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Original Article

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Computer and Internet Utilization among the Medical Students in Qassim University, Saudi Arabia

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ABSTRACT

Background: Computer-based training (CBT) and internet-based training (IBT) have become a vital part of the Medical Education. A cross-sectional study was carried out in Qassim University-Kingdom of Saudi Arabia (KSA), with the objective of assessing the pattern of the computer and Internet utilization among both male and female medical students.

Methods: A total of 500 medical students from 4 different medical colleges of Qassim University participated in this study. A semi-structured, pre-tested questionnaire was used to collect the data and the data analysis was done by using SPSS, Version 17.

Results: Forty two percent female and twenty four percent male students used computers to get general information, 80% of the students reported using computers for academic activities and 52% females and 22% males used computers for entertainment. Most of the females preferred using computers at home (84%), while 54% males used computers at cyber cafés. For the information retrieval, 84% males used the internet, followed by journals/library (36%) and textbooks (35%), while the females preferred textbooks (75%) and the internet (14%). Google was found to be most commonly used search engine.

Conclusion: The internet creates an educational delivery system; it is highly needed to increase the credit hours for the university requirement courses in computer application and the internet use for both among the male and female students.

Key Words: Medical students, Internet, Qassim University, KSA

INTRODUCTION

With the rapid developments in modern science and technology, the information network technology has blazed a trail in our learning, work and lives. Computers are used for a wide range of functions in medical education, which range from simple drill and practice applications and computer based lectures to more advanced simulations and intelligent tutoring systems [1] The internet, one of the important scientific developments in the medical field, provides a wealth of information with respect to diseases, therapeutic procedures and pharmaceutical products [2]. It has a lower cost as compared to the paper based dissemination of information and it also has an added advantage of being available worldwide instantly on demand. Therefore, there is a need, not only to make the internet facility available in the institutions which provide medical education and health care, but also to equip the medical internet centre with adequate skills for the use of the internet. In the wake of the fast development of the network construction in universities, the number of internet-using university students is increasing. Biological researchers and scientists are increasingly becoming more and more dependent upon computers to manage the generated information [3]. The internet has become the world's biggest library, where the retrieval of scientific resources can be done within minutes [4].

The institutions of higher learning are the main bodies which cultivate and educate the university students. In response to the tremendous impact of the internet on the university students, many universities have taken various counter-measures. However, the diversity of the students' internet behaviours and their features make the counter-measures lack the target and they lower the education efficiency. For providing internet access to the medical students of Qassim University, an "Internet Cafe" was opened in the library campus. It remains open from 8.00 AM to 2.00 PM daily and it is open for all the undergraduate medical students free of cost. The utilization of such internet facilities in a University would depend upon the percentage of the students/residents who know how to operate a computer as well as the quality of the services which are provided in the facility. Therefore, the current study was carried out to find out the use of computers and the internet and the purpose of using the internet among the students of Qassim University.

MATERIAL AND METHODS

The present cross sectional study was carried out at Qassim University among the students of the College of Medicine, College of Pharmacy, College of Nursing and the College of Applied Medical Sciences, who included male and female students, during Jan. 2012 to April 2012. The students who were enrolled at all the levels were selected randomly for their participations after taking informed, verbal and written consents by using a self-explained, pre-structured, pre-designed and a pre-tested questionnaire. A total of 500 study subjects were purposively enrolled, who included 400 males and 100 females. The data was collected from the students during their weekly lectures. Information was collected regarding their ages, sexes, the use of computers and

internet services and the purpose of using the internet. The data was analyzed by using SPSS, version 17.0. The Chi-square test was used to find out the statistical significance of the differences in the proportions. A p-value of <0.05 was considered to be significant.

