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ORIGINAL ARTICLE

Use of E-Learning in Education: Attitude of Medical Students of Shiraz, Iran

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ABSTRACT

Introduction: This study aimed to explore the use of e-learning in medical education in Shiraz, Iran. **Materials and Methods:** A convenience sample of 300 medical students of Shiraz University of Medical Sciences was interviewed using a structured questionnaire. The questionnaire contained a series of questions on the demographic characteristics, accessibility to computer and internet, use of internet for medical education and training, familiarity with e-learning, and the reasons for use of computer. **Results:** A total of 270 participants completed their questionnaires, 30.7% students reported familiarity with e-learning, 21.3% found e-learning beneficial, 57.6% used internet for education, 43.4% considered e-learning useful for medical education, and 57.9% students thought e-learning must be more prevalent in medical education. Most of the students (78.5%) used their personal computer for e-learning, only 6.3% did not use the computer for education. **Conclusion:** Considering the increasing role of computer and internet in daily life, the current results indicate that the attitude of the participants towards e-learning was positive. However, medical students have to be made aware of the advantages of e-learning. Technological limitations were less compared to reports from the other developing countries.

INTRODUCTION

The growth and impact of the information technology industry on the daily life of human beings has been immense, especially on education and training. It is an inseparable part of many individual lives and a promising medium for improving human knowledge (1). E-Learning includes different types of electronic-supported learning, teaching and education aimed at effective construction of knowledge with reference to individual experience, practice and knowledge of the learners and students (2). It provides a medium to transfer information, skills and knowledge using electronic applications and processes. The types of e-learning applications and processes are internet-based learning, computer-based learning, virtual classrooms and digital collaboration. Content is delivered by the internet, intranet/extranet, audio or video tape, satellite television (TV), and compact disc read-only memory (CD-ROM). This learning may be self-paced or instructor-led, such as media in the form of text, image, animation, and streaming video and audio (2,3). Computers and/or internet are considered a key part of the educational environment and provide a structured environment for all types of teaching and training methods. So, e-learning is a means to enhance learning efficacy (4).

As mentioned above, technology has changed many aspects of life, including our teaching and learning processes (3). Also e-learning has changed the status of teachers as the only source of knowledge. In this new academic space, e-learning plays an active and unlimited role in improving the students' knowledge and education. They can revise, improve, and update their knowledge rapidly. They can control the content as well as time. In addition, they can follow their personal educational needs (5). The students can easily impart their knowledge (6). The effectiveness of e-learning has already been established by studies of higher education, government, corporate, and military environments (4, 7, 8). Research from the Institute of Educational Studies in Canada showed that learners adopt a more active attitude as they have access to electronic books, on-line articles of journals, interactive exercises, discussion panels, and videos as methods of learning (4, 9). On the other hand, it seems that doctors do not have sufficient time or opportunities to be trained to the standards of their education.

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In this respect, e-learning is an excellent way to offset this. E-learning can be used by all medical educators to improve the efficiency and effectiveness of educational interventions (5, 10, 11). To the best of the authors' knowledge, no published study/survey on the prevalence and effectiveness of electronic learning among medical students in Iran had been conducted before.

MATERIALS AND METHODS

This study was performed with a convenience sample of 300 medical students of Shiraz University of Medical Sciences in 2014. The participants were selected randomly from the 7 classes of the medical school. The researchers explained the method and the goal of study to all the participants and asked them to complete the questionnaire after obtaining oral consent. A total of 270 participants completed their questionnaire. Personal information of the participants was kept confidential.

The participants were required to answer the questions by rating them on a five point scale. For example, for e-learning usage duration, 1=daily usage and 5= never, and students' views were evaluated as 1=absolutely agree and 5=absolutely disagree. This questionnaire has been used in previous studies (18,19). In the pilot study, the questionnaire was given to 15 medical students and favorable results were obtained. The questionnaire was distributed among the students and collected 20 minutes later.

