



Assessing the Quality of E-learning Courses during the COVID-19 Pandemic from the Perspective of Nursing Students of Islamic Azad University, Tehran Branch, Iran

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Abstract

Background: The present study aims to evaluate the quality of online teaching courses during the COVID-19 pandemic from the perspective of nursing students of Islamic Azad University, Tehran Branch, Iran.

Materials and Methods: The present cross-sectional study was performed at Tehran Islamic Azad University in 2021. Simple random sampling was used to select nursing students. Data collection was carried out using baseline characteristics and a valid 13-item questionnaire. Nursing students were asked to rate the items based on the five-point Likert scale. The questionnaires were distributed among nursing students by the researchers (through telephone interviews, web-based questionnaires, and face-to-face visits in hospitals and colleges), and collected after completion.

Results: A total of 900 nursing students participated in the study. The highest average satisfaction with the quality of the teaching courses was related to the items of clear information about the objectives and lesson description at the beginning of the course, organization and logical sequencing of content to achieve the teaching objectives, and the appropriateness of assignments and online tests to the objectives and content of the course. The lowest level of satisfaction was related to the items of technical and infrastructural problems, the mismatch between the volume of course content and the number of courses, and dissatisfaction with the contents, assignments/tests, and the feedback. There was a statistically significant relationship between gender, school year, history of attending face-to-face and online classes, and commenting on the quality of online teaching ($P < 0.05$).

Conclusion: Students had above-average satisfaction with the quality of online teaching. Satisfaction was higher in women, third-year students, and students who had the experience of attending face-to-face classes than other students.

Key Words: E-learning, Nursing students, COVID-19, Quality.

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1- INTRODUCTION

Coronavirus disease 2019 (COVID-19) is a contagious disease caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). The first known case was identified in Wuhan, China, in December 2019. The disease has since spread worldwide, leading to an ongoing pandemic (1, 2). The COVID-19 pandemic has introduced Iranian students to online teaching; a concept that had not been considered seriously by students and even university officials and higher education practitioners before (3, 4). Online teaching is a form of educational technology based on values such as being person-centered, independent, self-directed, and active learning. However, every society uses this type of learning based on its specific social and cultural conditions (3).

Online teaching refers to all teaching/learning forms that are implemented and supported electronically. This method of teaching aims to build knowledge related to personal experience. Information and communication technologies, whether on- or offline, are considered to be the main means of facilitating e-learning (6). The onset of the coronavirus pandemic and the need to prevent its spread by closing classrooms in universities raised the issue of online teaching in Iranian universities. Online teaching and e-classes, which had not been considered in the Iranian educational system until then, suddenly became the focus of attention. At the same time, university officials thought of launching online teaching systems for their students and holding classrooms in the context of online teaching systems. Although with the prevalence of coronavirus, medical teaching was initially offered in the context of social networks and irregularly, medical universities were eventually required to use the NAVID educational system (special software for university

learning) and professors and students could benefit from its capabilities. This system was redesigned and used in some universities; however, it didn't reach nationwide prevalence in all medical universities. This system is not ideal yet and does not respond to the frequent referrals of students and professors across the country, and they face problems such as slow Internet speed, limited uploading space, and low professor-student interaction (7-9). Despite the widespread use of online teaching in universities, there are challenges in many teaching centers. For example, medical students, including nursing students, need to take internships in clinical settings. This has confronted university administrators with ethical challenges as to whether students should attend the clinical setting or not. On the other hand, students are worried about their future careers and may face financial problems (10).

Measuring the level of academic satisfaction can be an effective indicator in optimizing students' performance such as commitment to university goals, successful completion of studies, adaptation with the university, and overall satisfaction and success of universities. Academic satisfaction can also be an effective factor in measuring the quality of students' learning and teaching (11, 12). The experience of remote teaching and IT-related tools is one of the teaching goals that has played an effective role during the COVID-19 pandemic. It can also be said that after approximately two years since the COVID-19 outbreak, electronic teaching is considered the most important teaching method in the current situation. It has advantages and disadvantages for students and professors and their opinions vary. There have been few studies on students' perceptions of the quality of online teaching and satisfaction with this teaching method (13-18), and medical students and colleges may face various

challenges in teaching during the COVID-19- pandemic. Therefore, it is necessary to review and monitor the quality of teaching and the level of students' satisfaction with the online teaching methods and the processes in general. The aim of the present study is to evaluate the quality of online teaching courses held during the COVID-19 pandemic from the perspective of nursing students of Islamic Azad University, Tehran Branch in Tehran, Iran.

