Original Article

Virtual Education status from the Perspective of Students at Alborz University of Medical Sciences in the Covid-19 Pandemic Period

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Abstract

Background & Objective: Regarding the changes in the process of education and conducting e-learning system in the context of the Corona epidemic, there is an essential role of evaluating the education programs in improving its quality and effectiveness. This descriptive study was conducted to investigate the virtual education status from the perspective of students in Alborz University of Medical Sciences.

Materials & Methods: The statistical population of the study included 364 students studying at Alborz University of Medical Sciences in the second semester of the 2019-2020 academic year. A researcher-made questionnaire having four domains (lesson introduction, educational content, feedback and interaction, assessment and evaluation) was used as the instrument and 20 items were prepared based on a four-point Likert scale. The questionnaire validity was reviewed and confirmed based on the opinion of a 5-member panel with relevant experts. The reliability of the questionnaire was assessed using the test-retest method and Cronbach's alpha was 0.902.

Results: The results showed that the virtual education status in the domains of course introduction, educational content, interaction and feedback, assessment and evaluation is relatively favorable from the students' point of view. Comparing the level of satisfaction in different schools, the School of Pharmacy, and among the different levels, master students showed the highest level of satisfaction with the virtual education program among the schools based on the domains under study. There was no significant difference in the level of satisfaction between students from different schools and levels.

Conclusion: Generally, the level of satisfaction in terms of various domains was relatively favorable for students participating in the virtual education classes at Alborz University of Medical Sciences.

Introduction

Having the advancement and development of information technology, e-learning has emerged to provide educational services as a basic need and has a high speed of expansion in the field of teaching and learning; as there is an inevitable interaction between technology and learning (1, 2). Therefore, the quality and state of teaching and learning has been changed and e-learning as a new paradigm has been proposed with the focus on human beings as active learners and the reduction of time and place constraints as well as improving the quality of teaching and creating equal opportunities (1-4).

Considering the policies of the Ministry of Health and Medical Education on the development and strengthening of virtual education at the level of the country's medical universities and the need to plan and guide the schools and centers of virtual education in these universities, and also accelerating quantitative and qualitative development of e-learning, most universities are trying to increase the effectiveness of emerging technologies in their educational activities

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(1). On the other hand, due to the prevalence of Covid-19 disease in the country, the use of virtual educational systems and providing conditions as the main priority is in the universities of the country for holding e-learning classes through systems Including Navid software for university learning. However, it should be considered that like all educational activities, the need to evaluate and ensure the quality of e-learning programs is an integral part of e-learning and without evaluating e-learning from different aspects, this type cannot be considered the training desirable or improved its quality (2, 5, 6). Therefore, with the development of e-learning at the level of universities and higher education institutions in today's competitive environment, the issue of evaluating e-learning programs and measuring the success of these systems has become important, to determine the extent to which Implementation and implementation of e-learning courses have been successful (7).

To evaluate an e-learning course, it is necessary to identify the main and practical indicators of e-learning evaluation. In this regard, an action to evaluate and guarantee the quality of e-learning should be conducted within the framework of evaluation models to be effective (6). One of the appropriate models in this field is the evaluation model arising from the goal-based approach in which the goals of an educational activity are determined first and then in the evaluation process, the necessary studies are performed to achieve the set goals (7, 8).

Understanding which factors could be considered important from the users' point of view will help universities to adopt the right policy for investing in effective factors and to be more effective in redesign by eliminating ineffective factors (7). Evaluating the effectiveness of e-learning courses from the users' point of view can also be used to predict the results of these courses and to discover the strengths and weaknesses of the system to provide strategic solutions to eliminate defects and improve problems (8, 9).

