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Original Article

The Relationship between Emotional Intelligence and Online Test Anxiety in Paramedical Students in Qom During the COVID-19 Epidemic in 2021

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Abstract

Background: Following a shift in the exam mode from face-to-face to online exams during the COVID-19 pandemic, test anxiety became more prevalent among students. Emotional intelligence is one of the factors that may be effective in controlling anxiety. To this end, the present study examined the relation between emotional intelligence and anxiety caused by online exams in students of paramedical sciences during the COVID-19 epidemic.

Methods: This descriptive-analytical and cross-sectional study was conducted in June 2021 during the final-semester exams of the students at the Faculty of Paramedicine of Qom University of Medical Sciences. The data in this study were collected using a demographic information questionnaire, the Schutte Self-Report Emotional Intelligence Test (SSEIT), and the FRIEDBEN Test Anxiety Scale. The questions were developed in Google Form and sent to the students. The collected data were analyzed using descriptive statistics and inferential statistics, including analysis of variance (ANOVA), independent samples t-test, and Pearson's correlation test at a significance level of 0.05.

Results: The participants in this study were 193 undergraduate students. The mean scores of the students' online test anxiety and emotional intelligence were 42.03 ± 10.90 and 97.05 ± 14.36, respectively. There was a statistically significant relation between test anxiety scores with age ($P=0.020$), gender ($P=0.010$), field of study ($P=0.001$), and place of residence ($P=0.034$). However, there was no statistically significant relation between the students' emotional intelligence and test anxiety ($r=0.042$; $P=0.563$).

Conclusion: The paramedical students in this study had high online test anxiety and a moderate level of emotional intelligence. However, the students' emotional intelligence had no relation with their online test anxiety. Thus, other strategies should be adopted to reduce students' online test anxiety.

Keywords: Emotional intelligence, Test anxiety, Students

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Introduction

In March 2020, the World Health Organization (WHO) declared COVID-19 as a pandemic disease (1). After this declaration, most countries of the world announced extensive closures and quarantines, which led to an increase in mental and emotional problems, despair, and anxiety among people (2). Universities were also closed or semi-closed in many countries of the world, and this caused a severe disruption in education and learning (3). Following the closure of universities, mental problems such as anxiety and depression increased among students (4). During the COVID-19 pandemic, the prevalence of anxiety among students of various fields was reported to be 40% in Chinese universities, 60.2% in French universities, and 42.8% in nursing students in Israel (5-7).

Excessive anxiety can lead to physical and mental problems and affect students' academic performance and achievement (8). One of the reasons for the increase in anxiety among medical students was the change in the teaching methods from face-to-face to online (9). Holding the final exams of medical students online was another factor that led to behavioral changes and anxiety among students. Gender (being a female student), the duration of the exam, the exam setting, the exam scoring procedure, and technical problems (e.g., internet disconnection) were the main risk factors for exam stress in students (10,11). During the COVID-19 outbreak, some students increased their sleep time, caffeine consumption, cigarette use, and energy drinks, sugary and fast foods consumption, and reduced their physical activities to control their stress, and these lifestyle changes were detrimental to their health (10). Thus, finding a way to reduce anxiety in medical students during the COVID-19 pandemic was very important.

Emotional intelligence is one of the factors that can be effective in the occurrence or control of anxiety. Emotional intelligence is defined as the ability to understand, absorb, and regulate emotions in oneself and others to promote

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emotional and intellectual development (12). Cejudo et al showed that emotional intelligence has a significant negative relation with anxiety (13). Fernandez-Berrocal et al also reported a negative correlation between emotional intelligence and depression and anxiety, indicating that the higher the emotional intelligence, the lower the level of anxiety (14).

Given the high prevalence of anxiety among medical students, the ability to control anxiety and adapt to it are the two main components of emotional intelligence (15). Furthermore, emotional intelligence may be an important protective factor against online test anxiety in students during the COVID-19 epidemic. However, a review of the literature showed no study has yet addressed the relation between online test anxiety and emotional intelligence among paramedical students during the COVID-19 pandemic. To this end, the present study sought to explore the relation between emotional intelligence and anxiety caused by online exams in paramedical students during the COVID-19 epidemic.