2- MATERIALS AND METHODS

2-1. Method

This cross-sectional study was carried out at the Islamic Azad University of Medical Sciences, Tehran Branch, Tehran, Iran in 2021. The study population consisted of all nursing students of Islamic Azad University of Medical Sciences, Tehran Branch. A total of 900 students were selected based on purposive simple random sampling.

2-2. Statistical population

After consulting a statistical advisor, 900 nursing students were selected using the simple random sampling method considering a 5% error rate and 90% confidence interval. All the nursing students who were studying at the Tehran Islamic Azad University Branch of Medical Sciences were eligible to enter the study. Exclusion criteria included unwillingness to participate in the study and incomplete questionnaires.

2-3. Data Collection

To obtain information on the evaluation of virtual teaching during the COVID-19, a valid 13-item questionnaire was used (16). The questionnaires were distributed among students by the researcher (through telephone interviews and web-based questionnaires), after providing the necessary explanations. The questionnaires were collected after completion.

2-4. Ethical consideration

Participants' personal information was extracted as a whole and providing names and surnames was not mandatory. Participation in the study was optional and the students were assured that the information would be extracted in general and their names would not be disclosed. The study results were made available upon request.

2-5. Reliability and Validity

The validity of the questionnaire was confirmed by the content validity method through consultation with experts (two faculty members of medical education and three members of the pediatric faculty). Cronbach's alpha coefficient of 89% was calculated to determine reliability, indicating appropriate internal consistency of the questionnaire items.

2-6. Data Analysis

Data analysis was performed using SPSS software version 16.0. Descriptive analysis (frequency and percentage indices) was performed to describe the study variables. The Chi-square test, independent t-test, and ANOVA test were also used to compare the frequency of responses to different questions. The p-value < 0.05 was considered as the significance level.

3- RESULTS

A total of 900 nursing students expressed their opinions about the quality of online teaching courses held in general and specialized nursing courses in the second semester of the 2021 academic year. A total of 86% of participants were female, 55.8% were third-year students, and 91.7% were single. A total of 89.3% of students had participated in at least three online semesters (**Table.1**). The highest average satisfaction with the quality of the teaching courses was related to the items of informing about the objectives and lesson description at the beginning of the course (4.35 ± 0.981),

organization and logical sequencing of content to achieve the teaching objectives (4.20 ± 0.952), and the applicability of assignments and the online tests to the objectives and lesson content (4.09 ± 0.989), which included items 1, 2, and 11 (**Table.2**). The results also showed the lowest satisfaction level was related to items of technical and infrastructural

problems (3.66 ± 1.270), the mismatch between the course content and the number of courses (3.88 ± 1.165), and dissatisfaction with the contents, assignments/tests, and the feedback (3.91 ± 1.148), which included items 10, 3, and 7. The frequency percentage of students' responses to each of the items is shown in **Table.2**.

Table-1: General characteristics of participants (n=900).

Variables	Sub-group	Number	%
Gender	Male	126	14
	Female	774	86
Marital status	Single	825	91.8
	Married	74	8.2
Academic year	Second year	398	44.2
	Third year	502	55.8
Number of virtual semesters	1	4	0.4
	2	84	9.3
	3	804	89.3
	4	8	0.9

Table-2: The students' opinions on the quality of E-learning courses during the COVID-19 period (%).

Items	Totally agree	Agree	No comments	Disagree	Completely disagree
Lesson objectives and descriptions were clearly communicated at the beginning of the course.	2.9	3.5	8.6	25.9	59.1
The content presented was reasonably organized and sequenced and helped to achieve the educational goals during the course.	2.3	4.2	11.1	36.1	46.3
The volume of course content was proportional to the number of courses.	4.9	9.9	16	31.4	37.9
The time allotted to each topic was appropriate.	4	7.6	16.4	31.9	40.1
The quality of the uploaded educational content (audio-video) was good.	4.2	7.2	13.9	28.7	45.9
The presentation method (how students participate and interact, provide examples and assignments, etc.) was appropriate.	4.4	6.5	15.2	32.1	41.8
The sum of the contents, assignments/tests and feedback, provided effective learning and sufficient motivation to study.	4.8	7.4	19.1	28.6	40
The assignments presented in the virtual course were reasonable and transparent.	3.9	6	18.7	30.2	41.2
It was possible to respond to tasks on time.	2.9	5.4	19.6	29.7	42.3
Technical and infrastructural problems disrupted the learning process during the course.	7	14.5	18.3	26.3	33.9
The assignments and virtual tests were appropriate to the objectives and content of the course.	2.5	4.2	17.2	33.8	42.3
To succeed in the exam, it is necessary to participate in virtual training courses.	5.2	5.2	15.5	27.4	46.8
Overall, the quality of education in this course was virtually satisfactory.	6	6.5	11.5	35.2	40.3

The t-test showed a statistically significant relationship between sex and commenting on items 2, 4, 6, 7, and 11 ($P < 0.05$), so that the female students had a more positive opinion in this case than male

students (**Table.3**). The t-test also showed no significant relationship between marital status and comments on the 13 items ($P > 0.05$).