According to the mentioned above, the study aimed to review the virtual education program of Alborz University of Medical Sciences using the e-learning evaluation criteria obtained from the review of existing models and also to consult with professors and elites in this field; To obtain a clear picture of the current situation of e-learning in the university, by presenting the results, a step towards planning to improve the quality of these courses, as well as adopting appropriate policies and strategies to improve the level of learning in the future. In this research, the elements that have been most considered by researchers in this regard, including the quality of educational content, the amount of teacher-student interaction, the amount of feedback, the quality of the electronic system, the level of active student participation and the quality of assessment and evaluation; A questionnaire (researcher-made) has been prepared based on the factors as the goals of designing a virtual education program.

Materials and Methods

This research is a descriptive cross-sectional study. To observe the ethical points, after obtaining the ethics license from the University Ethics Committee (IR.ABZUMS.REC.2020.105), informed consent was obtained, explaining the purpose of the study and the way it should be done. Students studying in 2020, including 3080 people and the sample size was 364 people based on Cochran's formula and Morgan's table. Due to the fact that the questionnaire was distributed online, the questionnaire was made available to all students studying in the schools of medicine, dentistry, pharmacy, health, paramedical and nursing of Alborz University of Medical Sciences in the academic year 2019-2020. While explaining the objectives of the study, available sampling was performed for the students who were willing to participate in the study completed and sent a questionnaire.

In this research, a researcher-made questionnaire was used based on the objectives of the

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virtual education program. The questionnaire was designed based on previous articles and according to the goals of the study and the system used in the evaluation of professors and virtual education of Alborz University of Medical Sciences. The face and content validity of the questions in terms of quality and quantity of the questionnaire was reviewed and approved based on the opinion of a 5-member panel of relevant experts. CVI and CVR values were measured based on Lawshe's opinion. Due to the number of panel experts based on the Lawshe table, values were accepted above 0.99 (10).

The reliability of the questionnaire was tested using the test-retest method and calculating the Cronbach's alpha coefficient. The questionnaire was completed by 15 students at two-week intervals and Cronbach's alpha coefficient was 0.902. The final questionnaire included four domains of course introduction (2 items), educational content (9 items), interaction and feedback (5 items), assessment and evaluation (4 items) and a total of 20 items that the e-learning program based on 20 indicators It was measured on a four-point Likert scale as a percentage (0-25%: undesirable, 25-50%: relatively desirable, 70-50%: desirable, 100-75%: very desirable) for students.

To collect data, the link of the electronic questionnaire was sent through the e-Poll system to all groups of students of Alborz University of Medical Sciences. At the beginning of the online questionnaire, participants were given the necessary explanations about the objectives of the research. It was also emphasized that all information related to them is preserved and participation in the study is optional. Students have the opportunity to answer for two weeks and during this period, twice to complete the questionnaire, the link was sent as a reminder in student groups. Questionnaires with a common IP as well as questionnaires that took less than 30 seconds to complete were excluded. The obtained data were analyzed by SPSS-21 software. In order to analyze the data, descriptive statistics of frequency distribution, mean percentage and standard deviation and also were used to compare the mean of the statistical sample of ANOVA test.

Result

In this research, during a period of two weeks to complete the online questionnaire, 364 people participated in the study and completed and sent the questionnaire. Table 1 shows the frequency distribution and percentage of students participating in the study in 6 schools separately. The highest participation rate was observed among medical students with 88 students (24.2%), paramedical students with 83 students (22.8%) and health students with 79 students (21.7%), and the lowest participation in nursing students with 34 students (9.3%) and the School of Pharmacy with 32 students (8.8%).

Table 1: Distribution of students at Alborz University of Medical Sciences in 2020 according to the school (n=364)

School	Number	Percentage
medicine	88	24.2
Health	79	21.7
Pharmacy	32	8.8
Dentistry	48	13.2
Nursing	34	9.3
Paramedicine	83	22.8
Total	364	100

Table 2 shows the frequency distribution and percentage of students by degree. The highest number of students participating in the study, respectively, were undergraduate students with 203

(55.5%), 134 (36.8%) of professional doctoral students, 17 (4.7%) of students in undergraduate Master's degree and 10 (2.7%) students are in associate degree.