Methods

This descriptive-analytical and cross-sectional study was conducted in June 2021 at the time of the final-semester exams of the paramedical students of Qom University of Medical Sciences. The research population consisted of 1st to 6th-semester students of Bachelor of Science in Anesthesia, Surgical Technology, Laboratory Science, and Emergency Medical Services. A total of 231 students were selected as the participants using the census method. The inclusion criteria were the students' willingness to participate in the study, no history of known psychiatric disorders based on the student's statements, and no use of anti-depressants and anxiety medications. The exclusion criteria were the participant's unwillingness to continue cooperating in the study and the failure to complete the questionnaires.

The data in this study were collected using a demographic information questionnaire, the Schutte Self-Report Emotional Intelligence Test (SSEIT), and the FRIEDBEN Test Anxiety Scale. The demographic information questionnaire contained 8 items that assessed the participants' age, gender, field of study, marital status, number of family members, academic semester, place of residence, and interest in the field of study.

The FRIEDBEN Test Anxiety Scale contains 23 items that measure different dimensions of test anxiety (social derogation, cognitive obstruction, and tenseness). Items 1 to 8 assess social derogation, items 9 to 17 measure cognitive obstruction, and items 18 to 23 measure tenseness. The items are scored on a four-point scale (0 = strongly disagree, 1 = disagree, 2 = agree, and 3 = strongly agree) and respondents are required to select the option that best expresses the intensity of their feelings. The score for each subscale is calculated as the sum of the scores for the items on that subscale. Moreover, the total score for the scale is calculated as the sum of the scores for all items. Higher scores indicate lower test anxiety and lower scores show a higher level of test anxiety. The minimum and maximum scores on this test are 0 and 69, respectively. The scores from 0 to 23 indicate high anxiety, the scores ranging from 24 to 46 show moderate anxiety, and scores higher than 46 indicate low anxiety. The validity of the scale for the Iranian population was confirmed by Baezzat et al The reliability of the scale was calculated with Cronbach's alpha and the corresponding values were 0.90, 085, 0.83, and 0.91 for social derogation, cognitive obstruction, and tenseness subscales, and the whole scale (16).

The SSEIT was developed in 1998 with 33 items. A total of 13 items address the appraisal and expression of emotions, 10 items measure emotion regulation, and 10 items measure the utilization of emotions. The items on the SSEIT are scored on a 5-point Likert scale (1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, and 5 = strongly agree). Items 5, 29, and 33 are scored in reverse. The SSEIT yields a total score ranging from 33 to 165, with higher scores indicating greater emotional intelligence. Scores ranging from 33 to 66 indicate low emotional intelligence, scores from 67 to 100 indicate average emotional intelligence, and scores above 100 indicate high emotional intelligence (17). The SSEIT has been used in several studies to evaluate emotional intelligence and has acceptable validity for evaluating emotional intelligence (17-19). The reliability of the test was also confirmed by Besharat with Cronbach's alpha of 0.89 (20).

To start the study, initially the researchers obtained a permit (IR.MUQ.REC.1400.070) from the research ethics committee of Qom University of Medical Sciences. The participants were selected with informed consent after receiving some information about the objectives of the study and the research procedure. Afterward, the researchers received the students' examination schedule, a list of students in different fields, and their phone numbers from the office of admission and records of the faculty. The questionnaires and the informed consent form were submitted to the participants via WhatsApp Messenger at the beginning of the final exams. The students were asked to complete the questionnaires, if they were willing to participate in the study. The students needed to complete the questionnaires within 10 to 15 minutes. The students were asked to answer the questions at a suitable time and in a quiet space. The sampling procedure was terminated at the end of exams and the students who did not send their questionnaires were considered as those who did not want to participate in the study and were excluded from the study. The collected data were then analyzed with SPSS-20 software using descriptive statistics and inferential statistics including analysis of variance (ANOVA), independent samples t-test, and Pearson's correlation test at a significance level of 0.05.

