Assessing Students' Satisfaction Regardingthe Use of Virtual Learning at Larestan University of Medical Sciences

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ABSTRACT

Background: Given the dramatic expansion of e-learning in the world and also its increasing use in Iranian universities and considering the fundamental role of students in educational systems, it is necessary to further study the structure of their knowledge and attitude in using e-learning method. The present study was designed to determine the level of satisfaction with virtual education among the students of Larestan University of Medical Sciences in 2021.

Methods: The present study is a survey conducted in 2021 on students at Larestan University of Medical Sciences. The sample size was 132 people. Available (convenient) sampling method was used for sampling. A researcher-made questionnaire (Content Validity Ratio=0.99, Cronbach's alpha reliability=0.82) was used to collect data on the students' satisfaction with virtual learning. SPSS software version 25 and independent t-test and one-way analysis of variance were used for statistical analysis.

Results: Out of 132 students participating in the present study, 88 (67.70%) were girls. The only correlation was between the students' semester and the total satisfaction score, where the higher the student's semester, the lower their satisfaction was (P=0.002). The overall mean score of satisfaction with virtual learning was 3.02±0.84.

Conclusion: In general, due to the significant expansion of virtual education around the world, despite the short life of those efforts to improve the facilities and infrastructure of hardware and network ,paying attention to the diversity and appeal of training using diverse solutions, providing appropriate content based on the results of needs assessments, and more interactions between professors and students can lead to the development of this type of education and maximize student satisfaction.

Keywords: Student, Virtual learning, E-learning techniques, Satisfaction

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Introduction

The emergence of extensive communication networks such as the Internet, along with advanced educational tools and facilities, has led to a change in educational methods and has made it possible to quench the thirst of a

wide range of science enthusiasts around the world owing to the educational network and the implemented scientific and specialized training without the need to attend face-to-face classes. This new educational method, which is referred to as virtual e-learning, is one of the most advanced educational methods in the world today and uses a variety of advanced technologies such as Internet networks, databases, and knowledge management (1). In virtual education, educational content is provided through electronic services (1, 2). In fact, in traditional education, the teacher plays a key role, but in virtual education, the role of the teacher changes to that of a facilitator of education (3). The culture of learning cannot easily find its place without the presence of the teacher, and as a result, the new environment of teaching and learning is associated with challenges. In some studies, due to the provision of this type of training in cyberspace, students may face challenges and develop a negative view of this type of training (4). Of course, in order for education to be more practical in cyberspace, learners must receive sufficient education in this field (5).

Teaching in the traditional way is a teacher-centered method. Although students are trained in this way, their learning is superficial and the traditional method is not a great teaching method for teaching clinical topics (6). In fact, virtual education can complement traditional education (7). Due to the low cost of e-learning, its use has been suggested in the Iranian university education. The dramatic expansion of e-learning in the world and also its increasing use in Iranian universities and considering the pivotal role of students in educational systems, it is vital to further study the structure of their knowledge and attitude in using e-learning method (1). E-learning techniques have proven beneficial, but their successful implementation depends on several factors, including students' attitudes and satisfaction and their understanding of how to use this method (8).

A study of midwifery students in India showed that the use of new teaching methods such as e-learning increased students' knowledge and skills in learning the curriculum (6). A study by Phungsuk et al. reported that providing evidence-based learning in cyberspace increased students' ability to learn and problem-solving skills. Their results further showed that during virtual training, using various media and educational files was able to increase the students' motivation to learn educational content (9).

Based on some studies, virtual education increases clinical skills in students (10). Stewart et al. conducted a study to investigate the effect of combination education in medical students on neonatal clinical examination skills. In this study, the group that received combined education (virtual and traditional education) exhibited more skills in the physical examination of infants compared with the group that received education in the traditional way (11).