Table 2: Distribution of students at Alborz University of Medical Sciences in 2020 according to the degree (n=364)

Degree	Number	Percentage
Associate	10	2.7
B.Sc.	203	55.8
M.Sc.	17	4.7
Doctor	134	36.8
Total	364	100

The mean and standard deviation of students' overall assessment of the status of virtual education in Alborz University of Medical Sciences was 41.44 ± 10.35 and separately in each of the domains of course introduction, 41.75 ± 17.07; Educational content, 46.71 ± 10.85; Interaction and feedback was obtained at 42.16 ± 13.15 and in the field of measurement and evaluation was obtained at 40.99 ± 14.30

Based on the results of one-way analysis of variance (ANOVA), the mean and standard deviation of the domains studied in the questionnaire (course introduction, educational content, interaction and feedback, assessment and evaluation) in different schools (medicine, health, pharmacy, dental, nursing and paramedical) were compared, the results of which are shown in Table 3. There is a significant difference between the schools in the domains of course introduction (p=0.005) and educational content (p=0.003) and the domain of assessment and evaluation (p=0.026).

With T-Test and Post-Hoc test in the field of course introduction, a significant difference was observed between health and nursing schools as well as between health and paramedical schools. In the field of educational content, there was a significant difference between the School of Health and the Schools of Paramedical and Pharmacy, and in the field of assessment, this significant difference was observed between the School of Health and Pharmacy.

Also, Table 4 shows the comparison of the mean and standard deviation of the domains studied in the questionnaire (course introduction, educational content, interaction, assessment and evaluation) in different levels (associate, bachelor, master and professional doctorate), based on ANOVA analysis. By performing the mentioned tests, it was found that in the field of course introduction, there is a significant difference between undergraduate and professional doctoral degrees.

Table 3: E-learning program and its domain among the schools at Alborz University of Medical Sciences in 2020

Domains	Paramedicine	Nursing	Dentistry	Pharmacy	Health	Medicine	p-Value*
	Mean and standard deviation						
Introduction	46.6±17.62	20.56±49.5	17.01±42.23	15.31±37.50	15.75±38.70	15.77±39.11	**0.005**
Content	50.42±11.31	11.24±47.55	10.26±44.89	9.73±53.89	9.94±42.44	10.13±47.01	**0.003**
Feedback	13.34±44.46	16.36±47.83	14.47±43.13	13.14±40.38	12.22±39.71	10.39±39.69	**0.087**
Assessment	14.56±43.1	14.60±42	12.88±37.50	14±46.31	13.34±37.14	14.90±43	**0.026**
Total	11.44±42.9	12.80±41.93	11.03±41.69	12.21±46.25	9.19±39.17	9.09±41.48	**0.530**

*According to the ANOVA; p-Value = 0.05.

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Table 4: E-learning program and its domain among different degrees at Alborz University of Medical Sciences in 2020

Domains	Doctor	M.Sc.	B.Sc.	Associate	p-Value*
	Mean and standard deviation				
Introduction	14.91±38.5	17.08±54.17	17.95±43.86	17.43±40.28	0.01
Content	10.58±47.5	8.30±46.53	11.30±46.33	8±45.83	0.922
Feedback	12.61±40.6	15.63±49.17	13.19±42.8	16.18±40.7	0.386
Assessment	14.10±41.2	12.88±50	14.53±40.48	11.78±38.28	0.254
Total	10.14±42	7.10±45.94	10.84±41.09	2.60±36.88	0.627

*According to the ANOVA; p-Value = 0.05.

