ORIGINAL ARTICLE

An investigation into the Knowledge, Attitude, and Performance of the Students in Birjand University of Medical Science about Computer and Internet Use

Background: Computers and Internet play an ever- increasing and important role in medical education.This research was performed to determine the rate of knowledge, attitude, and performance of the students of Birjand University of Medical Science in the case of computer and Internet use.

Material & Method: This descriptive – analytical study was performed on 425 students of Birjand University of Medical Science selected by random systematic classification sampling. Knowledge , attitude, and performance of the students were evaluated by using a self – structured questionnaire that had already been completed by faculty members of Birjand University of Medical Sciences and its reliability was confirmed. The data entered into SPSS software and was analyzed by using the Chi- Square test in level (0.05).

Results: Of 425 Students studied , 227 (53.4%) were female. In the field of measuring computer knowledge of the students, 56.9% had minimal computer knowledge. In the field of attitude, 69.4% had a good attitude and 30.1% had an average one. In the area of skill , 49.6% did not have enogh skills in using software and 38.8% in using internet facilities.

The students were mostly skilled in using Word (54.6%) and Power point (52.7%). There was a statistical significant relationship between performance (Using internet Services) and gender and between awareness and education level of the students (P< 0/05).

Conclusion: Considering the limited knowledge and skill and the positive attitude of the students regarding computer and Internet, designing and compiling the training programs related to the computer in the form of scheduled workshops with repeatability and preparing the computer centers of the university are suggested.

Key words: Internet, Computer, Students, Medical Science, Knowledge, Attitude, Performance.

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دراسة مستوى المعرفة و الروئیه و العمل عند طلاب جامعة بیرجند للعلوم الطبیه حول استعمال الحاسوب و شبکه الانترنت.

التمهید و الهدف: الحاسوب و شبکه الانترنت لهم دور مهم و متزاید فی امرالتعلیم الطبی. هدف هذه الدراسه هو تعیین مستوی المعرفه و الروئیه و العمل عند طلاب جامعه بیرجند للعلوم الطبیه حول استعمال الحاسوب و شبکه الانترنت.

اسلوب العمل: الدراسه توصیفیه – تحلیلیه اجریت علی ٤٢٥ طالب فی سنه ١٣٩٠. و تم اختیار هذه المجموعه علی شکل الصدفه و تم تجمیع المعلومات عبراستمارات قد تم اختبارها من قبل علی اعضاء الهیئه العلمیه فی جامعه بیرجند الطبیه و تم استخدام برنامج spss و اختبار مربع کای علی مستوی α=0.05 لتحلیل المعطیات.

النتائج: من ٤٢٥ طالب کان عدد الإناث ٢٢٧ طالبه (٥٣.٤%) و عدد الذکور ١٩٨ (٤٦.٦%). فی مجال المعرفه الحاسوبیه (٥٦.٩%) کان لدیهم مستوی متدنی. فی مجال الروئیه الحاسوبیه (٦٩.٤%) کان لدیهم مستوی جید و (٣٠.١%) روئیه متوسطه. فی مجال المهاره الحاسوبیه (٤٩٦) فی مجال استخدام البرامج و (٣٨.٨%) فی مجال الانترنت کانت المهاره غیر کافیه. اکثر مهاره عند الطلاب کانت فی مجال استعمال الـword (٥٤.٦%). الـPowerPoint (٥٢.٧%). کان هناک ارتباط ملحوظ بین مستوی الاداء من جهه و بین الجنس و المعرفه و المقطع التعلیمی عند الطلاب من جهه اخری (p<0.05).

النتیجه: نظرا الی المعرفه و المهارات المحدوده و الروئیه الإیجابیه تجاه استعمال الحاسوب و الانترنت یلزم تصمیم و تدوین برامج تعلیمیه تتعلق بالحاسوب بشکل محاضرات منظمه و تجهیز الجامعات بما یتناسب مع هذا الهدف.

الکلمات الرئیسیه: اینترنت، حاسوب، طلاب، علوم الطبیه، معرفه، روئیه، اداء.

بررسی دانش ، نگرش و عملکرد دانشجویان دانشگاه علوم پزشکی بیرجند پیرامون کاربرد رایانه و شبکه اینترنت

زمینه و هدف: رایانه و شبکه اینترنت نقش مهم و فزاینده ای در امر آموزش پزشکی ایفا می کند. این پژوهش به منظور تعیین میزان دانش ، نگرش و عملکرد دانشجویان دانشگاه علوم پزشکی بیرجند پیرامون کاربرد رایانه و شبکه اینترنت انجام شد.