The questionnaire was designed to collect the following information; the demographic characteristics (age, sex, class) of the participants, their knowledge about e-learning, personal computer and internet service availability, their attitude towards the effectiveness of e-learning in medical education, and their views about the future of e-learning in medical education and its limitations in our university. Data were analyzed under the supervision of a statistical specialist using the statistical package for the social sciences version 15 (SPSS Inc., Chicago, IL) statistical software. The analyses included descriptive statistics, student's t-test and chi-square test. A $P<0.05$ was considered statistically significant.

RESULTS

As shown in Table 1, of the 270 students who completed their questionnaire, 100 (37%) were male. The mean age of the students was 22.59 ± 1.94 years. Personal computers were used by 152 (78.5%) students for e-learning at home; 86.8% of the students had computer at home for 5 years and more and 89.6% of them used computer since the age of 10. Only 17 (6.3%) students did not use computer for education. Although 50.8% of the students used computer programs regularly, 30.7% were familiar with e-learning and only 21.3% used it regularly for learning. Multimedia was easily available in the university and internet was used by 57.6% students for education. The students agreed on the usefulness of e-learning in medical education and wanted it to be more prevalent (Table 2).

A few students (26%) thought that e-learning cannot replace the classroom lectures. According to 75.1% students, e-learning has a complementary role in medical education (Table 3). Technical problem, such as error in connection was the most important limitation to internet usage among medical students. There was no significant correlation between the sex of the student and computer use.

DISCUSSION

This study aimed to present an overview of e-learning among a sample of Iranian medical students. As e-learning continues to be widely used in the training of future physicians, it is critical to evaluate the role of e-learning in medical learning. As in previous studies, most of our students were familiar with e-learning. The rate of availability of computer and internet was acceptable among our students; it was significantly higher compared to few developing countries.

Table 1. The self-reported reasons for internet and computer use among medical students

Using internet and computer for …	Daily	Several times a week	Several times a months	Seldom	Never
Search information	65 (25.3%)	89 (34.6%)	57 (22.2%)	45 (17.5%)	1 (0.4%)
Download	45 (18.3%)	49 (19.9%)	78 (31.7%)	63 (25.6%)	11 (4.5%)
Learning medicine	30 (12.3%)	49 (20.1%)	59 (24.2%)	85 (34.8%)	21 (8.6%)
Writing texts	25 (10%)	47 (18.7%)	68 (27.1%)	89 (35.5%)	22 (8.8%)
Planning the appointments	11 (4.4%)	37 (14.8%)	31 (12.4%)	98 (39.2%)	73 (29.2)
Doing their calculations	16 (6.5%)	21 (8.6%)	49 (20%)	96 (39.2%)	63 (25.7%)
Adjusting the pictures and images	46 (18.4%)	61 (24.4%)	83 (33.2%)	47 (18.8%)	13 (4.8%)
Play computer games	29 (11.5%)	47 (18.7%)	48 (19%)	70 (27.8%)	57 (22.6%)
Sending E-mail	48 (19.2%)	78 (31.2%)	64 (25.6%)	47 (18.8%)	13 (5.2%)
Chat	16 (6.5%)	26 (10.6%)	31 (12.7%)	80 (32.7%)	91 (37.1%)
Attending in chat rooms	7 (2.9%)	23 (9.4%)	42 (18.2%)	85 (34.8%)	86 (35.2%)
Research	45 (18%)	87 (34.8%)	79 (31.6%)	29 (11.6%)	10 (4%)
Designing websites	20 (8.1%)	39 (15.9%)	34 (13.8%)	67 (27.2%)	85 (34.6%)

Table 2. The self-reported familiarity and usage of e-learning by the medical students

Familiarity Questions	Yes	No	I'm doubtful about it
I'm familiar with e learning completely	79 (30.7%)	114 (44.4%)	64 (24.9%)
I use the benefits of e learning everyday	54 (21.3%)	160 (63.2%)	39 (15.4%)
I use the computer programs regularly	127 (50.8%)	91 (36.4%)	32 (12.8%)
Multimedia is easily available in our university	112 (44.3%)	96 (37.9%)	45 (17.8%)
I use internet for education regularly	144 (57.6%)	76 (30.4%)	30 (12%)
e learning is useful in medical education	106 (43.4%)	57 (23.4%)	81 (33.2%)
e learning must be more prevalent in medical education	140 (57.9%)	50 (18.5%)	52 (21.5%)

