%)	51 (21.4%)	71 (29.8%)	77 (32.4%)	3.72 $\pm$ 1.20

Students had the highest awareness of and satisfaction with "Web of Science" and use of "PubMed" and the lowest awareness of and use of "BMJ" and satisfaction with "EBSCO" (Table 2).

In scientific databases, "scientific journal articles" were used by students more than books and scientific conference articles (Table 3). The results of Friedman test indicated a significant difference between information

resources used by students for using scientific information (P<0.001).

Students' were satisfy with the "quality of information in knowledge databases" more than the number of

information databases and updating the status of articles and information databases (Table 4). The results of Friedman test indicated a significant difference in satisfaction level of students in using scientific information (P<0.001).

Table 2. Students' satisfaction with and awareness and use of scientific databases

Database		Very low N (%)	Low N (%)	Average N (%)	High N (%)	Very high N (%)	Mean ± SD
Science Direct	Use	21(8.8%)	14(5.9%)	42(17.6%)	75(31.5%)	86(36.1%)	3.80±1.24
	Awareness	27(11.3%)	20(8.4%)	33(13.9%)	77(32.4%)	81(34%)	3.69±1.32
	Satisfaction	16(6.7%)	28(11.8%)	39(16.4%)	88(37%)	67(28.2%)	3.68±1.38
Wiley	Use	9(3.8%)	30(12.6%)	52(21.8%)	75(31.5%)	72(30.3%)	3.72±1.14
	Awareness	19(8%)	29(12.2%)	57(23.9%)	54(22.7%)	79(33.2%)	3.61±1.28
	Satisfaction	8(3.4%)	28(11.8%)	64(26.9%)	46(19.3%)	92(38.6%)	3.78±1.19
Scopus	Use	13(5.5%)	18(7.6%)	41(17.2%)	69(29%)	97(40.8%)	3.92±1.17
	Awareness	24(10.1%)	22(9.2%)	55(23.1%)	55(23.1%)	82(34.5%)	3.63±1.31
	Satisfaction	17(7.1%)	16(6.7%)	48(20.2%)	49(20.6%)	108(45.4%)	3.90±1.12
Springer	Use	8(3.4%)	12(5%)	34(14.3%)	83(34.9%)	101(42.4%)	4.08±1.03
	Awareness	9(3.8%)	17(7.1%)	40(16.8%)	95(39.9%)	77(32.4%)	3.90±1.05
	Satisfaction	13(5.5%)	10(4.2%)	37(15.5%)	54(22.7%)	124(52.1%)	4.12±1.02
ProQuest	Use	13(5.5%)	19(8%)	44(18.5%)	44(18.5%)	118(19.6%)	3.99±1.22
	Awareness	21(8.8%)	20(8.4%)	38(16%)	48(20.2%)	111(46.6%)	3.87±1.32
	Satisfaction	13(5.5%)	22(9.2%)	37(15.5%)	67(28.2%)	99(41.6%)	3.91±1.23
Web of Science	Use	11(4.6%)	12(5%)	31(13%)	46(19.3%)	138(58%)	4.21±1.01
	Awareness	6(2.5%)	6(2.5%)	19(8%)	56(23.5%)	151(63.4%)	4.43±0.96
	Satisfaction	5(2.1%)	8(3.4%)	39(16.4%)	48(20.2%)	138(58%)	4.28±0.98
PubMed	Use	7(2.9%)	18(7.6%)	21(8.8%)	42(17.6%)	150(63%)	4.30±1.02
	Awareness	6(2.5%)	11(4.6%)	29(12.2%)	63(26.5%)	129(54.2%)	4.25±0.94
	Satisfaction	14(5.9%)	16(6.7%)	55(23.1%)	32(13.5%)	121(50.8%)	3.97±1.13
EBSCO	Use	17(7.1%)	16(6.7%)	40(16.8%)	71(29.8%)	94(39.5%)	3.88±1.18
	Awareness	20(8.4%)	18(7.6%)	58(24.4%)	67(28.2%)	75(31.5%)	3.67±1.24
	Satisfaction	13(5.5%)	42(17.6%)	76(31.9%)	45(18.9%)	62(26.1%)	3.42±1.44
BMJ	Use	25(10.5%)	34(14.3%)	70(29.4%)	62(26.1%)	47(19.7%)	3.30±1.32
	Awareness	30(12.6%)	28(11.8%)	82(34.5%)	53(22.3%)	45(18.9%)	3.23±1.27
	Satisfaction	18(7.6%)	21(8.8%)	66(27.7%)	78(32.8%)	55(23.1%)	3.55±1.41
Google Scholar	Use	22(9.2%)	26(10.9%)	61(25.6%)	49(20.6%)	80(33.6%)	3.59±1.30
	Awareness	27(11.3%)	32(13.5%)	55(23.1%)	58(24.4%)	66(27.7%)	3.44±1.33
	Satisfaction	37(15.5%)	33(13.9%)	24(10.1%)	71(29.8%)	73(30.7%)	3.46±1.51