روش: پژوهش توصیفی – تحلیلی حاضر بر روی ۴۲۵ نفر از دانشجویان دانشگاه علوم پزشکی بیرجنددر سال ۱۳۹۰ که با روش نمونه گیری طبقه بندی سیستماتیک تصادفی انتخاب شدند، انجام گرفت. دانش ، نگرش و عملکرد دانشجویان با استفاده از پرسشنامه خود ساخته که قبلا بر روی اعضاء هیئت علمی دانشگاه علوم پزشکی بیرجند اجرا و پایائی آن تایید شده بود ، سنجیده شد. داده ها در نرم افزار spss وارد و با استفاده از آزمون آماری کای اسکوئر در سطح ۰.۰۵ آنالیز شد.

یافته ها: از ۴۲۵ دانشجوی مورد مطالعه، ۲۲۷ نفر (۵۳.۴%) مونث، ۱۹۸ نفر (۴۶.۶%) مذکر بودند. در حیطه سنجش دانش رایانه ای دانشجویان (۵۶.۹%) از افراد دارای حداقل دانش رایانه ای بودند. در حیطه نگرش (۶۹.۴%)، نگرش خوب و (۳۰.۱%) نگرش متوسط داشتند.در حیطه مهارت ، (۴۹.۶%) در زمینه استفاده از نرم افزارها و (۳۸.۸%) استفاده از سرویسهای اینترنتی از مهارت کافی برخوردار نبودند. بیشترین میزان مهارت دانشجویان با نرم افزار Word (۵۴.۶%) Powerpoint، (۵۲.۷%) می باشد. بین عملکرد (استفاده از سرویسهای اینترنتی) با جنس و آگاهی با مقطع تحصیلی دانشجویان ارتباط آماری معناداری وجود داشت. (P < 0/05)

نتیجه گیری: با توجه به دانش و مهارت محدود و نگرش مثبت دانشجویان نسبت به کاربرد رایانه و اینترنت، طراحی و تدوین برنامه های آموزشی مربوط به کامپیوتر در قالب کارگاههای زمان بندی شده با قابلیت تکرارپذیری ، تجهیز مراکز کامپیوتر دانشگاه، پیشنهاد می گردد.

واژه های کلیدی: اینترنت، رایانه، دانشجویان، علوم پزشکی، دانش، نگرش، عملکرد

انٹرنیٹ اور کمپیوٹر کے استعمال کے سلسلے میں آگہی، نظریات اور کارکردگی ۔

بیک گراونڈ: انٹرنیٹ اور کمپیوٹر آج کل میڈیکل تعلیم میں نہایت اہم کردار کے حامل ہیں۔ اس تحقیق کا ہدف بیرجند میڈیکل یونیورسٹی میں کمپیوٹر اور انٹرنیٹ کے استعمال کے بارے میں طلباء کے نظریات، کارکردگی اور آگہی کا جائزہ لینا ہے۔

روش: یہ ایک توصیفی اور تجزیاتی تحقیق ہے جس میں بیرجند میڈیکل یونیورسٹی کے چار سو پچیس طالب علم شریک تھے۔ یہ تحقیق دوہزار گیارہ میں انجام دی گئی اور طلباء کا انتخاب رینڈم طریقے سے کیا گیا۔ طلباء کی نظر اور کارکردگی کا جائزہ خود ساختہ سوالناموں سے لیا گیا جس کی توثیق اکیڈمک کونسل کے اراکین نے کی تھی۔ جوابوں کا تجزیہ ایس پی ایس ایس سافٹ ویراور کائی اسکوائر اعداد وشمار ماڈل سے کیا گیا۔

نتائج: چار سوپچیس طلباء میں دو سوستائیس طالبات تھیں اور ایک سواٹھانوے لڑکے تھے۔ ان طلباء کو کمپیوٹر کی کم سے کم معلومات تھیں، انہتر اعشاریہ چار فیصد کے کمپیوٹر اور انٹرنیٹ کے بارے میں مثبت نظر رکھتے تھے۔ تیس اعشاریہ ایک فیصد کی نظر متوسط تھی، اور انچاس فیصد طلباء سافٹ ویر کے استفادے میں مہارت رکھتے تھے جبکہ اڑتیس اعشاریہ آٹھ فیصد انٹرنیٹ سے استفادہ کرنے میں کافی مہارت رکھتے تھے۔ یہ طلباء سب سے زیادہ ورڈ اور پاور پوائنٹ پروگرامون میں مہارت رکھتے تھے۔

