







Satisfaction of the Students of Ghaen and Ferdows Medical Schools with Virtual Education and the Effective Factors during COVID-19 Epidemic

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Abstract

Background: The spread of Coronavirus Disease 2019 (COVID-19) caused restrictions and shutdowns affecting the economic situation, employment, and the educational needs of society. Meanwhile, the universities of medical sciences have faced serious problems in education.

Objectives: The present study aimed to assess the satisfaction of the students of Ghaen and Ferdows medical schools with virtual education during the COVID-19 epidemic. In addition, the factors effective in this satisfaction are investigated.

Methods: This descriptive-analytical (cross-sectional) study was conducted at Ghaen School of Nursing and Midwifery and Ferdows School of Paramedical Sciences and Health, Iran, using a researcher-made questionnaire provided to students online. The study population was all the students of these two faculties. The sample size was estimated as 285 people using the Morgan table, and 296 individuals participated in the study. Data were collected and analyzed using descriptive and inferential tests by the SPSS software version 24.

Results: Our findings showed that most (40.2%) students had moderate satisfaction, and only 5.74% had very high satisfaction with virtual education. The mean satisfaction of female students was higher than males without a statistically significant difference ($P = 0.4$). Moreover, the results of the analysis of variance revealed that the level of the academic satisfaction of students is different in distinct academic levels ($P = 0.007$). In addition, Pearson's correlation coefficient indicated a significant positive correlation between age and academic satisfaction score ($P = 0.001$, $r = 0.185$).

Conclusions: Overall, the results of the present study showed that less than half of the students were moderately satisfied with virtual education. According to the students, this dissatisfaction mainly results from the lack of a suitable infrastructure for virtual classes. Usually, satellite branches are weaker than the main university in terms of facilities and equipment, and solving these problems requires the special attention of education officials and managers.

Keywords: COVID-19, Satisfaction, Students, Virtual Education

1. Background

The spread of Coronavirus disease 2019 (COVID-19) throughout the world and Iran affected diverse populations, organizations, and departments. The imposed restrictions and closures caused many of them to run into economic, employment, and educational problems. Universities of medical sciences, which play an essential role in providing human resources and healthcare staff, faced more serious challenges (1). However, due to the novelty

of this disease and the limited treatment methods, restriction and closure approach is the best way to fight this virus and prevent its spread (2).

Many countries have adopted a virtual education system for students to solve a part of challenges (3). Virtual education is indeed the use of electronic systems and devices, such as the internet, computers, and online magazines, which can provide better and more accessible learning along with saving time and money (4). Although vir-

tual education is of great importance in the current pandemic situation because of the need to continue the education process (5), it has limitations. For example, it lacks face-to-face communication, human relations, and emotional interactions in the in-person classroom. In addition, the supply and demand system of higher education does not yet have a precise understanding of virtual education environments and is not familiar with their capabilities (6). In the universities of medical sciences, many disciplines require internship periods in clinical settings, creating many challenges for university administrators and officials (1). However, in the present era, virtual education has created a fundamental change in education employing advanced information technology tools. Therefore, many educational institutions and centers have turned to this method to increase their success rate and improve their service quality.

One of the most critical advantages of this method is to provide educational services based on the needs of students, making it possible for individuals to study efficiently regardless of time and place constraints (6). In the current situation, many professors and students are excited to move toward virtual education and electronic learning (e-learning) worldwide. Due to the present situation, faculties have started curricula to provide online and virtual teaching. The most significant achievements of this method include elevating the quality of learning, easy access to a large amount of information in a very short time, reducing some educational costs, improving the quality and accuracy of curriculum, and the scientific advancement of students and instructors (7, 8).

Although several studies have shown the benefits of virtual education, the development of virtual education will not be successful without considering the attitudes of users and the needed educational infrastructures. Success in virtual education, similar to any other information system, depends to a large extent on the satisfaction and willingness of students to use it (8, 9). Academic satisfaction of students is their satisfaction and pleasure with their experiences and role as a student (10). It is one of the critical and effective indicators of optimizing the performance of students in areas such as successful education completion, commitment to goals as a student at university, and life satisfaction. Furthermore, it is considered an indicator of the quality of learning and education in students (10, 11).

In a study on students' satisfaction with the quality of courses and virtual education during the COVID-19 pandemic in Tehran province, Farsi et al. concluded that the quality of education courses was satisfactory for 66.2% of students. These authors demonstrated that 56.3% of the participants had a moderate satisfaction with virtual education (12). However, in another study, Yarizanganeh

showed that students' satisfaction with the quality of virtual courses during the COVID-19 pandemic was not desirable (13). In a similar study, Osmani indicated that the satisfaction of most (42.2%) students with virtual education was at a moderate level (14).