Table 3. Information resources used by students in scientific databases

Information resources	Very low	Low	Average	High	Very high	Mean ± SD
Scientific journal articles	6(2.5%)	10(4.2%)	19(8%)	37(15.5%)	166(69.7%)	4.46±0.97
Books	12(5%)	22(9.2%)	57(23.9%)	45(18.9%)	102(42.9%)	3.85±1.21
Scientific conference articles	14(5.9%)	25(10.5%)	43(18.1%)	84(35.3%)	72(30.2%)	3.74±1.17

Table 4. Students' satisfaction with scientific databases of university

The satisfaction level of the students	Very low	Low	Average	High	Very high	Mean ± SD
Quality of information in knowledge databases	9(3.8%)	6(2.5%)	25(10.5%)	82(34.5%)	116(48.7%)	4.22±0.99
Number of information databases	13(5.5%)	12(5%)	36(15.1%)	46(19.3%)	131(55%)	4.13±1.18
Updating the status of articles and information databases	1(4.2%)	29(12.2%)	13(5.5%)	39(16.4%)	147(61.7%)	4.19±1.04

"Lack of acquaintance with English language" was the most important barrier and challenge ahead of students while using university databases (Table 5). The findings of ANOVA showed no significant difference between the barriers and challenges ahead of the students and "age", "place of education", "education level", "place of using

databases" and "use of databases" ( $P > 0.05$ ). Further, various study groups reported similar impacts for the barriers and challenges.

Students' "use" of scientific databases was more than their awareness and satisfaction (Table 6).

**Table 5. Barriers and challenges ahead of students while using university databases**

Barriers and challenges while using knowledge databases	Very low	Low	Average	High	Very high	Mean $\pm$ SD
Lack of awareness about related resources in database	9(3.8%)	18(7.6%)	27(11.3%)	42(17.6%)	142(59.7%)	4.22 $\pm$ 1.04
Lack of acquaintance with English language	7(2.9%)	19(8%)	19(8%)	52(21.8%)	141(59.3%)	4.26 $\pm$ 0.97
Lack of acquaintance with information seeking skills	8(3.4%)	10(4.2%)	43(18.1%)	49(20.6%)	128(53.8%)	4.17 $\pm$ 1.02

**Table 6. Results of one-sample t-test regarding comparison of students' average use, awareness of and satisfaction with scientific databases**

	Mean	Standard deviation	T	P.value
Use	3.90	1.20	11.570	0.001
Awareness	3.77	1.18	10.066	0.001
Satisfaction	3.81	1.11	11.258	0.001

## Discussion

Over the recent years, clinical and caring activities based on the evidence of medical sciences courses have attracted much attention of the specialists and experts. To decide on the clinical and caring activities, it seems necessary for the health experts to receive the latest scientific and research findings. In fact, to carry out effective and desirable clinical activities, it is necessary to have the capability and skill of using and merging the best evidence of the day, which comes from clinical research, and health students can improve their knowledge and scientific and professional awareness related to their clinical activities by using reliable, precise and useful information of knowledge databases. Many of studies in this filed have indicated that health students and experts are increasingly using scientific information and continuous databases to improve the professional knowledge quantitatively and qualitatively and to perform their clinical and professional activities, which is in accordance with the findings of the current study (18, 19).