In a study conducted by Kian et al. the lack of face-to-face communication in virtual learning had to be compensated by conditions such as a more interactive learning environment with the capability of visual technologies (12). Numerous experts have pointed out the shortcomings of e-learning. Dreyfus, a contemporary professor of philosophy and Internet critic, believes that e-learning cannot guarantee the emergence of creative ideas, the quality of information, users' mastery of all facts, and the possibility of a meaningful life for learners. According to him, students realize that being in class, being with the teacher and being with other students in the classroom make them feel connected to the class, a feeling that they do not want to lose. Attending class is such a positive experience that most students attend their classes even in bad weather conditions. He believes that teachers can never know whether the students in the class are attracted to the lesson or not in the virtual classroom, nor can they understand the extent of the student's involvement in the lesson and estimate and guide their emerging and creative ideas (13).

Therefore, considering that virtual

education is currently a widespread method in universities and this educational method is being implemented alongside traditional teaching in Larestan University of Medical Sciences, we decided to conduct this study with the aim of assessing the virtual learning satisfaction in students in order to find the shortcomings of this educational method.

Methods

Study Type

The present study is a survey conducted in 2021 on the students of Larestan University of Medical Sciences.

Sample Size

The sample size was estimated to be about 132 with 5% alpha(mean 3.16 and standard deviation of 0.29) (14).

Sampling Method

Available (convenient) sampling method was used for sampling. Due to the fact that students were not present in university at the time of sampling due to COVID-19 conditions, an online questionnaire was used to conduct the sampling. A researcher-made questionnaire was used to collect data on students' satisfaction with virtual learning.

Research Tools

The present questionnaire contained 46 questions (5 questions related to the quantitative and qualitative characteristics of the participants and 41 questions related to the virtual education status). The content validity of this questionnaire was confirmed by seven faculty member of Larestan University of Medical Sciences (Content Validity Ratio (CVR)=0.99, Content Validity Index (CVI) for each item was higher than 0.79). Its reliability was evaluated by Cronbach's alpha method and was estimated to be 0.82.

The first part of this questionnaire included the demographic and educational information of the students, including age, gender, semester, field of study, and college; the second part included questions related to satisfaction with virtual learning based on

a 5-choice scale from strongly disagree to strongly agree: Strongly disagree (grade 1), disagree (grade 2), have no opinion (grade 3), agree (grade 4), and strongly agree (grade 5).

The link of the online questionnaire was provided to the eligible students through the official student information channels and they were asked to read and complete the questionnaire carefully if they were satisfied. Also, at the beginning of the questionnaire, all study participants were assured that their data would remain confidential at all stages of the study. Inclusion criteria were students who were studying at Larestan University of Medical Sciences, used virtual learning fortheir courses, and were willing to participate in the study. Exclusion criteria were students who werereluctant to complete the questionnaire and those who had acute and chronic mental disorders.

Statistical Analysis

After collecting the data, it was primarily entered into Excel 2013 software and then called in SPSS statistical software version 25. Frequency (percentage) and mean (standard deviation) were used to present the descriptive statistics. Independent t-test and one-way analysis of variance (ANOVA) were used for statistical analysis. Significance level was also considered 0.05.

Results

Out of 132 students participating in the present study, 88 (67.70%) were girls. The mean age of the participants was 20.45±1.51 years and most students (40.20%) were studying nursing (Table 1).

In Table 2, only the semester variable of students showed a significant difference in terms of satisfaction score, so that the higher the student's semester, the lower their satisfaction (P=0.002).

Table 3 lists the mean scores of each item in the questionnaire. The results of Table 3 show that the most satisfaction with the virtual training was related to the following: "Is it possible to review previous information through the electronic system",

Table 1: Quantitative and qualitative characteristics of the participants in the study.

Variables	Descriptive statistics
Age (year), Mean±SD	20.45±1.51
Gender, n (%)	
Male	44 (33.30)
Female	88 (67.70)
Semester, Mean±SD	2.52±1.79
Field, n (%)	
Nursing	53 (40.20)
Surgical technology	15 (11.40)
Public Health	29 (22.00)
Occupational Health Engineering	16 (12.10)
Environmental Health Engineering	9 (6.75)
Nutrition science	10 (7.55)
College, n (%)	
Nursing	68 (51.50)
Health	64 (48.50)
Semester, Mean±SD	2.52±1.79

Table 2: Comparison of the mean score of satisfaction with virtual learning by age, gender, semester, field and college of students