Discussion

Having the implementation and implementation of e-learning courses, the issue of evaluating e-learning programs and measuring the success or failure of these programs is very important and due to the complexity and the existence of indicators and important factors and an effective key in e-learning, designing and developing appropriate tools for evaluating e-learning is very important in order to improve the level of distance learning (2, 11). In this study, using a researcher-made questionnaire consisting of 20 items, to evaluate and evaluate the status of virtual education in the context of the corona epidemic from the perspective of students in the second semester of the academic year 1399-99 in Alborz University of Medical Sciences based on lessen introduction, educational content, interaction, assessment and evaluation, are discussed. The results showed that the status of e-learning from the students' point of view, in terms of each of the four domains (lesson introduction, educational content, feedback and interaction, assessment and evaluation), is relatively desirable.

The desirability of virtual education for students in the research conducted at Ferdowsi University of Mashhad is moderate (12). Also, the results of the research of Rastegar et al. (13) and Badrian et al. (14), showed that the virtual education program in some technical fields in Khajeh Nasir al-Din Toosi University has the necessary desirability, and that is inconsistent with the results of the current. However, Yassini's results at the University of Tehran showed that the effectiveness of the virtual education course was unfavorable for students (15). Of course, it should be noted that one of the reasons for the difference between the results of this study and the above research, maybe due to differences in medical courses with other courses and the practical nature of the courses. In a study conducted in the Virtual School of Hadith Sciences conducted by Noorollahi et al., Similar results were obtained and the desirability was evaluated as relatively desirable (16).

Regarding the introduction of the course, the level of satisfaction of the students of all six schools was relatively desirable. In the field of course introduction, there was a significant difference in different stages; However, in the domains of educational content, interaction and evaluation, this relationship was not significant and there was no difference in terms of the degree of desirability and satisfaction of the studied domains in students of different levels.

The highest level of satisfaction in the field of course introduction was obtained among master, bachelor, associate and professional doctoral students, respectively. One of the reasons for the difference in student satisfaction in this domain between colleges is the loading or not loading of the lesson plan in the course introduction section of the Navid system and attention to the number of contents and their loading time that need to be further studied in It has a context. Although there was no difference between the opinions of students of different levels in other fields; however, graduate

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students in the field of assessment and evaluation had the highest level of satisfaction, which can be due to the smaller number of graduate students and also the greater interaction of these students with professors.

Regarding the uploaded educational content, the level of satisfaction of students of medical, health, dental and nursing schools was relatively desirable and the level of satisfaction of students of pharmacy and paramedical schools was desirable. In terms of the results of recent schools, these results were consistent with the results of the research of Fathi et al. At Ferdowsi University of Mashhad (12). Differences in the nature of practical courses and the extent of students' interaction with professors in different disciplines can be the reasons for this difference. However, investigating these causes in different schools requires further investigation and interviewing student representatives in different disciplines in each school.

A survey of students on virtual education in Tehran universities showed that they did not benefit from appropriate educational content (17). Also, Noorollahi et al. (16) similar to the present study in their research stated that from the students' point of view, the design of educational content is estimated at a relatively desirable level. Yassini's research also showed that in the eyes of students, the effectiveness of educational content has been optimal (15).

There are differences between the number and content of the questions presented in the scope of this research and the questions of the research questionnaires. This is one of the limitations of this study, which makes it difficult to properly compare the findings. It should also be noted that the level of student participation in this study was different in each school, which due to the availability of sampling method, one of the reasons can be a difference in the characteristics of school members in He pointed out the schools, the way of informing, the possible approaches and strictures in each of the schools, and the possibility of non-participation of students who were working in the clinical department in hospitals and did not have enough time to participate in the survey.

Hasin et al. (18) also evaluated the educational content element of the course as desirable. Also, the results of Rahmani's research (19) were consistent with the opinions obtained from students of the School of Medicine, Health, Dentistry and Nursing and were evaluated as relatively desirable. Aghasiri, in a study of virtual education in Tehran universities, showed that students had a favorable opinion about the level of satisfaction with educational content (20). However, the study of the results of the research conducted at Sistan and Baluchestan University in terms of educational content, the situation was unfavorable, which was inconsistent with the results of this research (2). Asadi et al. Also evaluated the educational content of virtual courses at the University of Tehran as relatively desirable in some courses and undesirable in others (16).