سفارشات: کمپیوٹر اور انٹرنیٹ کے تعلق سے میڈیکل طلباء کی ضعیف صلاحیتوں اور کارکردگی کے پیش نظر انہیں انفارمیشن ٹکنالوجی کے بارے میں تعلیم دینا ضروری لگتا ہے اور یہ کلاسیں ورکشاپ کی صورت میں دائر کی جائیں جنہیں کئی مرتبہ دوبرا کیا جاسکے۔ اسی طرح یونیورسٹیوں میں کمپیوٹر لیب کا ہونا بھی نہایت ضروری ہے۔

کلیدی الفاظ: کمپیوٹر، انفارمیشن ٹکنالوجی، نظریہ۔ انٹرنیٹ ۔

INTRODUCTION

It is about 35 years that computers are used in Iran and fields related to computer sciences and application have been taught as independent university majors and short term educational courses in state and private educational institutes .University as one of the most important organizations responsible for education in our country requires periodical investigation of students' skills using computer and Internet for its improvement and development.(1)

Using information technology and Internet provides the possibility of getting access to the most updated information in the shortest time. This is especially useful for the students of developing countries ,as Internet fills the gap of information in such countries.(2)

The results of a research in France showed that today most medical schools use computer networks for educating students ,in a way that this methodology has become the basic part of learning and educational environment.(3)

According to the increasing process of using computers in education, at present using computers is inevitable in educational environments and they play an important and increasing role in medical education.(4)

Recent developments in education technology,provides new conditions in medical education and affects methodologies ,learning, planning ,and performing curricula.For better usage of the vast volume of medical information in World Wide Web,students and professors must get the necessary trainings for effective use of such information.Thus,medical schools have to provide clear strategies for solving the problems followed by these technologies.(5)

Conducted studies on faculty members and students of medical sciences universities in Iran show that the viewpoint of these people toward using

Computer and Internet is positive but the functional skill of these people in using Internet and data bases is not appropriate and in most of the cases the skill of using Internet and data bases among faculty members is less than 50%.(7,5,4) Also a study conducted on students of Mashhad University of Medical Sciences showed that in contrast with the positive viewpoint toward electronic education ,their knowledge has been little in this field.(8)

According to the importance and effect of computers and information network in education and development of different aspects of knowledge, and as identifying knowledge and performance of students can help education managers of universities in planning the training of computer application and as such a study has not been conducted on students of Birjand University of Medical Sciences so far ,this study was done for determining the rate of knowledge ,viewpoint ,and performance of students of Birjand University of Medical Sciences in using computers and Internet.

METHODS

In this descriptive –analytical study ,425 of students of Birjand University of Medical Sciences who had passed at least two terms of university were selected through random systematic classification sampling ,four faculties were considered, and the list of students of each faculty was taken from the education office of the university and participants were selected through random classification systematic sampling .Data was collected through a self-structured questionnaire which was planned based on the purposes of the study and its content and face validity were confirmed by some expert faculty members. This questionnaire was previously used in Naseri et al.'s study on faculty members of Birjand University of Medical Sciences and its reliability was confirmed by Alpha-Cronbach and calculated as 0.86.The mentioned questionnaire was classified in three fields of knowledge (41 questions for each a score of one or zero was allocated),viewpoint (13 questions based on Likert 5-scale started from strongly agree to strongly disagree scored from 1 to 5) ,and performance(45 questions based on 5-scale Likert from very much to not at all scored from 1 to 5).

Getting a score less than 50% of the total in any field of knowledge, viewpoint, and performance was considered weak,50-75% average, and higher than 75% was good .Questionnaires were given to selected students and after explaining the purposes of the study and confidentiality of the information ,they were asked to fill them.Questionnaires were filled by participants autonomously.Data was analyzed by SPSS (version 13),statistical tests of Qui-square and Exact Fischer in level alpha$=0.05$.

RESULTS

Out of 425 participant students,227(53.4%) were female.From the aspect of education level 15(3.5%) were studying in the level of associate degree,303(71.2%) B.S.,4(9%) M.S.,and 103(24.2%) PhD.

In the study of the viewpoints of students,almost all participants considered using computers necessary for conducting research.92.7% of the students considered the necessity of using computers and Internet in conducting research and development a lot to very much and 78.6% considered the necessity of using computers and Internet in education and teaching a lot to very much.

79.8% of students considered holding educational workshops of computer and Internet a necessity .While only 44% were pleased with the provided facilities of computers and Internet by university. In the case of questions of "the necessity of having a weblog" and "the necessity of installing wireless Internet in campus" 78.8% and 58.1% of participants evaluated the necessity from a lot to very much respectively.