Table-3: Relationship between the proportion of E-learning courses content and students' gender.

Item	Gender	Number	Mean	SD	t	*P-value
2	Male	122	4.29	.944	-.968	0.001
	Female	761	4.36	.987	-1.141	
4	Male	119	4.01	.907	.449	0.002
	Female	764	3.96	1.135	.528	
6	Male	124	4.06	.922	.575	0.024
	Female	764	3.99	1.136	.667	
7	Male	123	3.83	.981	-.886	0.021
	Female	765	3.93	1.173	-1.008	
11	Male	122	4.11	.861	.170	0.019
	Female	765	4.09	1.008	.190	

*Independent t-test. SD: Standard deviation.

The ANOVA test showed a statistically significant relationship between students' comments on items 1, 3, 4, 10, 12, and 13 and the number of semesters during which students were present in class ($P < 0.05$), so

that the percentage of satisfaction with the quality of online teaching was higher in students who experienced more face-to-face classes than other students (**Table.4**).

Table-4: Students' opinions of 13 items regarding the quality of E-learning courses according to the number of semesters.

Item	Term	Number	Mean (SD)	df (between group)	F	P-value
1	1	266	4.27 (1.050)	5	2.256	0.47
	2	355	4.39 (0.946)			
	3	62	4.31 (1.049)			
	4	111	4.34 (0.939)			
	5	83	4.52 (0.875)			
	6	8	3.50 (0.756)			
3	1	265	4 (1.092)	5	5.729	0.001
	2	355	3.92 (1.144)			
	3	61	3.52 (1.324)			
	4	111	3.76 (1.193)			
	5	83	3.88 (1.214)			
	6	8	2.50 (1.069)			
4	1	265	4.02 (1.103)	5	4.321	0.003
	2	355	4.06 (1.019)			
	3	62	3.52 (1.340)			
	4	110	3.82 (1.167)			
	5	83	3.99 (1.153)			
	6	8	3.38 (0.744)			
10	1	265	3.25 (1.320)	5	20.249	0.000
	2	359	3.83 (1.102)			
	3	63	4.03 (1.231)			
	4	111	4.13 (10.71)			
	5	83	3.25 (1.614)			

	6	8	3.88 (0.641)			
12	1	268	3.96 (1.092)	5	3.071	0.036
	2	358	4.14 (1.140)			
	3	63	3.76 (1.422)			
	4	111	4.05 (1.017)			
	5	83	4.25 (1.146)			
	6	8	3.62 (0.916)			
13	1	268	4.06 (1.084)	5	4.284	0.006
	2	357	4.04 (1.093)			
	3	64	3.56 (1.367)			
	4	113	3.77 (1.316)			
	5	83	4.08 (1.150)			
	6	8	3.62 (0.744)			

Df: Degree of freedom, SD: Standard deviation.

The ANOVA test also showed a statistically significant relationship between students' comments on items 1, 3, 7, 9, and 10 and the number of semesters during which students attend online classes

($P < 0.05$) so that the percentage of satisfaction with the quality of online teaching was higher in students who had experienced more online classes than other students (**Table.5**).

Table-5: Students' opinions of 13 items regarding the quality of E-learning courses in terms of the number of virtual semesters.

Item	Term	Number	Mean (SD)	df (between group)	F	P-value
1	1	4	4 (2.000)	3	5.418	0.001
	2	83	4.47 (0.902)			
	3	790	4.35 (0.973)			
	4	8	3 (1.069)			
3	1	4	4.75 (0.500)	3	9.306	0.000
	2	83	3.52 (1.272)			
	3	788	3.92 (1.142)			
	4	8	2.62 (1.188)			
7	1	4	2.25 (1.893)	3	4.305	0.020
	2	84	3.88 (1.113)			
	3	792	3.92 (1.144)			
	4	8	4.38 (1.061)			
9	1	4	2.50 (1.915)	3	3.481	0.023
	2	84	3.95 (1.108)			
	3	792	4.05 (1.036)			
	4	8	4.25 (0.707)			
10	1	4	5 (0.000)	3	5.300	0.001
	2	84	4.05 (1.231)			
	3	7938	3.60 (1.269)			
	4		4.25 (0.886)			

Df: Degree of freedom, SD: Standard deviation.