Results

The participants were 231 students of Bachelor of Science in Anesthesia, Surgical Technology, Laboratory Science, and Emergency Medical Services. A total of 38 students (16.45%) who had not completed the questionnaires were excluded from the study, and finally, the data for 193 students were analyzed.

A total of 120 students (62.2%) were female. The participants' average age was 25.39 ± 8.43 years. Moreover, 146 students (75.6%) were single and the rest were married. In addition, 69 students (35.8%) were studying anesthesia and the rest were in other fields including surgical technology, laboratory science, and emergency medical services. Since sampling was performed during the COVID-19 outbreak, 167 students (89.5%) were staying in private homes. Besides, 133 students (68.9%) lived in families with 2 to 4 members and 175 students (90.7%) were interested in their fields of study. Furthermore, 140 students (72.5%) were studying in the 1st to 3rd semesters and the rest were in higher semesters (Table 1).

The data showed that the emotional intelligence scores were significantly correlated with the students' age, place of residence, and interest in the field of study ($P < 0.05$). However, there was no statistically significant relation between emotional intelligence and gender, field of study, number of family members, marital status, and academic semester ($P > 0.05$). There was also a statistically significant relation between online test anxiety scores and age, gender, field of study, and place of residence ($P < 0.05$). However, there was no statistically significant relation between online test anxiety scores and variables such as marital status, number of family members, interest in the field of study, and academic semester ($P > 0.05$; Table 1)

The mean scores for the students' online test anxiety and emotional intelligence were 42.03 ± 10.90 and 97.05 ± 14.36, respectively. The results showed that 109 students (56.5%) had an average level of emotional intelligence and 102 students (52.8%) experienced an average level of test anxiety. Moreover, Pearson's correlation test showed no statistically significant relation between emotional intelligence and test anxiety of the students (r = 0.042; $P = 0.563$) (Table 2).

Discussion

Test anxiety is an emotional reaction that most medical students face before any exam. This fear is not irrational, but excessive fear disrupts their performance on the exam. Many researchers suggest that a little anxiety is

Table 1. The descriptive statistics for the participants' demographic data and the relation between these variables with emotional intelligence and test anxiety

Variables	Categories	Frequency	Percent	Emotional intelligence	*P* value	Test anxiety	*P* value
Age	18-24	137	71	95.30 ± 13.90	0.005*	41.48 ± 11.19	0.020*
	25-31	13	6.7	95.00 ± 12.22		50.15 ± 5.17	
	32-50	43	22.3	103.23 ± 14.53		41.34 ± 10.39	
	Mean ± SD	25.39 ± 8.43		97.05 ± 14.36		42.03 ± 10.90	
Gender	Male	73	37.8	97.15 ± 14.00	0.940**	44.60 ± 11.81	0.010**
	Female	120	62.2	96.99 ± 14.47		40.47 ± 10.04	
Field of study	Anesthesia	69	35.8	99.34 ± 14.83	0.107*	35.91 ± 11.59	0.001**
	Surgical technology	66	34.2	97.71 ± 14.85		44.39 ± 8.16	
	Medical emergency services	30	15.5	95.06 ± 11.59		46.0 ± 10.58	
	Laboratory sciences	28	14.5	91.96 ± 13.09		47.32 ± 8.40	
Marital status	Single	146	75.6	96.29 ± 13.77	0.194**	42.33 ± 11.06	0.503**
	Married	47	24.4	99.40 ± 15.60		41.10 ± 10.44	
Number of family members	2-4	133	68.9	98.41 ± 14.14		41.03 ± 11.40	0.070*
	5-7	54	28	94.75 ± 13.56		43.35 ± 09.50	
	8-10	6	3.1	87.50 ± 19.17		46.33 ± 11.05	
	Mean ± SD	04.14 ± 01.30		97.05 ± 14.36	0.317*	42.03 ± 10.90	
Academic semesters	1-3	140	72.5	97.03 ± 14.25	0.803*	41.30 ± 11.66	0.300*
	4-6	43	22.3	96.46 ± 13.89		44.23 ± 07.98	
	7-9	10	5.2	99.80 ± 17.10		42.80 ± 10.39	
Place of residence	Dormitory	17	8.8	89.94 ± 12.47	0.038*	39.82 ± 08.89	0.034*
	Personal house	9	4.7	104.44 ± 21.14		33.77 ± 20.22	
	Living with parents	167	89.5	97.37 ± 13.80		42.70 ± 10.27	
Interest in the field of study	Yes	175	90.7	97.04 ± 13.67	0.002**	42.38 ± 10.84	0.162**
	No	18	9.3	87.44 ± 16.57		38.61 ± 11.25	