In the case of evaluating the performance of students,68.5% (291 students) had personal computers.32% used the Internet everyday and 45.9% 2 to 3 times a week. From the point of the rate of hours of using the Internet,34.6% used 2 to 4 hours a week,21.4% less than 1 hour a week, and 20.9% 5-6 hours a week.28.9% used the Internet just at home,60.7% just in university, and 3.1% in both places.

It is worth mentioning that 41.9% mentioned that their method of learning to use Internet and computer was test and error,18.1% mentioned educational workshops ,and 1.6% mentioned both methods.

29.9% said that their purpose of using the Internet was doing research,8.2% studying,4% other, and 48.7% doing

Table 1:The Frequency Distribution of Participants' skills in Using Data Bases and Computer Software					
Question	Not at all n(%)	Little n(%)	avarage n(%)	A lot n(%)	Very much n(%)
Using email	21(4.9)	44(10.4)	140(32.9)	123(28.9)	96(22.6)
The skill of searching and finding data bases on Internet	25(5.9)	45(10.6)	177(41.6)	115(27.1)	63(14.8)
Having the skill of working with the data base of Jahad Daneshgahi on Internet	136(32)	126(29.6)	93(21.9)	39(9.2)	30(7.1)
Having the skill of working with the data base of Iran Medex	122(28.7)	100(23.5)	99(23.3)	60(14.1)	44(10.4)
Having the skill of working with the data base of Ovid	168(5.39)	112(26.4)	93(21.9)	33(7.8)	19(4.5)
Having the skill of working with the data base of Elsevier	178(9.41)	101(23.8)	75(17.6)	47(11.1)	24(5.6)
Having the skill of working with the data base of PubMed/ Medline	169(8.39)	86(20.2)	91(21.4)	56(13.2)	23(5.4)
Having the skill of working with the data base of EbSCO	184(3.43)	109(25.6)	75(17.6)	37(8.7)	20(4.7)
Having the skill of working with the data base of Scopus	184(3.43)	116(27.3)	76(17.9)	26(6.1)	22(5.2)
The skill of working with Power Point	30(7.1)	35(8.2)	136(32)	116(27.3)	108(25.4)
The skill of working with Word	35(8.2)	30(7.1)	128(30.1)	125(29.4)	107(25.2)
The skill of working with Access	139(7.32)	116(27.3)	94(22.1)	46(10.8)	30(7.1)
The skill of working with statistical software SPSS ‹Excel (&…)	159 (4.37)	114(26.8)	90(21.2)	36(8.5)	26(6.1)
The skill of working software such as End Note /Procite / Reference manager	210(4.49)	113(26.6)	61(14.4)	23(5.4)	18(4.2)

research plus other cases.

In the case of the skill of using data bases ,students made most use of the following data bases.PubMed 20.2%,Iranmedex 23.5%,Elsivier 23.8%,EbSCO 25.6%,Ovid 26.4%,SID 29.6%.

In the case of using computer software ,students were most skilled in using Word (54.6%) and Power point (52.7%). Most students had little skill in using software(table 1).

In the case of knowledge level and viewpoint, 56.9% were at level of weak and 69.4% good .In the case of using software and Internet services 38.8% and 49.6% were weal respectively (table 2).

According to the results of qui-square test there was not a significant relation ship between viewpoint and knowledge with gender ,a significant relationship was observed between performance and gender .In the case of using Internet facilities females were less skilled than males (P=0.02),(table 3).Also there was not a significant relationship between viewpoint and performance with the level of education ,but a significant relationship was observed between knowledge and level of education. (P=0.002) (table 4)

DISCUSSION

This study shows that as a whole the level of knowledge and performance of the students of Birjand University of Medical Sciences in the case of using computers and Internet is rather low ,this could be explained according to the limited facilities of the university in giving Internet services to students.

In a study done in the U.S. it has been expressed that medical education experts always remind that although sufficient access to computers and scientific sources is

Table 2: The Frequency Distribution of Knowledge, Viewpoint ,and Skill Level of Participant Students		
variable		n(%)
Knowledge	weak	242(56.9)
	average	153(36)
	good	30(7.1)
Viewpoint	weak	2(0.5)
	average	128(30.1)
	good	295(69.4)
Skill of using software	weak	211(49.6)
	average	182(42.8)
	good	32(7.5)
Using Internet services	weak	165(38.8)
	average	205(48.2)
	good	55(12.9)

provided ,but the knowledge and skill of users haven't improved much. They have also mentioned that if physicians and faculty members are supposed to use computer and Internet efficiently, their lack of knowledge must be taken in to consideration as well.(10)