In terms of interaction and feedback, there was no significant difference between the levels of the student satisfaction in different schools and was generally relatively desirable. In a study conducted by Fathi et al. At Ferdowsi University of Mashhad, the feedback provided was moderately effective (12). Research conducted by Song, Salim, and Nichols also showed that there was satisfaction with the feedback provided and that it affected learners' perceptions of e-learning (21-23). It can be said that the results of Yassini's research on the effectiveness of feedback provided in e-learning are similar to the present study and are estimated to be moderate (15). Also, the results of this research are consistent with the results of Noorullahi's research in terms of interaction dimension (16). Hasin et al., Similar to the present study, considered the element of interaction to be relatively desirable (18).

Also, in the research of Rahmani et al. In examining the scope of interaction, providing support services and realizing the consequences, a relatively desirable result was obtained (19), however, Ghaedi et

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al., in evaluating the e-learning program from the perspective of computer engineering students of the University of Science and Technology, evaluated the interaction method in e-learning as weak (24). Paul et al. showed that the use of the forum is one of the best items in the virtual education course (25), which it seems that professors have not used that a lot at Alborz University of Medical Sciences.

In terms of measurement and evaluation, comparing the level of desirability in different schools, has shown a significant difference in them, which can be attributed to differences in school members and the level of student participation in each school. In general, the level of satisfaction is estimated to be relatively good and does not agree with the results of research conducted by Ismaili and McGray that the situation was unfavorable (2, 26).

Also, the results of the research of Fathi et al. Indicate that students' opinions about the evaluation dimension of the virtual education course are unfavorable (12). Ghaedi et al. Also showed that the method of evaluating students in the virtual environment is weak (24). Yassini's research also showed that the evaluation of virtual education courses was not effective for students (15). Th e results of the present study are consistent with the results of Noorullahi's research in the Virtual School of Hadith Sciences and Rahmani Research, in terms of measurement and evaluation, and have been evaluated at a relatively desirable level (16, 19). It should also be noted that the results of the present study were obtained during the corona epidemic and in the context that the entire university education was implemented in the context of the e-learning system. It should also be noted that the results of the present study were obtained during the corona epidemic and in the context that the entire university education was implemented in the context of the e-learning system. Comparison of the mean and standard deviation of the studied domains in different educational levels (associate, bachelor, master and professional doctorate) shows that in general there is no significant relationship and was evaluated at a relatively desirable level in all levels; however the percentage of satisfaction of graduate students was higher than other levels.

Conclusion

According to the results, the status of e-learning in terms of the four domains studied (lesson introduction, educational content, interaction, assessment and evaluation), from the students' point of view, is relatively favorable. Considering the importance and necessity of implementing virtual education programs in universities, it is important to try to identify the strengths and weaknesses of the university's virtual education situation and provide solutions to solve problems and improve the program.

Considering the relative desirability of the virtual education situation, it can be said that in addition to offline meetings and uploading educational content, holding online or face-to-face meetings to solve students 'problems can increase the quality of students' learning and improve the educational conditions of virtual classes. Professors in cyberspace should be more responsive to students' problems and their questions and special meetings should be considered to resolve problems. Also, in terms of measurement and evaluation, it seems that a more suitable platform is provided for holding online exams, increasing the security of exams and preventing fraud. It is also important to note that providing solutions to increase interaction and feedback and the use of the forum can be effective in improving the quality of e-learning.

One of the limitations of the research is the mere use of self-report questionnaires to evaluate variables, review and cross-sectional collection of data and the lack of cooperation of some students in answering the questions of the questionnaire. Also, there were differences between the number and content of the questions presented in each domain in this research and the questions in the previous

research questionnaires; the availability of sampling method is another limitation of the study.

Conflicts of Interest

The authors declare that there are no conflicts of interest.

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