* ANOVA; ** Independent samples t-test.

Table 2. The descriptive statistics and the relation between the students' test anxiety and emotional intelligence

Variable	Intensity	Frequency	Percent	*P* value
Emotional intelligence	High	4	2.1	0.563*
	Moderate	109	56.5	
	Low	80	41.5	
	Mean ± SD	97.05 ± 14.36		
Test anxiety	High	82	42.5	
	Moderate	109	52.8	
	Low	9	4.7	
	Mean ± SD	42.03 ± 10.90		

* Pearson correlation test.

good because it keeps people focused on their tasks. However, excessive anxiety can be very debilitating (21). The present study aimed to examine the relation between medical students' emotional intelligence and online test anxiety during the COVID-19 epidemic.

The results confirmed that 95.3% of medical students reported a prevalence of moderate to severe online test anxiety, which was higher than the prevalence rates reported in other studies. Arora et al showed that 56% of the students in Indian universities had mild to severe test anxiety (22). Hashmat et al also found that test anxiety was moderate in 90.8% of medical students at Dow University in Karachi (21). Woldeab and Brothen examined test anxiety in students of a government research center in the United States and showed that students' anxiety was higher in online tests compared to non-online tests (23). It seems that the reason for the high prevalence of anxiety in this study compared to other studies was the unfamiliarity of students with online testing, the possibility of frequent internet disconnections during the online test, the impossibility of returning to previous questions, the impossibility of reviewing the answers at the end of the exam, inadequate time to answer the questions, insufficient time for the entire exam, the impossibility of the professor's presence in the exam session, and the unfamiliarity of the students with techniques to overcome difficulties in the exam. Satish and Manjunatha, studied medical students at Bijapur University in India and reported that the examination system, lack of time management, and extensive course loads were the main factors that aggravated test anxiety (24). Furthermore, Hashmat et al reported that extensive course loads, lack of physical exercise, and long duration of exams played a role in causing test anxiety (21).

The data in the present study showed a statistically significant relation between online test anxiety and age, gender, field of study, and place of residence, but other demographic variables did not have a significant relation with online test anxiety. Test anxiety was higher in the students aged 25 to 31 years than in other age groups. One reason was that most of the students at this age were students in different fields of paramedical sciences. These students were usually employed, and working and studying at the same time did not allow them to devote enough time to study, and thus they had higher test anxiety. Similarly, test anxiety was higher in Anesthesia students than the students of other academic fields in the Faculty of Paramedicine. One possible reason was excessive course loads (3 to 4 credits for one subject) imposed on this group of students. Besides, students who lived alone and those who lived in student dormitories showed more test anxiety. It seems that the absence of facilities in individual residences and student dormitories compared to the facilities that existed in private homes and the absence of family members with students living alone or in a student dormitory increased the level of online test anxiety in this group of students.

The findings of the present study showed no statistically significant relation between online test anxiety scores and marital status, number of family members, interest in the field of study, and academic semester. Other studies also found no significant relation between students' demographic variables and test anxiety. However, in some studies, female students reported a higher level of test anxiety than male students, which could be attributed to girls' inherent more sensitivity to exams (25,26).

In the present study, 41.5% of the students had low emotional intelligence and the emotional intelligence of the students was average to high. However, a study by Kant in India on Gaya Law School students and a study by Chew conducted on medical students at Universiti Putra Malaysia (UPM) found that students' emotional intelligence was high (27,28). Possible reasons for the average emotional intelligence reported by the students in the present study were the COVID-19 outbreak in the country, quarantine protocol in many cities, and the closure of universities. Students usually learn how to control their emotions by being in the university environment. However, due to the closure of universities, students could not learn emotional intelligence control strategies.