Variables	Test statistics	P-value
Gender	t=1.499	0.118
College	t=1.513	0.130
Age	F=1.512	0.574
Semester	F=5.689	0.002
Field	F=1.657	0.150

"The teacher uses PowerPoint and video in his e-teaching", "I have access to offline classes without problems and in the shortest possible time" and "I have quick and convenient access to training and announcements of the university regarding e-learning";the least satisfaction was related to the items: "Virtual education interests and motivates me", "In-person meetings are held to solve academic problems", "Content design is tailored to the interests and needs of students", "Needs assessment has been done before the start of virtual courses", "Working with e-learning system is enjoyable", "The amount of active teaching-learning method (such as group discussion) used by the teacheris appropriate", and "The amount of teacher supervision is suitable for the students' progress and carrying out their activities".

Discussion

In the last few decades, the medical education system has undergone significant changes with the advent of e-medicine and web-based medical education (15).

Based on the results of the present study, which was designed to measure students' satisfaction with virtual learning during the Covid-19 pandemic, the only relationship was between students' semester and the total satisfaction score, where the higher the student's semester, the lower their satisfaction was (P=0.002). The overall mean score of satisfaction with virtual learning was 3.02±0.84. Farsi et al. reported that the students's emester was the best predictor of students' satisfaction with the quality of the educational course, which isin line with the present study (16).

Since the Covid-19 outbreak, educational systems around the world, as well as in Iran, have been affected, leading to the absence of classrooms and the wider use of e-learning. Virtual learning is done through messengers,

Table 3: Mean score of questionnaire items based on participants' answers.

Items	Mean score
I have achieved educational goals appropriate to each lesson	2.81±1.19
Virtual interestsand motivates me	2.33±1.23
Virtual learning in terms of content is commensurate with my level of knowledge and abilities	2.92±1.22
Virtual learning is proportional to the number of courses in terms of content volume	2.65±1.16
Content is presented in a regular and logical manner	2.55±1.25
In terms of content, there is a connection with my prerequisite lessons	3.27±0.95
The content presented is organized using main and sub-titles	3.14±1.10
Content design is tailored to the student's interests and needs	2.61±1.11
Needs assessment was performed before the start of the virtual courses	2.45±1.14
It is a pleasure to work with an e-learning system	2.52±1.34
The time to use the content and learn it is adequate and sufficient	2.69±1.23
It is possible to review previous information via electronic system	4.01±1.13
The quality of educational materials in the electronic system is desirable	2.83±1.21
The number of assignments is proportional to the course level	2.89±1.21
The instructor uses PowerPoint and video in his / her e-teaching	4.05±1.02
Appropriate feedback is provided by the teacher	3.11±1.11
The time allotted to each lesson is commensurate with its difficulty	2.80±1.22
The teaching method used by the teacher is appropriate to the content	3.13±1.14
The rate of using the active teaching-learning method (such as group discussion) by the teacher is appropriate	2.60±1.14
The amount of teacher supervision in according to the students' progress in performing activities	2.65±1.15
The amount of electronic system used is appropriate for different styles of e-learning	2.92±1.13
The quality of course content (interactivity - multimedia - audio) is appropriate	3.05±1.17
The possibility of participating in virtual newsgroups has made me satisfied with the learning environment	2.94±1.22
The possibility of using online text conversations has resulted in the satisfaction of the learning environment	2.83±1.20
The possibility of using video conferencing has resulted in satisfaction with the e-learning environment	2.68±1.18
The possibility of providing feedback in interactions has led to satisfaction with the e-learning environment	2.80±1.16
The possibility of productivity inresponsibility in online interactions has led to satisfaction with the e-learning environment	2.83±1.09
The possibility of providing conditions for discussing course materials has led to my satisfaction with the e-learning environment	2.75±1.14
I am satisfied with the technical facilities and support of e-learning	2.92±1.24
The teacher uses communication tools (such as chat) for information	3.27±1.17
There isnecessary technical support for the system in case of problems	3.37±1.12
There are enough instructions in the system about how to use the system	2.73±1.34
Internet speed and bandwidth are suitable in e-learning systems	3.12±1.13
The amount of system support for the e-learning system is appropriate	2.73±1.21
There is access to a teacher in case ofcontent-related problems	2.27±1.37
In-person meetings are held to solve academic problems	3.30±1.32
I have the appropriate hardware facilities to view offline classes	3.16±1.34
I have the appropriate hardware facilities to view online classes	3.37±1.23
I have fast and easy access to offline classes	3.87±1.32
I have fast and easy access to online classes	3.42±1.19
I have fast and easyaccess to university trainings and announcements regarding virtual education	3.98±1.11
Total	3.02±0.84

social network,and various learning software and has its own advantages and disadvantages (17-19).