RESULTS

The demographic profiles of the students have been described in [Table/Fig-1], which show that the maximum number of students who participated in the study were of the age group of 19-21 years, with a male proximity [Table/Fig-1]. About 80% of the male students and 20% of the female students were reported to use computers. However, a majority (53%) of the male students took assistance (p<0.0001); whereas, 35% of the male students used the computers on their own [Table/Fig-2]. A majority of the female students used computers for entertainment than for gaining general information whereas, the male students used computers mainly for thesis and research work (p<0.0001). A majority of the male students used computers/internet at cyber cafés, followed by home and college, but the female students mainly used computers at home. Textbooks were represented as the preferred medium of information by 75% female students and the internet was reported as the preferred medium by 84% of the male students. 45% female and 24% male students were found to be exposed to computer-assisted teaching (CAT); however,

Characteristics	Number	Percentage (%)
1. Age Group (years)		
(a) <19	113	22.6
(b) 19-21	173	34.6
(c) 22-24	138	27.6
(d) >24	76	15.2
2. Gender		
(a) Male	400	80
(b) Female	100	20
3. Study		
(a) College of Applied Medical Sciences	100	20
(b) College of Pharmacy	100	20
(c) College of Nursing	100	20
(d) College of Medicine	200	40

[Table/Fig-1]: Baseline characteristics of the study population (N=500)

100% male and female students advocated the use of CAT.

DISCUSSION

The potential of the internet and evidence based medicine in providing the much needed information to the patients as well as the practioners in the today's world, cannot be denied. However, the present study showed a poor knowledge among the female medical students regarding this (p<0.0001) [Table/Fig-2]. The students should know how to do the literature search and how to extract the right information in this age of the internet [5]. Moreover, the geographic and the socioeconomic factors prevent the transfer of rapid information between the patients and the healthcare providers. With the use of the internet, through broadband high capacity network connections, we can cross these barriers to provide timely medical care in every nook and corner of the country [6]. To achieve this, it is important for the

Parameters		Female Students n=100	Male Students n=400	Q1 p-value
Computer Users		65(65%)	352(88%)	0.002
1. Self operated		55(55%)	140(35%)	0.044
2. Assisted		10(10%)	212(53%)	<0.0001
Purpose for using Computer				
1.	To get general Information	(42)42 %	96(24%)	0.062
2.	For thesis or research Work	--	320(80%)	–
3.	For entertainment	(52)52%	88(22%)	0.0002
4.	Any other	12(12%)	168(42%)	0.31
Place where use				
1.	Home	84(84%)	184(46%)	0.013
2.	College	5(05%)	84(21%)	184(46%)
3.	Cyber café		216(54%)	0.0009
4.	Any other	11(11%)	16(4%)	0.31
Preferred medium for Information				
1.	Journals/library	6(6%)	144(36%)	<0.0001
2.	Textbooks	75(75%)	140(35%)	<0.0001
3.	Internet	14(14%)	336(84%)	<0.0001
4.	Pharmacopeia	5(5%)	60(15%)	0.13
5.	Any other	–	–	–
Reason for preferring Internet				
1.	Time saving	14(14%)	256(64%)	<0.0001
2.	Latest knowledge	10(10%)	300(75%)	<0.0001
3.	Easy accessibility	4(4%)	176(44%)	<0.0001
4.	Nonspecific	–	8(2%)	0.56
Internet used to know				
1.	About drugs	3(3%)	120(30%)	<0.0001
2.	Rational prescribing	5(5%)	100(25%)	0.001
3.	Therapeutic guidelines	10(10%)	160(40%)	<0.0001
4.	Recent advances in Medicine	8(8%)	320(80%)	<0.0001
Knowledge about evidence based medicine		8(8%)	352(88%)	<0.0001
Commonly assessed web sites				
1.	www.Google.com	14(14%)	320(80%)	<0.0001
2.	www.yahoo.com	10(10%)	240(60%)	<0.0001
3.	www.msn.com	4(4%)	176(44%)	<0.0001
4.	Social networking site	1(1%)	40(10%)	0.02
5.	specific journal site	–	320(80%)	–
6.	PubMed	–	180(45%)	–
7.	any other	–	64(16%)	–

[Table/Fig-2]: Computer and Internet use among

practitioners to have ample knowledge on computers and the internet. With respect to the purpose of computer and Internet utilization

In this study, 42% Female and 24% Male students were using computers and the internet to get general information, 80% of the students used computers for thesis or research work, 52% Females and 22% Males used computers for entertainment and 42% of the students used computers for others purposes. These

data are less than those of the previous studies which were done by Unnikrishnan et al., [7] and Sharma et al., [8] which reported that a majority of the undergraduate medical students used the internet for entertainment and that postgraduates used it for general information and thesis and research. Ranasinghe et al., [9] stated that the students used computers predominately for; word processing (95.6%), entertainment (95.0%), web browsing (80.1%) and preparing presentations (76.8%). In a study which was conducted in Meerut, India, Maroof KA and co-workers [10] showed that the main use of the Internet was for communication (58.5%) and entertainment (46.3%) and that only about one-fifths of the respondents used the Internet for searching literature for projects from the medical journals which are there on the Internet. Jadoon et al., [11] stated that 61.0% used the internet for both academic and Personal activities, while 17% used it for academic activities [Table/Fig-3].