There was a statistically significant relation between emotional intelligence and age. Thus, as the age of the students increased, their emotional intelligence increased. The reason for this finding was that some non-continuous course undergraduate students were older than other students. These students were often employed and had more work and life experiences than the students in continuous bachelor programs. Thus, they had a higher level of emotional intelligence. There was also a statistically significant relation between interest in the field of study and emotional intelligence, and students who were interested in their field of study had higher emotional intelligence than students who were not interested. Likewise, there was a statistically significant relation between students' place of residence and their

emotional intelligence, and students who lived with their families had higher emotional intelligence than those who lived in student dormitories. On the other hand, Kant, in a study on law students in the city of Gaya, India, showed that the place of residence had no relation with emotional intelligence (27). However, the students in the present study lived in dormitories during the COVID-19 epidemic and most of the students lived in individual rooms due to strict health protocols. Therefore, the environmental and social factors affecting the increase in students' emotional intelligence were limited, making the emotional intelligence scores decrease in the present study compared to other studies.

The present study showed no statistically significant relation between emotional intelligence and gender, field of study, marital status, and academic semester. Štiglic et al showed that female nursing students of Maribor University in Slovenia had higher emotional intelligence scores than male students, but this difference was not statistically significant (29). Furthermore, Abe et al showed no statistically significant relation between gender and emotional intelligence in their study on medical students at Jifu University in Japan (30). In contrast, Fida et al in a study conducted on humanities students at Mardan University in Pakistan, and Kant in their study on law students in Gaya, India, showed that female students have higher emotional intelligence than male students (27,31).

The data in the present study showed no statistically significant relation between emotional intelligence and online test anxiety in students. Likewise, Cleary et al reported that there is not enough evidence to show that emotional intelligence improves the communication and academic achievement of nursing students (32). However, most studies have reported a significant relation between emotional intelligence and anxiety (33-35). A study by Trigueros et al on students of different disciplines at Almeria University in Spain and Ahmadpanah and colleagues' study on medical students at Hamedan University of Medical Sciences in Iran showed that emotional intelligence has an inverse relation with test anxiety and academic achievement (34,35). Enns et al also showed that in nursing students at the University of Ottawa in Canada, high emotional intelligence was associated with less perceived stress and adaptive strategies used by the students (33). Thomas et al studied undergraduate students of different fields at Ball State University in the United States and found that regulating emotions and developing self-regulation skills reduce test anxiety in students (36). The lack of a significant relation between emotional intelligence and online test anxiety could be attributed to the social and academic conditions during the COVID-19 pandemic that led to a decrease in the emotional intelligence of students. In addition, the risk factors for anxiety were reinforced during this period. The quarantine of cities, the impossibility of students attending universities, stadiums, and entertainment centers, the impossibility of traveling, the impossibility of attending joyful events such as concerts, birthday parties, and weddings, increasing levels of stress in the family and society, high COVID-19 prevalence and mortality, and a shift in face-to-face courses and exams to online courses and exams, all contributed to lower the level of emotional intelligence of students compared to the time before COVID-19. As a result, paramedical students' general anxiety and online test anxiety increased considerably.

One of the limitations of this study was that the students were advised to complete the questionnaires alone in a quiet and peaceful environment away from everyday concerns. Nevertheless, some students may not have paid enough attention to this recommendation.

Conclusion

The data in the present study showed that paramedical students had a high level of online test anxiety and a moderate level of emotional intelligence. However, emotional intelligence did not affect online test anxiety in paramedical students. Thus, students with any level of emotional intelligence may be affected by online test anxiety. Accordingly, regardless of the level of emotional intelligence of students, measures should be taken to reduce the anxiety caused by online exams in students.

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Competing Interests

The authors declared no conflict of interest.

Ethical Approval

This study was approved by the ethical committee of Qom University of Medical Sciences, Qom, Iran (No. IR.MUQ.REC.1400.070).

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