It seems that one of the main reasons for students' dissatisfaction with virtual learning is the absence of the teacher and face-to-face interaction, which is consistent with the results of the study of Altunay (20).

Another result of the present study was the lack of a statistically significant relationship between different fields of study and the mean score of virtual learning. However, in a study by Ansar et al. in Pakistan, there was a statistically significant difference between different fields of study and satisfaction level with virtual learning, which is not in line with the results of the present study(21).

The present study further showed that there was no statistically significant difference between male and female students in terms of satisfaction with virtual learning, which is consistent with the results of Basith et al. (22).

Jahanian et al. assessed e-learning in the e-learning centers of the University of Tehran, and found that in general, students of these centers did not have a positive attitude towards e-learning whereas they had access to the learning, resources, and facilities of these centers. Students have a definite satisfaction with these centers and the obligation to use this method. In our study, there was also students' satisfaction in accessing classes, resources, and a variety of educational tools. There were no students who believed that the design was not tailored to the needs and interests of students (23).

A study was conducted among faculty members and postgraduate students of the University of Tehran with the aim of assessing the perceived satisfaction, usefulness, and efficiency of virtual training workshops; according to its results, the ability to use virtual training and satisfaction with this method of training had the highest average. They also found out that due to the needs assessment of these workshops, the desire to participate and feel satisfied with the content, organization, availability of topics and its comprehensibility was seen among

the subjects of the present study, Students were relatively satisfied with virtual learning, and they argued that holding virtual courses was not based on previous needs assessments. And this probably had an effect on students' satisfaction, attention, and motivation (24).

Hamutoglu et al. evaluated the students' experience of a virtual learning environment and examined the two principles of satisfaction and preferences, where the features of recording lectures and educational and conceptual videos were satisfactory for the students and the most useful resources for students. However, according to our review, teachers' use of film, PowerPoint in e-teaching was associated with great satisfaction in students (25).

According to a study by Otarkhani et al., which measured students' satisfaction with e-learning systems, it was concluded that several factors affected students' satisfaction with e-learning such as flexibility of educational units, quality of Internet and technology, usefulness and ease of use, and university support services. It seems that addressing these issues in our study population can to some extent increase the general satisfaction of students, especially their motivation and attention to virtual education (26).

Based on the review of various articles, there was no potential relationship between semester and students' satisfaction level. However, in this study, it was observed semester had a significant inverse relationship with the student's satisfaction. The higher the semester of the students, the lower their satisfaction was. It is possible that paying more attention to details, attending and experiencing classes more and comparing the conditions and results with virtual education, has led to a stricter and critical attitude towards this issue.

Limitations and Suggestion

One of the main limitations of the present study was its small sample size. It seems that if such a study is performed in a larger sample size and environment, more accurate results

will be obtained.

Conclusion

The results of the present study showed a relative satisfaction with virtual learning; however, efforts to eliminate the shortcomings and deficiencies of virtual learning is essential. In general, due to the significant expansion of virtual education around the world, despite the short life of those efforts to improve the facilities and infrastructure of hardware and network, paying attention to the diversity and appeal of training using various solutions, providing appropriate content based on the results of needs assessment and more interactions between professors and students can lead to the development of this type of education and maximize student satisfaction.

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Author Contributions

HD: Supervision, Methodology, analysis and writing original draft preparation, EK: critical revision of manuscript, ArE: Investigation and data collection, FS: Study design and writing original draft preparation

Conflict of Interest: None declared.

Ethical Consideration

This research was approved by the Ethics Committee of Larestan University of Medical Sciences (Ethic No. IR.LARUMS. REC.1399.005).

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