The places where computers are used

Computers and the internet have now become more affordable and hence they are easily available and accessible. The computer ownership has considerably increased among the students in various parts of the world, along various courses.

In the present study, a majority of the medical students used computers at home, especially females (84%), while a majority of the male students (54%) used computers at cyber cafes. These findings are similar to those of the studies which were done by Ahmed et al., [12] and Ajuwon GA [13], where a majority of the students used computers in cyber cafés. On the other hand, a majority of the medical students in other studies were reported to use computers and the internet at home [Table/Fig-3].

The preferred medium for getting the required information

The media which were preferred for getting information in the present study was the internet for the male section, followed by Journals/library and textbooks, while the female medical students preferred textbooks and the internet. These variations between males and females for the media sources may be because of the conservative community and the family restrictions in Saudi Arabia. These findings were supported by those of other studies too [Table/Fig-3].

The commonly accessed sites

In the present study, the common websites which were accessed were Google and specific journals, followed by Yahoo, PubMed, MSN and the social networking sites. Studies which were conducted in India [7] and Sudan [12] showed that a small percentage of the medical students accessed PubMed due to a lack of knowledge on the basic technological aspects of the Internet and confuses to the data base for searching to getting medical information [Table/Fig-3].

The perception of the students regarding the benefit of the internet in medical academics

The advent of the World Wide Web (WWW) and the Graphical User Interfaces (GUIs) such as Netscape, have made the Internet a powerful medium of instruction and learning [14].

In the current study, 45% females and 24% male students were found to be exposed to computer-assisted teaching (CAT); however, 100% of the students advocated the use of CAT. This was comparable with the studies which were done in India, where a majority of the students advocated the use of computers and the internet in teaching institutions [7-9].

In 2002, Mansor I [15] stated that 93.4% of the respondents felt the necessity of learning high computer skills during their medical education and 53% thought that computers and the Internet could improve their studies and professional skills. In a study which was conducted in medical schools in Nigeria in 2008 by Ameh [16], it was found that 83% of all the students wanted computer education to be included in their medical school curriculum. The easy availability of computers and the accessibility to the internet have increased greatly, thereby influencing its role and demand in medical education too. The Internet has made the medical knowledge accessible for everyone around the world [17]. However, the students need to be guided in choosing the right material.

CONCLUSION

The internet is one of the important sources of medical education information and it creates an educational delivery system; it is highly needed to increase the credit hours for the university requirement courses in computer application and for the internet use for both among male and female students. Male and female students should be trained to extract valuable information from the special medical web sites and they should be encouraged to check the authenticity of the medical information by correlating it with the existing evidences. This will be helpful in promoting evidence based learning. Besides that, the Web-based learning programs are able to replace the conventional class lectures and the high demand requirement of the medical students for the recent advances in medicine.

Studies (References)	Computer and internet accessibility from home			Use of Search engine google	Academic/ professional purpose of computer	Internet as information source
	Male	Female	total	-	-	-
Present Study	46%	84%	53.6%	66.8%	80%	70%
Ranasinghe et al., [9]	74.4%	80.2%	77.3%	-	100%	-
Seetharaman N [18]	84.82%	85.4%	85.14%	48.9%	57.1%	62.9%
Jadoon et al., [11]	58.5%	78.6%	70.5%	88.9%	17%	-
Unnikrishnan B et al., [7]	-	-	52.8%	60.2%	12.8%	38.8%
Ahmed et.al., [12]	-	-	18.7 %	-	29.3%	-
Sharma et al., [8]	-	-	31.33%	34.66	80%	36%
Ajuwon GA [13]	-	-	8.1%	9%	-	48.6
Mansor I [15]			81.2		37.5%	78%

[Table/Fig-3]: Comparison between present study and other studies

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