Various factors can affect the academic satisfaction of students. These factors entail flexible planning of classrooms, speed, quality, internet access, a suitable system for easy and efficient usage, appropriate and timely support for students, prompt response to students through professors and educational consultants, and making up-to-date and relevant resources and materials available. Therefore, considering the pivotal role of students in the virtual education system, gaining their satisfaction as the final customers is one of the primary priorities of the managers and designers of this method and is one of the most critical factors for its success.

2. Objectives

Given the importance of the issue, limited research in this field, and the current virtual nature of universities, the present study aimed to investigate the level of satisfaction among the students of Ghaen and Ferdows medical schools with virtual education. Furthermore, the factors that influence this satisfaction during the COVID-19 pandemic are assessed.

3. Methods

This descriptive-analytical (cross-sectional) study was performed on the students of Ghaen School of Nursing and Midwifery and Ferdows School of Paramedical Sciences and Health, Iran. The study population included all continuous bachelor students, discontinuous bachelor students, and associate students of these faculties. The sample size was estimated as 285 people using the Morgan table, and 296 participants were finally selected by the convenience sampling method. Full explanations regarding the study objectives and how to respond to the questionnaire for the units under study were provided using electronic content. After virtually obtaining informed consent from the students, the questionnaire link previously designed on the site was provided to the students using social networks, such as Telegram and WhatsApp.

A researcher-made tool was used to collect the required data. This questionnaire was prepared using library resources and the views of educational experts and was then provided to eight experts in medical education, nursing, and epidemiology. The questions were evaluated in terms of content validity index (CVI) and content validity rate and

were confirmed based on obtaining the minimum needed scores. Moreover, the mean CVI score for this questionnaire was determined as 0.81. Next, the questionnaire was sent to 20 students in two stages with an interval of two weeks to investigate correlation and reliability, which resulted in a Cronbach's alpha coefficient of 0.97. This questionnaire consisted of 38 questions about the level of satisfaction with virtual education scored based on a Likert scale (very high = 4, high = 3, medium = 2, low = 1). Therefore, the higher the individual score, the higher the level of satisfaction.

Based on the opinions and choices of students, some educational problems with the highest frequency and percentage were also reported. A demographic information checklist was used to determine and examine the demographic indicators related to the research, such as age, gender, level of education, economic status, and faculty. In this research, the data were collected and analyzed utilizing the SPSS software version 24 by descriptive statistics, Pearson's correlation coefficient, Chi-square test, independent t-test, and the analysis of variance (ANOVA) at the α level of 0.05.

4. Results

The results of the current study showed that the mean age of participants was 22.57 ± 5.29 years, most of whom (55.1%) were female. Demographic characteristics are presented in Table 1. In addition, the findings showed that the mean and standard deviation of the score of satisfaction with virtual education was 76.22 ± 41.89 with a range of 38 - 152. Most students (40.2%) were moderately satisfied, and only 5.74% were strongly satisfied with virtual education (Table 2). The mean satisfaction of women was higher than that of men. However, there was no statistically significant difference in this regard ($P = 0.4$). Furthermore, ANOVA results showed that academic satisfaction with virtual education was different among students ($P = 0.007$). In this regard, Scheffe's posthoc test revealed that the mean score of discontinuous bachelor students was higher than that of other educational levels (91.23).

The Pearson's correlation coefficient showed a significant positive correlation between age and academic satisfaction score ($P = 0.001$; $r = 0.185$). In addition, a significant relationship was observed between the faculty of students and their academic satisfaction score ($P < 0.05$). The mean score of academic satisfaction in the students of Ferdows School of Paramedical Sciences and Health was higher than those of Ghaen School of Nursing and Midwifery (Table 3).

Some of the main problems of virtual education mentioned by students were the lack of face-to-face meetings

Table 1. Frequency and Percentage of Demographic Variables^a

Variables	Values
Gender	
Male	133 (44.9)
Female	163 (55.1)
Level of education	
Associate	43 (14.5)
Discontinuous bachelor	17 (5.7)
Continuous bachelor	235 (79.4)
Economic status	
Poor	36 (12.2)
Moderate	208 (70.3)
Good	52 (17.6)
Faculty	
Ghaen School of Nursing and Midwifery	201 (67.9)
Ferdows School of Paramedical Sciences and Health	95 (32.1)
Paramedical	110 (37.2)
Health	25 (8.4)
Age	22.57 ± 5.297 (18-48)
Academic satisfaction score	76.41 ± 22.89 (38-152)

^a Values are expressed as No. (%) or mean \pm SD (range).