Table 3. The attitude of medical students towards e-learning

Attitude	Absolutely agree	Agree	Less agree	Less disagree	Disagree	Absolutely disagree
e learning must has more effective role in medical education	147 (57.9%)	73 (28.7%)	28 (11%)	5 (2%)	1 (0.4%)	0
e learning can replace lectures at class	49 (19.3%)	28 (11%)	66 (26%)	29 (11.4%)	49 (19.3%)	33 (13%)
There isn't any important reasons for e learning in medical education	20 (8.2%)	23 (9.4%)	30 (12.3%)	28 (11.5%)	91 (37.3%)	52 (21.3%)
E learning must has a complementary role in medical education	90 (35.6%)	100 (39.5%)	45 (17.8%)	5 (2%)	9 (3.6%)	4 (1.6%)
I don't have any interest to work with English programs for medical education	26 (10.2%)	36 (14.2%)	29 (11.4%)	37 (14.6%)	78 (30.7%)	48 (18.9%)
e learning hasn't anything more than regular methods of education (books and notebooks)	22 (10.7%)	37 (18%)	54 (26.3%)	52 (25.4%)	30 (14.6%)	10 (4.9%)
I chat and use internet connection because I'm ashamed to speak in group	17 (6.9%)	21 (8.5%)	26 (10.5%)	33 (13.4%)	65 (26.3%)	85 (34.4%)

Consequently, the rate of e-learning was higher among our students (12).

Although more than half of our students thought that e-learning is useful and it must have a complementary role in medical education, many of them believed that it cannot replace the traditional educational methods, which is similar to the other studies.

Majority of our respondents agreed that multimedia e-learning enhances their learning. Learning delivery is the most cited advantage of e-learning in different studies as updating electronic content is easier and faster than updating textbooks (6). Users control the content, learning sequence, time, and their experience in accordance to their personal learning styles and objectives. Simultaneous and worldwide distribution of digital contents is provided by the internet and can be as good as traditional classroom lectures (7,8). Web-based learning as a part of e-learning shows similar findings in the context of diverse medical education aspects (4,13).

Today there are numerous open universities, some even 'mega-universities' with more than 100,000 students which have adopted e-learning as a standard education technique. The US National Center for Educational Statistics reported that 30% of the students with bachelor's degree (n = 860,000) were enrolled in distance education courses in 2011 and 75% of the students took their entire postgraduate program online (14). More than 80% of U.S. doctoral/research institutions used some form of e-learning, either courses or full programs (15). E-learning programs have several advantages in comparison to traditional education programs, such as uncoupling of education from time and place, preparation and standardization of instruction and assessment for the students, ease of documentation and increased educational cost-effectiveness (5,10,16).

Nowadays, traditional approaches to professional health education are facing challenges everyday due to the increased clinical demands and decreased available time (11,17). A supplementary e-learning resource was developed and the experiences of the users were explored. The resource was appreciated and accepted by the medical students (12).

Internet-based learning is associated with large positive effects and it has a complementary role in medical education. Studies comparing internet-based learning with non-internet-based traditional methods showed that the students with only internet-based learning had lesser educational benefit than traditional learning in skills and knowledge (5,10,16). In this study we showed that students are satisfied with e-learning compared to traditional learning. However, most of the students and teachers did not want e-learning to replace the traditional instructor-led training and lectures. They thought that both the teaching methods should complement to one another (12).

The limitation in our study was that the participants were medical students from only one university due to which our results cannot be generalized to other students in other branches and other universities.

There is limited published data about the prevalence and effectiveness of electronic learning among medical students in Iran and this study is unique in this aspect. For obtaining more reliable results, the researchers should perform such studies among other students in different branches and also in different universities. The results will be important and effective in future education.

CONCLUSION

Considering the increasing role of internet use in daily life, this study showed that the attitude of the medical students towards e-learning was positive. In our study, technological limitations are less compared to the studies reported from other developing countries.

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AUTHER CONTRIBUTIONS

All authors contributed equally.

CONFLICT OF INTEREST

None.

ETHICAL STANDARDS

Oral consent was obtain from all participants.

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