The ANOVA test also showed a statistically significant relationship between students' comments on items 5 and 10 and the academic year ($P < 0.05$), so

that the percentage of satisfaction with the quality of online teaching was higher among third-year students than other students (**Table.6**).

Table-6: Students' opinions of 13 items regarding the quality of E-learning courses by students' academic year.

Item	Year	Number	Mean (SD)	df	F	P-value
5	2	383	3.95 (1.162)	1	5.884	0.015
	3	501	4.13 (1.089)			
10	2	387	3.53 (1.332)	1	7.080	0.008
	3	502	3.75 (1.213)			

Df: Degree of freedom, SD: Standard deviation.

4- DISCUSSION

The aim of the present study was to evaluate the quality of online teaching courses held during the COVID-19 pandemic from the perspective of nursing students of Islamic Azad University, Tehran Branch, Iran. The findings show that students participating in online teaching courses were relatively satisfied with the online teaching method in the university. On the other hand, the level of satisfaction with the quality of online teaching was higher in women, third-year students, and students who had more face-to-face classes. Although the coronavirus pandemic imposed many problems on all indicators of society, including public health, it led to the flourishing of some capabilities in the country, including the pervasiveness and prosperity of online teaching throughout the country.

A successful online teaching system depends largely on students' satisfaction with this teaching method. Various studies have investigated the challenges of online teaching in universities. Keller et al. compared the concerns of online professors at universities in Argentina and Sweden. They found that Argentine professors, compared to Swedish professors, considered student communication and active student participation to be an important motivating factor (19). In a study of the main issues of university online teaching, Stodel et al. identified five major areas of neglect in this type of teaching: lack of in-depth conversation, lack of creative ideas, lack of

understanding and being understood by others, lack of knowing others, and ultimately, and role modeling for behavior and learning (20). According to professors, the biggest online teaching drawback is the lack of communication with the teachers (21). The findings of the present study show that the lowest level of students' satisfaction with the quality of online teaching was related to items of technical and infrastructural problems, the mismatch between the volumes of course content and the number of courses, and dissatisfaction with the contents, assignments/tests, and feedback. In another study, one of the main challenges mentioned by students was the lack of proper infrastructure.

Students referred to cases such as sending bulk content in an inappropriate time period, lack of high-quality and interactive content in some courses, the mismatch of content, lack of simulation of teaching content with face-to-face classes, and accumulation of teaching content around exam time (15). The findings of the present study show that students were more satisfied with having clear information about the objectives and lesson descriptions at the beginning of the course, organization and logical sequencing of content to achieve teaching objectives, and the applicability of assignments and online tests to the objectives and course content as compared to other items. Zolfaghari et al. (2009) referred to the benefits of online teaching such as increasing the quality of learning and student learning, easy access to a large amount of global information and

knowledge, fast and timely access to information, reducing teaching costs, improving the quality of accuracy of textbooks and scientific materials, and scientific promotion of students and instructors (22). Jefferson and Arnold (2009) showed that an appropriate teaching approach should have the characteristics of two-way professor-student interaction and the formation of teaching working groups and use appropriate teaching technologies such as using the web environment and information technology in teaching environments (23). Studies in Saudi Arabia and Pakistan have shown that the use of video conferencing and online teaching has had a positive effect on student satisfaction (24, 25).

Despite the advantages and disadvantages of e online teaching, due to the COVID-19 pandemic conditions, many universities in Iran and around the world have used online teaching independently to provide learning to learners. Many experts believe that e-learning is at best a complement to traditional methods and brings a more effective experience for the learner (7-9). With regard to medical education, the development of online simulators in the field of medicine, the promotion of online hospitals and telemedicine, providing online cases, and holding online exams can help promote online teaching (26).

5- CONCLUSION

The results of the present study showed that the students had above-average satisfaction with the quality of online teaching and the level of satisfaction was higher in women, third-year students, and students who experienced more face-to-face semesters than other students. The findings showed that students had higher satisfaction with the items regarding clear information about the course objectives and description at the beginning of the course, organization and logical

sequencing of the content, and the applicability of the assignments and the online tests to the course objectives and content. The findings of the present study also showed that the lowest level of students' satisfaction with the quality of online teaching was related to items of technical and infrastructural problems, the mismatch between course content and the number of courses, and dissatisfaction with timely feedback on assignments and students' questions.

6- CONFLICT OF INTEREST: None.

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