Table 2. Distribution of the Total Academic Satisfaction of Students with Virtual Education

Total Academic Satisfaction	No. (%)
Low	95 (32.1)
Moderate	119 (40.2)
High	65 (21.96)
Very high	17 (5.74)

to solve problems, the unattractiveness of using virtual education, not assessing the educational needs before the classes, impossibility of video conferencing, the impossibility of participation in webinars, lack of motivation, as well as problems with internet speed and bandwidth (Table 4).

5. Discussion

The present study was conducted to evaluate the satisfaction of the students of Ghaen and Ferdows medical schools with virtual education and the factors affecting this satisfaction during the COVID-19 pandemic. The findings of this study showed that in the critical conditions of the COVID-19 pandemic, the academic satisfaction of most

Table 3. Comparison of the Academic Satisfaction of Students with Virtual Education in Terms of Demographic Variables

Variables	Mean \pm SD	P-Value
Gender		0.4 ^a
Male	75.38 \pm 22.72	
Female	77.25 \pm 23.06	
Level of education		0.007 ^b
Associate	80.25 \pm 25.42	
Discontinuous bachelor	91.23 \pm 27.46	
Continuous bachelor	74.64 \pm 21.7	
Economic status self-report		0.8 ^b
Poor	76.75 \pm 23.16	
Moderate	76.78 \pm 23.22	
Good	74.69 \pm 21.67	
Faculty		0.005 ^a
Paramedical	76.52 \pm 24.20	
Health	67.84 \pm 15.04	
Ghaen School of Nursing and Midwifery	73.84 \pm 21.69	
Ferdows School of Paramedical Sciences and Health	81.85 \pm 24.47	

^a Independent *t*-test.^b ANOVA.**Table 4.** Frequency and Percentage of Virtual Education Problems from Students' Perspectives

Problems	No. (%)
Lack of face-to-face meetings to solve academic problems	179 (60.5)
Unattractiveness of using virtual education	146 (49.3)
Not assessing educational needs before the classes	143 (48.3)
Impossibility of using video conferencing	140 (47.3)
Impossibility of participation in webinars	131 (44.4)
Lack of motivation in students	130 (43.9)
Internet speed and bandwidth problems	127 (42.9)

students of Ghaen and Ferdows medical schools with virtual education was at a moderate level. In this regard, a cross-sectional study conducted by Aziz Ansari et al. (2021) on the understanding of online education and learning of 281 students of health sciences during the COVID-19 pandemic revealed that most students were satisfied (15). In the latter investigation, the quick response of professors to the questions of students, readiness to give lectures, and online communication between professors and students were some of the positive points reported by students. In contrast, most students were more satisfied with educational content such as movies and PowerPoint, content coherence, and content organization in the present

study. However, the evaluation of students' opinions in the abovementioned study shows the need to modify the teaching, learning, and evaluation methods considering that the materials were designed for a face-to-face presentation.

In another similar study conducted on students, the mean satisfaction of students with the quality of teaching and its components was higher than average (16). This study was conducted at Farhangian University, whose most students were male. Furthermore, the students were satisfied with the professors regarding the components of content mastery, teaching skills, learning performance evaluation, communication skills, and observance of ethical issues in teaching and learning, but in contrast, they were dissatisfied with the development of lesson plans, classroom management, and guidance and counseling by professors. In the present study, regarding the assessment of problems from the students' point of view, the lack of face-to-face meetings to solve academic problems (60.5%), the unattractiveness of virtual education (49.3%), and not assessing the educational needs before the class (48.3%) were mentioned as the most problematic issues.

The satisfaction of students cannot completely reflect all services of virtual education and educational systems. As a result, appropriate measures should be taken through continuous and accurate reviews and consultation with professors and experts to eliminate the shortcomings and challenges and improve the virtual education status. In line with the present research, Abbasi et al. (2020) evaluated the perception and evaluation of 1255 health sciences students regarding virtual education during the COVID-19 pandemic in developed and developing countries using a researcher-made questionnaire. Their investigation showed that students' level of satisfaction was better in developed countries than in developing countries. Most participants agreed that virtual education was satisfactory in acquiring knowledge, while it was not effective, and the methods of acquiring clinical skills needed improvement (17). The mentioned study was performed on 1255 students in different fields of dentistry, medicine, as well as fellowship and senior levels with various methods of virtual education, including platform and email, while the present study was performed on bachelor and associate students.