Another study was conducted on first year residents in Canada and it showed that the major obstacles for getting enough training for better use of computers were lack of time and its cost not lack of interest in learning, also most

Table 3: The Comparison of the level of viewpoint, knowledge, and skill among participants based on gender

Level	Variable	Female n (%)	Male n (%)	Significance Level
Viewpoint	weak	0(0)	2(1)	
	average	71(31.3)	57(28.8)	P=0.28
	good	156(68.7)	139(70.2)	
Knowledge	weak	125(55.1)	117(59.1)	
	average	87(38.3)	66(33.3)	P=0.55
	good	15(6.6)	15(7.6)	
Skill of using software	weak	110(48.5)	101(51)	
	average	102(44.9)	80(40.4)	P=0.55
	good	15(6.6)	17(8.6)	
Using Internet services	weak	101(44.5)	64(32.3)	
	average	103(45.4)	102(51.5)	P=0.02
	good	23(10.1)	32(16.2)	

Table 4:The Comparison of Viewpoint, Knowledge ,and Skill level in Participants based on Education Level

Level	Variable	Associate degree n (%)	B.S. n (%)	M.S. and PhD n (%)	Significance Level
Viewpoint	weak	0(0)	2(0.7)	0(0)	
	average	6(40)	100(33)	22(20.6)	P=0.07
	good	9(6.0)	201(66.3)	85(79.4)	
Knowledge	weak	10(66.7)	188(62)	44(41.1)	
	average	3(20)	99(32.7)	51(47.7)	P=0.002
	good	2(13.3)	16(5.3)	12(11.2)	
Skill of using software	weak	8(53.3)	149(49.2)	54(50.5)	
	average	5(33.3)	134(44.2)	43(40.2)	P=0.07
	good	2(13.3)	20(6.6)	10(9.3)	
Using Internet services	weak	6(40)	127(41.9)	32(29.9)	
	average	8(53.3)	140(46.2)	57(53.3)	P=0.21
	good	1(6.7)	36(11.9)	18(16.8)	

of the residents believed that computer training must become obligatory for them.(11)

In the present study ,the point of view of most students (69.4%) was positive toward computers and Internet. This result matches Yamani and Bahadorani's study which has mentioned the positive viewpoint of faculty members of Isfahan University toward computers and Internet in education.(6)

In another study conducted among students of Mashhad University of Medical Sciences in the case of electronic education, the level of knowledge of students was low and their viewpoint was positive.(8)

In the present study ,most students' knowledge and awareness of data bases were little, in the case of using computer software, students were most skilled on using Word and Power point and most of the students had little

skills in using computer software. It seems that holding training classes in the form of scheduled workshops with repeatability in the case of introducing medical databases and using software can play a considerable role in increasing efficient use of Internet facilities.

Based on the results of Abtahi's study ,41.2% of students were not familiar with medical data bases(12).In Rasoulabadi's study ,more than 50% of participants were not familiar with the topic of technical data bases of Ovid ,Blackwell ,and Elsevier(7).

In another study about medical students of Illinois University it was identified that medical students were skilled enough in using email and World Wide Web but were not sufficiently skilled in searching medical resources and using computer assisted learning software and most of them expected to learn these while doing their studies .This study also suggested that attempts should be made to plan computer training and computer assisted learning courses in the curriculum of medical students(13).The results of the mentioned studies in the case of using data bases show insufficient knowledge in using data bases which match the results of our study. In the present study ,the viewpoint of more than half of the students (69.4%) toward computer and Internet was good and only the skill of 12.9% of them was at a good level, also the knowledge of more than half of the participants (56.9%) was evaluated weak .In similar studies the performance skill of participants has been reported low ,although they had a positive viewpoint(6,14). According to the relationship between viewpoint and knowledge and skill in this study ,the necessity of students' familiarity with computer and Internet usages and

determination of appropriate strategies for the development of educational computer facilities at university level seems

necessary so that besides positive viewpoint ,knowledge and skill are achieved as well.

In the present study male participants used Internet facilities significantly more than females which matches Latifnezhad and Hayati's study (15,8).One of the reasons of such difference could be more chances of male students for using computer compared to females.

Also students' knowledge level in this study increased with the increase of education level which can be because of spending more time in campus and learning different aspects of working with computers.

According to the limited knowledge and skill of students in using computer and Internet and their positive viewpoint ,planning educational programs related to scheduled workshops with repeatability ,developing the equipment of computer centers of the university ,providing appropriate space matching the number of students(such as libraries ,dorms ,faculties) can improve knowledge and finally the performance of students in using Internet facilities and the improvement of the professional knowledge level.

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