The results also indicated that Web of Science and PubMed databases were extensively being used by students at MazUMS more than other knowledge databases. The ISI and WOS databases are known as the most important and famous information and citing databases which support and profile a wide range of valid and high quality scientific journals, conferences and

abstracts in various human knowledge fields. PubMed database is also one of the services of the U.S. National Library of Medicine. Some of the previous studies, including Salajeghe et al. (2016) and De Groote & Dorsch (2003) also have put emphasis on using extensive use of valid knowledge databases such as Web of Science, Elsevier, Scopus, etc. by the researchers and students, which is in line with the findings of the current study (20, 21).

The students' familiarity with knowledge databases was also reported to be in an acceptable level. The findings indicated that a considerable proportion of the students at MazUMS had a relative acquaintance with the ten studied databases and were least familiar with BMJ database, which was also more than the average level (3.23). Since the familiarity of students and users of information databases is effective in increasing their use of databases, it is recommended that MazUMS and its subsidiary colleges attempt to familiarize their students with the knowledge databases and teach students the most effective and optimal methods of using databases as well as the skills needed for searching and accessing information online.

The results also indicated that articles of scientific journals were one of the most important information resources which were searched for and used by students at

MazUMS. In this regard, it can be stated that publishing the results and achievements of scholars and specialists of the medical field in the best possible way and in the minimum time is one of the most important factors that can contribute to improving the knowledge of individuals in this field. Scientific journals publish the results of explorations and novel scientific findings, and due to updating of scientific journals and articles, they are more important than other information sources. The journals are so important today that the presence of professional journals plays a significant role in forming the activities of the scientific community and exchanging the ideas on the part of the researchers. They are also known as one of the most important means used for knowledge production. Students of this field can have access to the state-of-art medical achievements and updated information using scientific journals and articles. Many studies such as Abazari et al. (2015), Riahi et al. (2015) and Sayah Bergerd et al. (2015) have emphasized the importance and special role of scientific articles and journals in knowledge databases, which are in accordance with the findings of the current study in that the scientific articles are considered the most important information resource of databases (22-24).

Informing specialists can teach students the searching strategies and describe the guide to using knowledge databases. Previous studies in the field have indicated that librarians have a predominantly undeniable role in making scientific information available for students and users, and unlike the findings of the current study, the results of studies by Dadzie (2005) and Tanacković et al. (2017) showed the students sought the help of librarians to search the web (13, 25).

Results also indicated that low knowledge and lack of familiarity with English language were the most important challenges ahead of students while using cohesive database information resources of the university. In this regard, it is worth noting that a considerable part of international scientific data is currently being produced and published in English language, and we must recognize this language as the language of science. Since most of valid knowledge databases are produced in English language, the users and students' dominance on this language can help them to recognize valid scientific resources through precise searching strategies. Studies in this field have shown that familiarity with the language of information resource is very effective in using that resource (26). The findings of Khalili & Matlabi (2014) and Hariri & Fazli (2012) have also confirmed lack of optimal and desirable use of knowledge databases by the students and users due to low knowledge and capability in English language (11, 12).

## Conclusion

At the end, we can generally conclude that students' use and awareness of and satisfaction with knowledge databases are in an appropriate level. Knowledge databases are the most important resources for the academic and scientific community to access professional resources, and they have a great share in improving and developing the scientific knowledge and awareness of students as well as advancing the educational and researching objectives. Planning and policy making in MazUMS and Ministry of Health and Medical Education to purchase, share and make cohesive scientific databases accessible for postgraduate students as well as eradicating the barriers and challenges of students in accessing these databases can lead to positive and desirable approaches in various scientific fields for the university and students, develop the science, research and health and generally improve the health system in the society.

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