Dutta et al. (2021) conducted a cross-sectional study to assess the level of satisfaction of the medical and nursing students regarding preclinical and clinical virtual education during the COVID-19 pandemic. In contrast to the current study, they showed a high dissatisfaction among students. Their study was prospective with a larger sample size than the present study. Most of the samples were medical students satisfied with the sources and quality of information, individual learning, educational content, learn-

ing, and time management. However, they were largely dissatisfied with the cancellation of clinical courses, the lack of presence in hospital wards, and not interacting with patients, depriving them of access to and enhancing clinical skills as an essential part of the medical curriculum. We found that most students were satisfied with the appropriateness of duration and learning time (70.3%), as well as the quality of contents (72.3%). On the other hand, the participants of the current study expressed dissatisfaction with the achievement of educational goals appropriate for each course (22.3%) (18).

Yarizanganeh et al. (2021) performed a descriptive study using a researcher-made questionnaire to assess the effect of coronavirus prevalence on educational activities and satisfaction with the quality of virtual education systems. These authors indicated that satisfaction with virtual education among students did not have a desirable level (13). In this study, a questionnaire containing 35 items based on a Likert scale and Hao and Barish model was applied for humanities, engineering, and basic sciences students in associate, bachelor, master, and doctoral degrees. In addition, in the latter study, frequent interruptions of the educational system during classes and exam time and low internet speed were mentioned as the reasons for students' dissatisfaction with virtual education. Although the mentioned study was different from the current investigation in terms of students' level of academic satisfaction, the causes of dissatisfaction were consistent with our study. For example, the impossibility of using video conferencing (47.3%), the impossibility of participating in webinars (47.3%), as well as internet speed and bandwidth problems (42.9%) were the reasons for dissatisfaction.

Comparing the findings of different studies with the present investigation reveals that the impracticability of virtual education for many practical, clinical, and workshop courses in the field of medical sciences could be one of the possible reasons for the different satisfaction rates in medical sciences compared to other fields. It is also important that the current situation paved the way for students to attend clinics and clinical rounds virtually and completely safe, helping them become experienced in practical courses. The findings of this study showed that students' total satisfaction with virtual education had no statistically significant relationship with gender and economic status. Gholipour et al. (2020) also reported that the satisfaction of students was not correlated with their educational course and gender (19).

In addition, the present study showed that female students had a higher mean satisfaction score than male students. However, this difference was not statistically significant. Consistent with our finding, Sabouri et al. (2021) demonstrated no statistically significant difference

between genders regarding satisfaction (20). Contrary to the present study, Farsi et al. (2021) reported that female students were more satisfied with provided virtual education (12). However, Hashemi and Adu-Gyamfi (2021) noted that female students were unwilling to attend online classes and mentioned variable cultures and inequality as possible reasons (21).

In the present study, discontinuous bachelor students were more satisfied with virtual education than continuous bachelor and associate students. No similar study was found in this regard. However, Farsi et al. (2021) found that graduate students were more satisfied with virtual education than undergraduate students (12). Cheraghi and Mahjub reported that students in doctoral programs were more satisfied with their virtual courses than other students (22). In this study, most discontinuous bachelor students were employed and married and had children. Therefore, based on their statements, it is expected that attending a non-residential university usually makes it difficult for them to play other roles. The reason for their higher satisfaction compared to other educational levels may be the possibility of further consideration for other roles given their more frequent presence in their place of residence.

5.1. Limitations

Students were unwilling to participate in the present study due to its electronic nature, and the response rate was lower in the initial stage of sending the questionnaire link, which was somewhat resolved by repeating the submission. Moreover, random sampling was impossible for the same reason. Another limitation of this study was that its target group was exclusively students, and other individuals involved in education, such as professors, educators, and educational administrators, were not included in the study. Therefore, it is recommended that future studies consider these groups.

5.2. Conclusion

Overall, the results of our study showed that less than half of the students had a moderate level of satisfaction with virtual education. According to students, the dissatisfaction was primarily due to the lack of proper context and infrastructure for holding virtual classes. In addition, satellite branches were usually weaker than the main university in terms of facilities and equipment, which requires the special attention of education officials and managers.

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Footnotes

Authors' Contribution: Study conceptualization and design, M.A.M. and A.D.; Analysis and interpretation of data, A.A.A. and S.M.M.; Drafting of the manuscript, S.D., M.A.M., and A.D.; Critical revision of the manuscript for important intellectual content, Z.E.S., A.A.A., S.M.M., and S.D.; Statistical analysis, A.A.A.

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